

**PROPRIETARY PROTECTION FOR TRADITIONAL KNOWLEDGE IN AGRICULTURAL  
COMMODITIES: PROVIDING LEGAL CERTAINTY FOR INTERNATIONAL TRADE**

**BY**

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## ***Abstract***

The focus of this research is to determine whether the equitable construction of traditional knowledge can be characterised to give it the required level of certainty to recognise it as a legal construction that can have proprietary protection applied to it when it is used to develop agricultural commodities for international trade. Such a study is important in order to provide a greater understanding of the options for solutions to enable the proprietary protection of traditional knowledge associated with genetic resources that are utilised for the development of traded agricultural commodities. This is also relevant to the options for the provision of the legal certainty required for commercial transactions in these agricultural commodities on the international market. The research approach adopted in this dissertation includes the review and analysis of the key elements of the legal proprietary protection schematic, the construction of traditional knowledge, the parameters for international trade, the value and place of genetic resources for the provision of agricultural commodities and the international forums responsible for the governance of these areas. The findings from this research provide evidence that it is possible to provide proprietary protection to traditional knowledge associated with genetic resources utilised for the construction of agricultural commodities that are internationally traded. The dissertation recommends that this proprietary protection be given at a nation state level before embarking on an international certification mark of compliance.

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## ***Table of Abbreviations***

ABS	Access and Benefit Sharing
ACTA	Anti-Counterfeiting Trade Agreement
AMS	Aggregate Measure of Support
AnGR	Animal Genetic Resources
CBD	Convention on Biological Diversity
FAO	Food and Agriculture Organization of the United Nations
GATT	General Agreement on Tariffs and Trade
GBA	(UNEP) Global Biodiversity Assessment
GI	Geographical Indications
International Undertaking	FAO International Undertaking on Plant Genetic Resources
IGC	(WIPO) Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore
IK	Indigenous Knowledge
IPPC	International Plant Protection Convention
ISPMs	International Standards for Phytosanitary Measures
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
MAT	Mutually Agreed Terms
MLS	Multilateral System
OECD	Organization for Economic Co-operation and Development
PBR	Plant Breeders' Rights
PCT	Patent Cooperation Treaty
PGR	Plant Genetic Resources
PIC	Prior Informed Consent
PLT	Patent Law Treaty
SPS	Phytosanitary and Sanitary Measures Agreement
SMTA	Standard Material Transfer Agreement
TBT	Technical Barriers to Trade
TEK	Traditional Ecological Knowledge
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
UPOV	International Union for the Protection of New Varieties of Plants
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

## ***Glossary***

**ABS** — access and benefit sharing

**Agrobiodiversity** — that component of biodiversity that contributes to food and agriculture production. The term agrobiodiversity encompasses within species, species and ecosystem diversity.

Source: Global Strategy, Food and Agriculture Organization

**Animal Genetic Resources (AnGR)** — Animal Genetic Resources include all species, breeds and strains that are of economic, scientific and cultural interest to humankind for agriculture, both now and in the future. Common agricultural species include sheep, goats, cattle, horses, pigs, buffalo and chickens, but there are many other domesticated animals such as: camels, donkeys, elephants, reindeer, rabbits and rodents species that are important to different cultures and regions of the world.

Source: Food and Agriculture Organization

**Biodiversity** — is a synonym of biological diversity, see below. The contracted form 'biodiversity' was apparently coined by W G Rosen (1985) for the first planning meeting of the 'National Forum on Biodiversity' held in Washington DC (September 1986). The proceedings of which (E O Wilson and F M Peter, 1988) brought the notion of biodiversity to the attention of a wide field of scientists and others.

Source: Global Biodiversity Assessment (GBA)

**Biological diversity** —

- i. means the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

Source: *Convention on Biological Diversity*

- ii. is an umbrella term for the degree of nature's variety, including both the number and frequency of ecosystems, species, or genes in a given assemblage.

Source: Food and Agriculture Organization

**Biological resources** —

- i. includes: genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.

Source: *Convention on Biological Diversity*

- ii. is the ensemble and the hierarchical interactions of the genetic, taxonomic and ecological scales of organisation, at different levels of integration.

Source: Specialised Encyclopaedia and Dictionaries

**Biotechnology** — means any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use.

Source: *Convention on Biological Diversity*

**Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purpose of Patent Procedure 1977 (Budapest Treaty)** — the main feature is that a contracting state which allows or requires the deposit of microorganisms for the purposes of patent procedure must recognise, for such purposes, the deposit of a microorganism with any

'international depositary authority', irrespective of whether such authority is on or outside the territory of the said state.

Source: World Intellectual Property Organization

**Convention on Biological Diversity (CBD)** — signed by 150 government leaders at the 1992 Rio Earth Summit, the Convention on Biological Diversity is dedicated to promoting sustainable development. Conceived as a practical tool for translating the principles of Agenda 21 into reality, the Convention recognises that biological diversity is about more than plants, animals and microorganisms and their ecosystems – it is about people and our need for food security, medicines, fresh air and water, shelter, and a clean and healthy environment in which to live.

Source: *Convention on Biological Diversity* Secretariat

**Commodification** — the commercialisation of an object or activity that is not inherently commercial.

Source: Oxford English Dictionary

**Conservation** — judicious use and management of nature and natural resources for the benefit of human society and for ethical reasons.

Source: Global Biodiversity Assessment (GBA)

**Cosmeceuticals** — these are products that are a blend of pharmaceuticals and cosmetics that have, or purport to have, medicinal or drug-like qualities through biologically active ingredients. These products are usually applied topically, e.g. anti-ageing creams, anti-dandruff shampoo, mineral make-up.

**Derivatives** – plant biotechnology:

- i. resulting from or derived from
- ii. term used to identify a variant during meristematic cell division.

**DNA** — Deoxyribonucleic acid, the substance which contains genetic information. DNA consists of two twisted polynucleotide chains. It has four different constituents (nucleotides), adenine (A), guanine (G), cytosine (C), and thymine (T). In nature, base pairs form only between A and T and between G and C; thus the base sequence of each single strand can be deduced from that of its partner.

Source: Specialised Encyclopaedia and Dictionaries

**DNA Sequence** — the specific order of bases in a DNA molecule, whether in a fragment of DNA, a gene, a chromosome or an entire genome.

Source: Food and Agriculture Organization, Glossary of Terms for Biotechnology for Food and Agriculture

**Domesticated or Cultivated Species** — means species in which the evolutionary process has been influenced by humans to meet their needs.

Source: *Convention on Biological Diversity*

**Ex-situ** — the components of biological diversity outside their natural habitats.

Source: Food and Agriculture Organization of the United Nations *ITPGRFA* art 2.

**Farmers' Rights** — the recognition of the contribution of farmers to expand the plant gene pool for the purpose of continued management and advancement of agrobiodiversity. This is key to ensuring the developments undertaken by farmers in plant breeding and conservation, for the

purpose of the improved use of agrobiodiversity now and in the future, are recognised, particularly indigenous subsistence farmers and their communities.

The construction of Farmers' Rights was given formal recognition in the *International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)*. Farmers' Rights Realisation and Protection –

9.2 The Contracting Parties agree that the responsibility for realizing Farmers' Rights, as they relate to plant genetic resources for food and agriculture, rests with national governments. In accordance with their needs and priorities, each Contracting Party should, as appropriate, and subject to its national legislation, take measures to protect and promote Farmers' Rights, including:

- (a) Protection of traditional knowledge relevant to plant genetic resources for food and agriculture;
- (b) The right to equitably participate in sharing benefits arising from the utilization of plant genetic resources for food and agriculture; and
- (c) The right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of plant genetic resources for food and agriculture.

9.3 Nothing in this Article shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material, subject to national law and as appropriate.

Source: Food and Agriculture Organization of the United Nations *ITPGRFA* art 9.2–9.3

**Food and Agriculture Organization of the United Nations (FAO)** — which leads international efforts to defeat hunger. Serving both developed and developing countries, FAO acts as a neutral forum where all nations meet as equals to negotiate agreements and debate policy. FAO is also a source of knowledge and information.

Source: Food and Agriculture Organization of the United Nations

**Global Biodiversity Assessment (GBA)** — UNEP Global Biodiversity Assessment was completed by 1500 scientists in 1995 and is updated to give a dataset about global biodiversity at an ecosystem, species and genetic level.

Source: United Nations System-Wide Earthwatch

**General Agreement on Tariffs and Trade (GATT)** — is a multi-lateral agreement under the World Trade Organization.

**Genetic Material** — any material of plant, animal, microbial or other origin containing functional units of heredity.

Source: *Convention on Biological Diversity*

**Genetic resources** — means genetic material of actual or potential value.

Source: *Convention on Biological Diversity*

**Genome** — the master blueprint for the total set of an organism's genes.

Source: Food and Agriculture Organization of the United Nations, Glossary of Terms for Biotechnology in Food and Agriculture

**In-situ** — biodiversity within the evolutionary dynamic ecosystems of the original habitat or natural environment.

Source: Global Biodiversity Assessment (GBA)

**International Convention on the Protection of New Varieties of Plants (UPOV)** — adopted 1961, revised 1972, 1978 and 1991.

**International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)** which entered into force in 2004. The objectives mandate the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of benefits arising out of their use.

**International Undertaking** — Food and Agriculture Organization *International Undertaking on Plant Genetic Resources* 1983. This provided the governance framework for the Commission on Genetic Resources which was established in 1983.

**Mutually Agreed Terms (MAT)** — terms agreed between traditional knowledge holders and users of this knowledge.

**Nutricosmetics** — oral supplements with biologically active ingredients that purport to improve the cellular structure of the skin.

**Plant Breeders' Rights (PBR)** — Legal protection of a new plant variety granted to the breeder or his successor in title. The effect of PBR is that prior authorisation is required before the material can be used for commercial purposes.

Source: Food and Agriculture Organization of the United Nations

**Plant Genetic Resources (PGR)** — the reproductive or vegetative propagating material of:

1. cultivated varieties (cultivars) in current use and newly developed varieties
2. obsolete cultivars
3. primitive cultivars (landraces)
4. wild and weed species, near relatives of cultivated varieties and
5. special genetic stocks (including elite and current breeder's lines and mutants).

Source: Food and Agriculture Organization of the United Nations

**Patent Cooperation Treaty (PCT)** — was concluded in 1970, amended in 1979, and modified in 1984 and 2001. The *PCT* makes it possible to seek patent protection for an invention simultaneously in each of a large number of countries by filing an ‘international’ patent application. Such an application may be filed by anyone who is a national or resident of a contracting state.

Source: World Intellectual Property Organization

**Patent Law Treaty (PLT)** — was concluded in 2000. It harmonises and streamlines formal procedures in respect of national and regional patent applications and patents.

Source: World Intellectual Property Organization

**Prior Informed Consent (PIC)** — consent granted prior to ... of the traditional knowledge associated with the genetic resource.

**Soil biodiversity** — also referred to as below-ground biodiversity. These terms are used to describe the collection of microorganisms and invertebrates that inhabit the soil. This includes small organisms, bacteria, fungi, protozoa, insects, worms and other invertebrates

**Standard Material Transfer Agreement (SMTA)** — the contractual agreement for the transfer of genetic resources covered by the *International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA)*.

**Traditional Knowledge** — refers to the content or substance of knowledge that is the result of intellectual activity and insight in a traditional context, and includes the know-how, skills, innovations, practices and learning that form part of traditional knowledge systems, and knowledge that is embodied in the traditional lifestyle of a community or people, or is

contained in codified knowledge systems passed between generations. It is not limited to any specific technical field, and may include agricultural, environmental and medicinal knowledge, and knowledge associated with genetic resources.

Source: World Intellectual Property Organization

**Traditional Knowledge and Associated Genetic Resources** — indigenous and local communities' customary laws, community protocols and procedures, as applicable, with respect to traditional knowledge associated with genetic resources.

Source: *Nagoya Protocol* art 9.1

**Trade-Related Aspects of Intellectual Property (TRIPS)** — 1995 is a multi-lateral agreement under the World Trade Organization covering copyright and related rights, trademarks including service marks, geographical indicators including appellations of origin, industrial designs, patents including the protection of new plant varieties, the layout designs of new circuits and undisclosed information including trade secrets and test data.

Source: World Trade Organization

**World Trade Organization (WTO)** — is an international body which creates and deals with the rules of trade between nations. 'The goal is to help producers of goods and services, exporters, and importers conduct their business.' The WTO is the essential creator, promoter, and enforcer of rules and contracts with respect to economic globalisation.

Source: World Trade Organization homepage

## ***Introduction***

The adaptation of traditional knowledge associated with genetic resources to produce an agricultural commodity for the commercial purposes of international trade occurs regularly. This on-going practice raises some significant issues such as ownership, control, benefit, use and protection of knowledge for all parties involved. These issues are central to this research and are dealt with extensively. The context in which they occur is important as it gives a recognisable frame of reference for the analytical discussion of the research question. This context is best identified and highlighted in the following hypothetical scenario.

The farmer from the local indigenous community tends his rice crop in the searing heat as his family is dependent on the success of the rice crop for their survival. The rice provides food, as well as material to create shelter and carrying baskets from the weaving of the stalks. The rice grows well even in the challenging climate and seems to be immune from disease. For as long as the farmer can recall his community has always collected the rice and sown it for their subsistence needs.

A researcher from a university observes this practice and ponders why the rice crop seems to survive and appear to be immune to disease and pests. He speaks with the farmer and learns that this rice has always been grown by the community for that reason. He asks if he can have some of the rice to undertake some research to find out why the rice is disease and pest free. He also asks the farmer if he can try to reproduce these effects with other varieties of rice. The farmer agrees and the researcher collects samples of the rice to test.

The researcher is able to isolate a gene in the rice that provides resistance to the known bacterial diseases that affect rice propagation. He is also able to isolate another gene that produces a natural deterrent to identified pests that attack rice crops. If these genes can be transferred to other varieties of rice they would provide the same protection. This would make the rice varieties containing the isolated genes disease and pest resistant. This would increase the level of food security for subsistence farmers and provide a viable commercial product for agricultural production.

The researcher conducts a series of controlled field tests over a number of years with various varieties of rice. He measures the success of these trials using indicators such as successful percentage of germination under various climatic conditions, size and virulence of the plants, head size and yield, level of disease present, level of pest infestation present and the ability of the varieties carrying the genes to be grown as second and subsequent generation crops. From these trials he is able to establish that the genes he has isolated can successfully be transferred to several varieties of rice and that these varieties will regenerate as second or subsequent generations.

Given these results the researcher decides to continue to develop the adaptation of the genes as a possible commercial agricultural product. For the rice varieties containing the isolated genes he obtained a patent before continuing his research and development.

Three key questions arise: firstly, is the researcher on solid legal ground utilising the current proprietary rights system or does this action seek to grant privilege to him as an individual at the expense of the collective interests of the local indigenous community?

Secondly, can the current proprietary rights system offer a safeguard to both the local indigenous community as holders of traditional knowledge and to the researcher as the adapter of this knowledge?

Thirdly, will there be a comparable attainment of the required level of legal certainty for both the local indigenous community and the researcher to assert their proprietary rights in a commercial context?

The aim of the research is to characterise traditional knowledge and consider how best to protect that knowledge as utilised in the generation of agricultural commodities. In order to achieve this aim, the research question has been structured to ask:

*Can traditional knowledge be characterised to give it the required level of certainty to recognise it as a legal construction? And are we able to then apply proprietary protection to that knowledge when it is used to develop agricultural commodities for international trade?*

The practical significance of the research question is relatively simple. If agricultural commodities are traded at an international level, both the supplier and the purchaser of these commodities will insist on the legal certainty of proprietary ownership at either end of the most simple transaction. The legal ownership of the property will need to vest in the supplier prior to the transaction and move to the purchaser at the point that the transaction is completed. Each party must hold the ability to control the proprietary rights for the transaction to be valid. If this is not able to be ascertained with the required level of legal certainty to guard against even the most simple transaction being void, then trade at domestic or international level will not be able to take place. Proprietary ownership is the key element to commercial certainty.

This would also hamper any further development of the agricultural commodities, whether by conventional selective breeding techniques or through genetic manipulation or other means, as any advancements or new commodities would be legally uncertain in terms of proprietary ownership. This would stifle development in the critical area of food security, for fear of the lack of legal control over the developments for commercial purposes, whether at a domestic nation state level or at an international legal one.

International multilateral environmental, trade and other related agreements and treaties<sup>1</sup> currently operating amongst nations are designed to ensure mutual recognition of proprietary rights, the standards and formalities of proprietary applications, and the continuation of the necessary legal certainty regarding legal ownership.<sup>2</sup> In conjunction, these aim to provide the ensuing necessary legal certainty of trade at an international level over biological resources<sup>3</sup> and

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<sup>1</sup> These agreements include: *1883 International Convention for the Protection of Industrial Property*, signed 20 March 1883 (entered into force 7 July 1884) ('*Paris Convention*'). *World Trade Organization Agreement on Trade-Related Aspects of Intellectual Property Rights (Marrakesh Agreement on Establishing the World Trade Organization*, opened for signature 15 April 1994, 1867 UNTS 3 (entered into force 1 January 1995) annex 1C ('*TRIPS Agreement*')); *International Union for the Protection of New Varieties of Plants*, signed 2 December 1961 (10 August 1968) (revised 10 November 1972, 23 October 1978, 19 March 1991), (last revision entered into force 24 April 1998) ('*UPOV Convention*'); *Trademark Law Treaty*, signed 27 October 1994, I-35236 (entered into force 1 August 1996); *Patent Law Treaty*, signed 2000, I-41939 (entered into force 28 April 2005) ('*PLT*'); *Patent Cooperation Treaty*, signed 1970, I-18336 (entered into force 24 January 1978) ('*PCT*'); *Madrid System for the International Registration of Marks* signed 27 June 1989 I-11852 (entered into force 1 December 1995); *Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure*, signed 28 April 1977, I-31699 (entered into force 19 August 1980) ('*Budapest Treaty*'); *Nice Agreement for the International Classification of Goods and Services for the Purposes of the Registration of Marks*, signed 13 May 1977, I-18200 (entered into force 6 February 1979); *Strasbourg Agreement Concerning the International Patent Classification*, signed 24 March 1971, I-18337 (entered into force 7 October 1975). The United Nations World Intellectual Property Organization (WIPO) was established by the *WIPO Convention (Convention Establishing the World Intellectual Property Organization*, signed 14 July 1967 (amended 28 September 1967), I-11846 (entered into force 26 April 1970) ('*WIPO Convention*')) in 1967 with a mandate to promote the global protection of intellectual property rights through cooperation amongst the member states. This is a non-binding forum.

<sup>2</sup> If the standard formalities are to alter to give rise to the legal recognition of traditional rights in terms of proprietary ownership, alterations to both the *PCT* and *PLT* will be required to ensure the necessary level of legal certainty is maintained in commercial trade applications and developments. This will ensure that mutual recognition of the formalities associated with the process of applications for proprietary protection remain and that the enforcement of these privately held rights can be undertaken.

<sup>3</sup> This term was originally derived from the term 'biodiversity' which was used by Edward O Wilson in the *Diversity of Life* (Penguin Books Limited, 1992). Wilson used the term 'biodiversity' as an overarching abstract schematic that covered all the

the commodities that these resources generate. The question is whether the current arrangements will meet these objectives for the future without amendment<sup>4</sup> in order to accommodate traditional knowledge associated with genetic resources with the generation of these tradable commodities.

However, before a decision regarding the need for possible or probable amendments to the existing international schematic<sup>5</sup> can be made, the legal interface with public international law, private international law, and property law in the domestic jurisdiction will require examination. In particular, the role of industry private sector codes of ethical conduct and their interface with the legal schematic, domestically and internationally, will require deliberation to ensure all elements of a mutually supportive regime have been considered.

Biological resources<sup>6</sup> and their usage form part of people's daily existence, from the foods they ingest to the medicine used to cure ailments and advances in the standards of human health

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biological sciences, not as a basal term for the tangible characteristics of the genetic components of life. This is substantially different from the original use of the term 'biological diversity' and its subsequent contraction 'biodiversity' which was coined by Elliot Norse and Roger McManus in the *11th Annual Report to the Council on Environmental Quality* in 1980. This council was established to advise the President of the United States of America on environmental issues. The usage of the term or its contraction 'biodiversity' in the report centred on the genetic diversity of the resources as the tangible characteristics of the genetic components of life available for conservation under the existing United States legislative base.

<sup>4</sup> The certainty offered by the current multilateral agreements, particularly the capacity of WIPO to enforce currently held proprietary rights, is being significantly questioned in a plurilateral setting with the *Anti-Counterfeiting Trade Agreement (ACTA)* negotiations being held. ACTA is an initiative of Japan, the European Union, the United States of America and Switzerland that proposes a new forum for the introduction of a global standard of enforcement to address counterfeiting and piracy, primarily in infringing goods and digital piracy. While this forum is presently limited to these goods and the method of dissemination, the potential reach to include goods manufactured from genetic resources protected by proprietary rights is plausible. The range of the discussion and the extension of ACTA's coverage has the ability to collapse WIPO and force a back-door entry to the WTO for the sanctioning of the new agreement. Should this occur *TRIPS* would cease to exist.

<sup>5</sup> This is in reference to the existing intellectual property rights protection offered by the international agreements administered by WIPO and interfaced with *TRIPS*.

<sup>6</sup> This term is used with the meaning given by K J Gaston (ed), *Biodiversity, A Biology of Numbers and Difference*, (Blackwell Science, 1996) 1–7. The meaning given is one that views 'biological resources' as the tangible biotic components of ecosystems.

and well-being. Scientific research and its commercial application, particularly with regard to the genetic manipulation of deoxyribonucleic acid (DNA),<sup>7</sup> have permitted these advancements to be made in all sectors from pharmaceuticals to cosmeceuticals,<sup>8</sup> from natural therapies and industrial chemistry to agricultural applications. However, the manipulation of DNA is but one facet of the spectrum of usage, as derivatives of biological resources do not always require DNA manipulation. Wheat is a prime example of this, as the seed can be consumed as a source of plant genetic resource used for the purpose of propagation, it can be ground into flour, and made into bread or other edible wheat flour based commodities. Whether derivatives should form part of the legal frame and the role that their position in the consumption chain of agricultural commodities should attain is a sub-question that the examination will consider.

The legal proprietary constructions currently in operation may not be appropriate to fully recognise these developments with the required level of legal certainty in both the short and long term. This is particularly salient if the requirements of novelty or inventiveness are no longer compelled to be components of proprietary protection in the form of patents. Presently, the essential elements for an application for patent proprietary protection are novelty or inventiveness that will distinguish the new product or process from the existing field.

Currently there is an argument which states in order to recognise the value in traditionally held knowledge associated with the use of genetic resources the present required elements should be replaced with that knowledge. This would require significant amendment to the current

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<sup>7</sup> This molecule encodes all of the genetic information or identifiers and consists of two strands of sub-units known as nucleotides.

<sup>8</sup> This is a term 'often used by cosmetic companies to denote significant medicinal or drug-like benefits, allegedly beyond the capability of a regular cosmetic'. Accessed at <<http://www.starmedical.co.uk/cosmeceutical.php>> on 28 February 2009.

common law position on proprietary protection. It raises significant issues for the identification of the traditional holders of such knowledge, the validation of that knowledge and the delineation between which indigenous people held the associated knowledge first if that knowledge is attached to transboundary genetic resources and has been adapted by more than one group of indigenous peoples.

The main forum for this discussion has been the United Nations Permanent Forum on Indigenous Issues, which has been examining the construction of traditional knowledge as intellectual property and the ensuing means of protection that this construction would necessitate, including the use of this knowledge for commercial gain, particularly in the area of traditional medicines currently being marketed as alternative therapies.

At the Panel Discussion of the United Nations Economic and Social Council 2009 Organizational Session, the ability of traditional knowledge to be protected was discussed in terms of both positive and defensive protection. It was stated by Tony Tabuman that: “Positive protection” was recognition that traditional knowledge holders had a positive right over their knowledge. “Defensive protection” encompassed legal and practical measures to reduce the likelihood that illegitimate intellectual property rights were granted on traditional knowledge. World Intellectual Property Organization (WIPO) focused on both types.<sup>9</sup> Which interpretation provides the most effective legal mechanism to give rise to such protection requires further consideration before any amendments to current procedures and legal principles are made.

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<sup>9</sup> Accessed at <<http://www.un.org/News/Press/docs/2009/ecosoc6385.doc.htm>> on 3 March 2009.

Coupled with more recent scientific advancements or achievements are the issues of traditional knowledge and associated genetic resources as a subset of biological resources and their subsequent use, particularly for the purposes of exploitation<sup>10</sup> and commercialisation.<sup>11</sup> These technically cultural concerns do not fit within the legal paradigm currently in operation at an international level, and raise questions relating to the equity<sup>12</sup> of existing arrangements.

These questions centre on the resolution of specific issues ranging from the common base of foundational definitions to the subset of terminology that has developed to denote particular fields of use and to the continued incentives for the ongoing development and conservation of these resources.

The first of these issues, the foundational definitional base, has generated significant discussion as to the exact common usage and understanding of the terminology, particularly that of the overarching term 'biological diversity'.<sup>13</sup> This term can be taken to denote 'the portion of diversity of actual or potential use to people',<sup>14</sup> or '[t]imber resources, crop and plant resources,

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<sup>10</sup> The context in which 'exploitation' is used is one that requires the development of the biological resource in a scientific manner, not in terms of the access to or usage of the biological resource without consent as it is sometimes used to denote biopiracy, a practice of the removal of genetic resources and the subsequent exploitation of these resources without the consent of the nation state, community or individual holding the proprietary interest.

<sup>11</sup> 'Commercialisation' refers to the development of a commodity (tangible item of business/economic value, but not necessarily a product) that can be placed within the channels of commerce for financial gain. This commodity may not be able to be traded as a point of sale to the consumer, but would still possess financial advantage within a research and development matrix to develop a product able to be offered for sale to the consumer.

<sup>12</sup> The use of traditional knowledge without legal proprietary protection provides no reach-through capacity for the benefit flow that ensues from the commodification and commercialisation of such knowledge. While technically legally sound, indigenous people's international forums are concerned about the failure of the current international schematic to recognise the contribution of traditional knowledge and to access the remuneration that the use of that knowledge generates.

<sup>13</sup> 'Biological diversity – the variety within and among species and ecosystems' taken from the *Convention on Biological Diversity* and the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising Out of Their Utilization.

<sup>14</sup> J A McNeely, K R Miller, W V Reid, R A Mettermeier, T B Werner, *Conserving the World's Biological Diversity* (IUCN, Gland Switzerland and WRI, CI, WWF-US and the World Bank, Washington DC, 1990) 153; where 'diversity' is a shortened use of 'biological diversity' which is defined as 'the total of genes, species and ecosystems on earth'.

aquatic resources, and animal resources other than aquatic that bring use benefits today or that may do so in the future',<sup>15</sup> or '[i]t is an umbrella term for the degree of nature's variety, including both the number and frequency of ecosystems, species, or genes in a given assemblage',<sup>16</sup> or numerous other similar, but also incongruous definitions. This will require resolution prior to any progression in the international discussion to ensure a robust foundational basis for the promulgation of any agreements.

The subsequent issues regarding the places of genetic resources<sup>17</sup> and agricultural genetic resources<sup>18</sup> in the overall schematic are numerous. Not all of these issues can be examined as not all are of the same importance. Only those that are fundamentally relevant will be examined. One such subsequent issue is the ability of the current proprietary protection legal dynamic to protect both the advancement and encouragement of further research and development. This is important for both commercialisation and research purposes. It is also important when examined in conjunction with providing a platform of equity in the broadest sense concerning the commodification<sup>19</sup> of these resources to ensure an equitable flow of

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<sup>15</sup> Glossary of Statistical Terms (30 November 2005) Organisation for Economic Co-operation and Development (OECD) <<http://stats.oecd.org/glossary/detail.asp?ID=6359>> accessed on 3 March 2009.

<sup>16</sup> Food and Agriculture Organization (FAO) of the United Nations Corporate Document Repository <<http://www.fao.org/docrep/003/w4230e/w4230e09.htm>> accessed on 3 March 2009.

<sup>17</sup> The definition of genetic resources prescribes a broad ambit claim to cover '*any material of plant, animal, microbial or other origin containing functional units of heredity*' [Genetic material] *that is 'of actual or potential value'* [Genetic resources] as contained in *Convention on Biological Diversity* signed 5 June 1992, I-30619 (entered into force 29 December 1993) art 2 ('CBD').

<sup>18</sup> This is a subset of plant and animal genetic resources used for the attainment of sustainable agriculture, food security and food integrity through research and development and commodification.

<sup>19</sup> Meaning the process by which something that is of great intrinsic value, but no commercial value, is developed into a commodity which can be traded to give it commercial value.

benefits if they also utilise traditional knowledge and associated genetic resources.<sup>20</sup> Finally, the agreement concerning the use of derivatives<sup>21</sup> within this schematic will all require examination.

The research will be divided into three parts:

1. the characterisation and context of traditional knowledge
2. the existing legal framework and
3. the options for reform.

### ***Overview of Parts One to Three***

#### ***Part One — The Characterisation and Context of Traditional Knowledge***

##### ***Boundaries of Terminology***

Prior to any of the above issues being contemplated and considered, some boundaries of terminology and a short history of their development is required. This will give some contextual understanding and a frame of reference and baseline position from which to transverse the current global debate.

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<sup>20</sup> This term is used to denote the knowledge of indigenous peoples and local communities embodying a traditional lifestyle relevant for the conservation and sustainable use of biological diversity which is used as associated knowledge, innovations and practices related to the utilisation of genetic resources in the form of commodities. This is in line with the definition used in the *CBD* art 8(j).

<sup>21</sup> This term is used in the scientific sense to denote the chain of developments from the original core genetic material to the complex substances that are developed. These can, and usually do, replicate and represent as commodities. The extent to which a derivative has a traceability factor in terms of benefit flow is a major point of contention in the current debate, particularly if research projects should be included. An example of a derivative from an agricultural plant genetic resource would be a grape plant which would produce fresh grapes, crushed grape juice, wine (alcoholic and non-alcoholic), alternative medicines for the treatment of ailments, flavouring essences for the baking of cakes or biscuits etc. The issue is where the end point should be for the traceability of the benefits flowing from these items when they are commercialised.

## ***Juxtaposition of Environment and Trade***

This section will focus on a suite of concerns ranging from a baseline definitional understanding of the key concepts outlined in Section One through to the commercial application in a legal paradigm that is able to demonstrate both an equitable distribution and the necessary certainty in terms of ownership. Coupled with this is the interface of these key conceptual constructions with the existing intellectual and other property rights structures with regard to legally enforceable proprietary rights<sup>22</sup> that a natural person or other legal entity may possess and seek to exercise.

An adjunct to this interface is the complex issue of traditional knowledge, including traditional knowledge associated with genetic resources, and the legal space that this may or may not occupy in the proprietary structure at an international legal level. This is the juncture at which environment and trade appear to be juxtaposed and it is the result of the opposing tenets of each sector; one environmental and the other trade. The first arm, environment, rests on the protection and conservation of the biological resources from a natural resources ecologically sustainable use nation state perspective.<sup>23</sup> The other arm, trade, concerns goods and products which are produced or obtained from the environment, and rests on the tenets of continued economic growth through the exchange of commodities between recognised legal entities with

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<sup>22</sup> In terms of international trade, the issue of the role of border agencies in the enforcement of intellectual property rights has a varied view, with Japan enforcing patents attached to tradeable goods, while Australia will only assist in the enforcement of trade marks and copyright material through a Notice of Objection lodged with the private right holder. The ability of either the right holder or the border agency to actively undertake enforcement action through the judicial process is varied as to which entity can initiate the action.

<sup>23</sup> The major agreement to recognise and pursue this initiative is the *CBD*, specifically art 16–18.

a high degree of legal certainty in terms of ownership,<sup>24</sup> exploitation<sup>25</sup> and proprietary protection.<sup>26</sup> The elements of this juxtaposition put simply are trade, development and wealth generation from genetic resources versus the maintaining of a pristine environment. While these elements of the juxtaposition are not mutually exclusive, the possible remedies will be discussed in the later sections.

### ***A Place for Traditional Knowledge***

In this section, the other triangular issue that appears at varying degrees in this juxtaposition will be discussed. This is the concept of traditional knowledge as it relates to genetic resources and the place that it occupies in the current legal schematic, both at a nation state and international level. The construction of traditional knowledge, according to WIPO:

[R]efers to the content or substance of knowledge that is the result of intellectual activity and insight in a traditional context, and includes the know-how, skills, innovations, practices and learning that form part of traditional knowledge systems and knowledge that is embodied in the traditional lifestyle of a community or people, or is contained in codified knowledge systems passed between generations. It is not limited to any specific technical field, and may include agricultural, environmental and medicinal knowledge, and knowledge associated with genetic resources.<sup>27</sup>

This section will examine the historical construction of traditional knowledge and its current formulation in the debate. The issues associated with the disclosure of traditional knowledge for proprietary protection purposes and the tracking of benefit flow will be examined in Part Three:

Options for Reform.

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<sup>24</sup> This is in terms of the common law perspective of title, control and ability to deal.

<sup>25</sup> For the purposes of commercial advantage in the course of trade as outlined in the *TRIPS Agreement* to both encourage and protect the continued development of commodities to be used in the course of trade.

<sup>26</sup> *Marrakesh Agreement Establishing the World Trade Organization*, opened for signature 15 April 1994, 1867 UNTS 3 (entered into force 1 January 1995) ('*WTO Agreement*').

<sup>27</sup> World Intellectual Property Organization Intergovernmental Committee, *Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore*. 11<sup>th</sup> sess, WIPO/GRTKF/1C/11/7 E (Geneva 3–12 July, 2007) <<http://www.wipo.int>> accessed on 2 August 2010.

## ***Part Two — The Existing Legal Framework***

### ***Current International Legal Paradigm***

In this section the existing legal paradigm in an international context, will be considered, with reference to the continuing international debate concerning the global recognition and possible legal advancement of the key constructions of traditional knowledge associated with genetic resources in conjunction with access and benefit-sharing (ABS)<sup>28</sup> as they relate to biological resources, and specifically to the defined subset of agrobiodiversity with its specific characteristics. This consideration will include the recently negotiated *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity*.<sup>29</sup>

The current global environmental debate has seen signatory nations to some international conventions being charged with the obligation to enact domestic provisions.<sup>30</sup> These provisions capture their intention to regulate and control biological resources within their jurisdiction, both in their original form and as they would be used for scientific research, commercial development of commodities and the ensuing trade in such at domestic and international

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<sup>28</sup> This is taken from the (CBD) which calls for the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, CBD art 15, particularly 15(2), 15(4) and 15(5).

<sup>29</sup> *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity*, signed 29 October 2010, NEW-30619 (not yet entered into force).

<sup>30</sup> The CBD in particular charges signatory nation states to deal with biological diversity in accordance with national legislation. There are other such agreements, including UPOV and the *International Treaty on Plant Genetic Resources for Food and Agriculture* (signed 3 November 2001, I-43345 (entered into force 29 June 2004) ('ITPGRFA Treaty')) that also have a premise of national legislative provisions to ensure that the tenets of the international agreements are reflected in a national legislative schematic. For example, in Australia there is the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) for the tenets of the CBD, and *Plant Breeders' Rights 1994* (Cth) in relation to UPOV.

levels.<sup>31</sup> This obligation has been discharged by a number of nations within a continuum that represents a diverse range of interpretation and legal application of the central concepts of biological resources, genetic resources, ABS, derivatives and traditional knowledge associated with genetic resources, leading to a great deal of legal uncertainty for both nation state and international researchers and users. Some of these nations have enacted domestic provisions which seek to regulate only on an access basis,<sup>32</sup> while others have delineated between the usage of the biological resources (research, commodification and others) as the purpose of their provisions.<sup>33</sup> This can be seen when examining the provisions concerned with pure scientific research (analogue derivatives)<sup>34</sup> as opposed to the commercialisation of biological resources in the form of tradable commodities.

### ***The Place of Agrobiodiversity as the Key Platform for Agricultural Commodities***

In this section the place of agrobiodiversity<sup>35</sup> in relation to plant and animal genetic resources and the commodities generated from these resources will be considered. This is to highlight the

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<sup>31</sup> The delineation between domestic legislative and regulatory provisions concerning the access to and usage of biological resources is often compartmentalised in relation to usage (scientific versus commercial) and included in property law enactments. Once these biological resources have become tradable commodities, the enactments from a domestic perspective will require compliance with *GATT (General Agreement on Tariffs and Trade)/WTO (World Trade Organization)* provisions to ensure that no barriers to trade exist (eg technical barriers as described in the *World Trade Organization's Agreement on Technical Barriers to Trade (Marrakesh Agreement Establishing the World Trade Organization, opened for signature 15 April 1994, 1867 UNTS 3 (entered into force 1 January 1995) annex 1A ('Technical Barriers to Trade Agreement' 'TBT'))*)).

<sup>32</sup> These nations generally do not have the domestic infrastructure to enforce agreements relating to the subsequent usage of these resources, and therefore the benefits that may flow from their commodification.

<sup>33</sup> Australia and Canada fall within this ambit given there is a range of legislative and regulatory options that cover both access to, usage of and benefit from biological resources. This also includes the intellectual property rights attached to these resources.

<sup>34</sup> This is a DNA schematic of the genetic markers for resources. These are usually protected by patent or copyright to ensure recognition of the scientific research that attaches to the generation of the schematic. It is also to ensure that patents of addition are also forced to recognise this initial work, and recompense the researcher accordingly.

<sup>35</sup> The term meaning that component of biodiversity that contributes to food and agriculture production. The term encompasses within species, species and ecosystem diversity.

specific characteristics of these particular resources in all of their dimensions; from the sustainable use and maintenance of agricultural ecosystems to the continuing development of plant genetic resources,<sup>36</sup> microbes, insects and animal genetic resources for the purposes of both production and human consumption. The inherent differences between the treatment of plant genetic resources and animal genetic resources will be detailed, particularly since the space in the existing international legal schematic occupied by animal genetic resources is one that rests primarily in property law. Any animal genetic resources are usually traded as simple property transactions, with title passing to the purchaser on the completion of the transaction. Any trading of patented animal genetic material is normally conducted under a licence agreement, but supply agreements are not normally entered into in relation to the produced or engineered commodity that results. Even at its most simple transactional level, that of a subsistence farmer, the trade in animal genetic resources still remains a simple property law transaction.

However, the ensuing international legal debate concerning the regulation, protection and usage of animal genetic resources would institute a change in this essentially simple transactional arrangement, particularly at the public law level. It would be difficult, unless domestically enacted, to extend any jurisdictional change to private sector ownership and trade in these resources and the commodities that they generate without the issue of compensation being raised for loss of title and continued use.<sup>37</sup> It would also appear to generate a very high

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<sup>36</sup> S Biber-Klemm and T Cottier (eds), *Rights to Plant Genetic Resources and Traditional Knowledge – Basic Issues and Perspectives* (Cabi, 2005) 5.

<sup>37</sup> The issue of how currently registered proprietary interest could be both apportioned and valued to account for the component of traditional knowledge usage is difficult. This would then need to be cross-correlated with the actual and

level of uncertainty for all transactions, even that of the subsistence farmer, if such domestic jurisdictional reach were to come into existence. This would be particularly so if this was undertaken as a tangible demonstration of their international obligations on a domestic jurisdictional level.

#### ***Four Domestic Jurisdictions***

This section will treat four specific domestic jurisdictions: Australia, Canada, New Zealand and the United States of America as a comparative case study in terms of the domestic provisions enacted. This is important to the research question as they detail four examples of how each different primary-producing nation state has dealt with the issues at hand. These four jurisdictions have been selected to compare two established megadiverse<sup>38</sup> nations (United States of America and Australia), which have a high percentage of agricultural commodities available for trade, with two other agricultural nations. One is a trading nation that has a domestic treaty with its indigenous peoples<sup>39</sup> (New Zealand), which has an increasing level of agricultural commodities available. The other is an established trading nation (Canada), which is dependent upon continued access to genetic advancements regarding the commodification of agricultural plant and animal genetic resources. In order to analyse the effects of these four

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projected commercial gain to identify the percentage of compensation that may well be payable to the current right holder. It also raises the issue of retrospective challenge for the component of traditional knowledge (even if this has been placed in the public domain), depending on the reach of the domestically enacted legislation, to the actual legal right to hold the proprietary protection.

<sup>38</sup> This term is used to denote the 18 countries in the world that contain 60–70% of the total biodiversity of the planet as identified by the World Conservation Monitoring Centre, an agency of the United Nations Environment Programme.

<sup>39</sup> *Treaty of Waitangi*, opened for signing on 6 February 1840 (entered into force 21 May 1840), was signed at Waitangi in the Bay of Islands by Hobson, several English residents, and approximately 45 Māori rangatira, Hone Heke being the first. The Māori text of the Treaty was then taken around Northland to obtain additional Māori signatures and copies were sent around the rest of the country for signing, but the English text was signed only at Waikato Heads and at Manukau by 39 rangatira. By the end of that year, over 500 Māori had signed the Treaty. Of those 500, 13 were women. Accessed at <<http://www.waitangi-tribunal.govt.nz/treaty/>> on 2 June 2011.

trading nations and their capacity to continue to engage in expansive agricultural trade on a global level, an evaluation of their domestic enactments regarding genetic resources, particularly the access to, use of and benefit-sharing arrangements, will be undertaken to determine the required legal certainty for continued commodity development and exchange. However, before a decision regarding the need for possible or probable amendments to the existing international schematic can be drawn, the legal interface with public international law, private international law and property law in the domestic jurisdiction requires examination.

### ***International Trade in Agricultural Commodities***

In this section the international trade in the commodities generated from agrobiodiversity as a discreet subset of tradable commodities and the schematic in which this trade operates will be considered; with particular reference being given to the *General Agreement on Tariffs and Trade (GATT)*<sup>40</sup>/World Trade Organization (WTO) arrangements. Also considered, in light of the enactment of domestic provisions by some nations to discharge perceived obligations under other international agreements, will be the concerns raised regarding the legal certainty of current obligations under the existing intellectual and other proprietary rights agreements. These include: the impact of Articles 27, 29, 35 and 39 of the Agreement of the WTO on *Trade-Related Aspects of Intellectual Property Rights (TRIPS)*<sup>41</sup> the disclosure obligations under the

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<sup>40</sup> *Marrakesh Agreement Establishing the World Trade Organization* (opened for signature 15 April 1994, 1867 UNTS3 (entered into force 1 January 1995) annex 1A ('*General Agreement on Tariffs and Trade*' (GATT)).

<sup>41</sup> Article 27 'Patentable Subject Matter' provides that patents 'shall be available for 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' (*TRIPS* art 27.1). Debate has ensued concerning Article 27.3(B) and the four rules of patentability that it contains, particularly the issue of *sui generis* protection for plant varieties. Various developing nations have called for a review of this particular provision to avoid conflict with the *CBD* as *TRIPS* is silent on the concepts of traditional knowledge and biodiversity. This represents a call for a major refocus on substantive legal obligations. Article 39 charges *TRIPS* member countries with

*Patent Cooperation Treaty (PCT)* and the *Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purpose of Patent Procedure (Budapest Treaty)*<sup>42</sup> and the current standards and formalities regarding international applications, particularly Articles 2, 5 and 10 of the *Patent Law Treaty (PLT)*.

These are the points in the agreement, treaties and international conventions where the intersection between the construction of traditional knowledge and the legal formalities of intellectual proprietary connection intersect. They are the basis for the current protection system and would require substantial amendment if traditional knowledge were to form an integral component. This is the practical legal ramification of the research question regarding both the content of the proprietary protection and the formalities that would need to be undertaken to give such proprietary protection legal effect.

### ***Part Three: Options for Reform***

#### ***International Alignment***

In this section the challenges of incorporating or aligning the environmental multilateral conventions, agreements and treaties with the similar international trade arrangements will be considered. This will attempt to focus on a possible way forward, the conceptual constraints this

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the protection of undisclosed information. While this provision was originally aimed at the protection of traditional industrial trade secrets, it has been debated that the three requirements of Article 39 could be met by traditional knowledge, thus allowing nations to enact domestic legislative provisions to protect such knowledge consistent with the provisions of *TRIPS*.

<sup>42</sup> The *Budapest Treaty* provides for the deposit of microorganisms in an international depository authority where a deposit is necessary to satisfy descriptive requirements of patent legislation for inventions involving microorganisms or the use of microorganisms. Under the Treaty, a Member State which allows or requires the deposit of microorganisms for the purpose of patent procedure must recognise the deposit regardless of the location of the facility.

may impose and the delicate balance that needs to be achieved between conservation<sup>43</sup> of the myriad of biological resources and the ensuing research and development of these resources to ensure continued human advancement on all levels of consciousness. These include, amongst others: the issues of mandatory disclosure of traditional and associated knowledge, the characterisation of the concept of benefit flow being distinct from royalty and conditional to disclosure, the removal of the concept of control from property ownership when defining traditional and associated knowledge, the application of legal forms of protection for traditional and associated knowledge only in situations of commercialisation – not research initiatives, the compliance obligations that would ensue if amendments to disclosure provisions were made and the interface between contract law and the patent system. These matters will all be placed under consideration.

The issues currently under consideration raise a number of complex and challenging propositions that will require resolution in terms of the research question. Some of these include:

- the future for plant and animal genetic resources currently held by private individuals and other legal entities<sup>44</sup>
- whether plant and animal genetic resources within the jurisdictional boundaries of nation states are under their domestic control and management<sup>45</sup>

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<sup>43</sup> 'Conservation' is taken to mean the judicious use and management of nature and natural resources for the benefit of human society and for ethical reasons. This permits the usage of these resources rather than the preservation of them as specimens.

<sup>44</sup> The question to be resolved is similar to the one faced by CITES regarding pre-convention specimens in private and scientific collections. These were issued with pre-CITES certificates which allowed them to be traded legally. This model may provide an option in relation to collections of plant and animal genetic material assembled prior to any international agreement.

- if any proposed amendments should encompass the issue of mandatory disclosure for traditional knowledge associated with plant and animal genetic resources utilised and what form of protection such disclosure would provide
- or whether mandatory disclosure would resolve the current perceived impediments and provide scope to encompass future technological and scientific advancements with regard to plant and animal genetic resources.

Coupled with these are the subsequent dilemmas of the legal principles that such disclosure be based on, given the technical cultural delineation in the current intellectual and other proprietary rights legal system. If plant and animal genetic resources are subject to nation-specific jurisdictional provisions, how this would impact on the necessary legal certainty of commodities based on combined or modified genetic resources that are traded under bilateral or multilateral agreements will be considered.

The impact of these issues on the legal certainty of patents over genetic resources and products made from or using them and the ability to provide the necessary certainty in ensuing commercial transactions, both at a domestic and international level, has a broad reach. The impact is compounded when placed adjacent to the cardinal objective of international trade law of the WTO: that of economic development through open and free trade.<sup>46</sup> This liberalisation of the international trade agenda by the WTO has as its cornerstone the reduction of barriers to

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<sup>45</sup> Absolute ownership may not be possible given that the subject matter (wild animals) is incapable of being in the absolute ownership of any person. This would give rise to special rather than general property. The proprietary rights vesting in such special property was examined by the High Court in *Yanner v Eaton* (1999) HCA 53, with particular reference to the concept of control which is embodied in property ownership.

<sup>46</sup> M Rafiqul Islam, *International Trade Law of the WTO* (Oxford University Press, 2006).

trade, which could be dramatically curtailed if the resolution of these impact issues is resultant domestic legislation that is prohibitive or restrictive to open and free trade between nations. The existence of barriers to trade was recognised in the Preamble to the *WTO Agreement*, with the reference ‘by entering into reciprocal and mutually advantageous arrangements directed to the substantial reduction of tariffs and other barriers to trade and to the elimination of discriminatory treatment in international trade relations’.<sup>47</sup> Although at the time of drafting it was recognised that the lack of protection offered to innovators was a barrier to free and open trade on an equitable footing,<sup>48</sup> the inclusion of domestic proprietary protection legislation seeking to offer legal protection to technical cultural concerns may not have featured amongst these perceived barriers. Domestic legislation, given that it is at the discretion of the nation state, may include components that are incompatible with international systems and as such, these would have the potential to be used as barriers to trade.

### ***A New Schematic***

In this section a proposal for a new schematic specifically targeting agrobiodiversity development will be proposed. This is to place emphasis on the foundational importance of agrobiodiversity as the elementary cornerstone for the future development of agricultural commodities. Whether this schematic, or essential elements of it, can be transposed into the wider context of biological resources and the tradable commodities that the exploitation of these resources generate, will also be considered in terms of the research question.

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<sup>47</sup> World Trade Organization, *WTO* 26 accessed at <[http://www.wto.org/english/docs\\_e/legal\\_e/04-wto.pdf](http://www.wto.org/english/docs_e/legal_e/04-wto.pdf)> on 4 March 2009.

<sup>48</sup> *TRIPS* was drafted to address this trade barrier and to encourage investment within a system that offered protection to inventions or innovative processes.

***PART ONE: THE CHARACTERISATION AND CONTEXT OF  
TRADITIONAL KNOWLEDGE***

## ***Section One: A History of Biodiversity and the Essential Terminology of International Discussions***

### ***1.1 The Relevance of Biodiversity***

Biodiversity is relevant to the research question as it is the overarching construction used to define and describe the wide ranging variety of all genetic resources, both terrestrial and marine. This broad classifying construction can be further specified as containing plant, animal, microbial, insect, viral and marine genetic resources. These can be further delineated to include agricultural genetic resources as a subset of biological resources utilised or required in the production of agricultural commodities. Without biodiversity there are no base elements for the development of agricultural commodities. Biodiversity provides the contextual frame of reference for the research question.

The development of the construction of biodiversity and the international forums that have considered its application form the background for the consideration of the research question. By placing the research question in this context, it can be examined from the broadest context possible to ensure that all elements have been addressed.

### ***1.2 The Brief History of Biodiversity and International Forums***

The conceptual construction of 'biodiversity' began to emerge during the late 1980s and was originally coined as a mechanism to describe and define the multiformity of all living species. 'Biodiversity' or 'biological diversity' are interchangeable terms used to give tangible meaning to the variability of life in any form or combination or component level, but not the total summation of each ecosystem, all genetic material and every species. It is the variability,

multiformity, variety and point of difference of life that biodiversity encompasses as an overarching conceptual construction, rather than as a concrete, substantive and tangible element.<sup>49</sup>

Biodiversity has been given hierarchical categories in an attempt to incorporate its value in economic, cultural and spiritual terms.<sup>50</sup> This hierarchy, developed as a result of the Global Diversity Assessment (GBA),<sup>51</sup> includes genetic diversity (the variation of genes within species), species diversity (variety of species within a geographical region), ecosystem diversity (the association of species and ecosystems) and cultural diversity (cultural practices derived from biological diversity and their impact on biodiversity).

### **1.3 Biological Resources and Genetic Resources – Their International Treatment**

Biological resources, as distinct from biological diversity or biodiversity, are defined in Article 2 of the *CBD* as ‘includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity’.<sup>52</sup> This set of resources is not limited to the genetic data held in wild or domesticated species of plants, animals and microbes, but extends to both in-situ<sup>53</sup> and ex-situ<sup>54</sup> holdings in a terrestrial and oceanic sense.

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<sup>49</sup> L Glowka, F Burhenne-Guilmin, and H Synge, ‘A Guide to the Convention on Biological Diversity’ (1994) 30 *Environmental Policy and Law Paper No 30* IUCN (World Conservation Union) 16.

<sup>50</sup> K Ten Kate, and S A Laird, *The Commercial Use of Biodiversity: Access to Genetic Resources and Benefit-Sharing* (Earthscan Publications Limited, 1999) 3.

<sup>51</sup> UNEP Global Biodiversity Assessment 1996.

<sup>52</sup> *CBD* art 2.2.

<sup>53</sup> In-situ is used with the meaning of these biological resources being located in their natural habitat or surroundings; under natural conditions.

The term for the subset, genetic resources, according to Article 2 of the *CBD* is ‘genetic material of actual or potential value’, with ‘genetic material’ given the meaning of ‘any material of plant, animal, microbial or other origin containing functional units of heredity’.<sup>55</sup>

Genetic material means any material of plant, animal, microbial or other origin containing functional units of heredity. According to the *International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)*, ‘genetic material’ means any material of plant origin, including reproductive and vegetative propagating material, containing functional units of heredity, which is a specific reference to the actual functional components of the material.<sup>56</sup> The *ITPGRFA* further defines ‘plant genetic resources for food and agriculture’ to mean any genetic material of plant origin of actual or potential value for food and agriculture.<sup>57</sup> This latter definition of the specific plant genetic resources utilised for food and agriculture covers both the actual developments of these plant genetic resources and the future capacity for these to be developed thus not time limiting the construction.

#### ***1.4 International Agreements Concerning Biodiversity – A Historical Perspective***

##### ***1.4.1 International Undertaking on Plant Genetic Resources and the United Nations Food and Agriculture Organization Commission on Genetic Resources for Food and Agriculture***

The Undertaking was first formalised by the Food and Agriculture Organization (FAO) of the United Nations in the International Undertaking on Plant Genetic Resources (the International

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<sup>54</sup> Ex-situ is used with the meaning of these biological resources being located in collections outside of their natural habitat or surroundings; in gene banks or botanical collections.

<sup>55</sup> CBD art 2(5)

<sup>56</sup> *ITPGRFA* art 2 – Use of terms.

<sup>57</sup> Ibid.

Undertaking) in 1983.<sup>58</sup> The *International Undertaking* provided the governance framework for the Commission on Genetic Resources which was established in 1983 at the FAO Conference.

The *International Undertaking* had as its main objectives the exploration and collection of plant genetic resources (Article 3); the preservation of plant genetic resources in-situ and ex-situ (Article 4); the evaluation of plant genetic resources for agriculture used for the purposes of plant breeding and scientific research and the dissemination of this knowledge (Article 7). These objectives are all premised on the access to and availability of plant genetic resources (Article 5) and the international cooperation in relation to plant breeding (Article 6). This undertaking was based on the premise that plant genetic resources were the ‘common heritage of mankind’<sup>59</sup> to be utilised for the public good and could not be claimed to belong to nation states. This presumption allowed free exchange of plant genetic resources in the broadest possible meaning.

This scope was narrowed in November 1989 at the 25<sup>th</sup> Session of the FAO Conference with the adoption of two resolutions providing an agreed interpretation that the *International Undertaking* was not in conflict with Plant Breeders’ Rights.<sup>60</sup> This gave recognition to varietal protection for plant breeders and the ability to continue to obtain such protection for new varieties. This recognition was primarily of benefit to developed nation states which had

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<sup>58</sup> United Nations FAO, *International Undertaking on Plant Genetic Resources*, Res 8/83, FAO Conference, 22<sup>nd</sup> Session, Rome, 5 – 23 November 1983, C83/REP para 275 <[apps3.fao.org/wiews/docs/Resolution\\_8\\_83.pdf](http://apps3.fao.org/wiews/docs/Resolution_8_83.pdf)> accessed on 4 February 2013 (*‘International Undertaking’*).

<sup>59</sup> *International Undertaking Preamble Recognizing para (a)*, Res 8/83 <[apps3.fao.org/wiews/docs/Resolution\\_8\\_83.pdf](http://apps3.fao.org/wiews/docs/Resolution_8_83.pdf)> accessed on 4 February 2013.

<sup>60</sup> Report of the Conference of FAO, *International Undertaking* Res 4/89 and 5/89, 25th Sess. Rome 11–29 November 1989, C89/REP.

significant commercial research and development corporations operating in the private and public sector, while it failed to recognise the contribution of others in developing nation states. In order to amend this, a further resolution recognising the contribution of farmers was also passed at the 25<sup>th</sup> Conference. This resolution was a goodwill initiative to recognise ‘the past present and future contributions of farmers in conserving, improving and making available plant genetic resources particularly those in centres of origin/diversity. These rights are vested in the International Community, as trustee for present and future generations of farmers’.<sup>61</sup>

The original *International Undertaking* prior to the *CBD* did recognise the ability of nation states to lay claim to their territory regarding land mass, but it did not recognise the associated legal system of proprietary rights for plant genetic resources occupying the territorial land mass.<sup>62</sup>

This perspective placed the proprietary protection of plant genetic material through patents or by private ownership under property law as untenable and outside the scope of the *International Undertaking*. This was rectified to some extent at the 26<sup>th</sup> Session of the FAO Conference when in November 1991 Resolution 3/91 was adopted. This resolution stated that while plant genetic resources were the common heritage of mankind, they were subordinated to the sovereignty of nation states over their genetic resources. Whilst the FAO recognised the sovereignty of the nation state over genetic resources within their territorial jurisdiction, which was later confirmed by the *CBD* (refer section 1.4.3), the governance of agricultural genetic resources given under the *ITPGRFA* (refer section 1.4.4)

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<sup>61</sup> Ibid Res 5/89.

<sup>62</sup> *International Undertaking* Preamble considering para (b), accessed at <[http://www.apps3.fao.org/wiews/docs/Resolution\\_8\\_83.pdf](http://www.apps3.fao.org/wiews/docs/Resolution_8_83.pdf)> on 4 February 2013.

The mandate of the Commission on Genetic Resources was broadened at the United Nations FAO Conference in 1995 with Resolution 3/95 in order to facilitate an integrated approach to agrobiodiversity.<sup>63</sup> This created a broader mandate to cover all components of biodiversity of relevance to food and agriculture. This necessitated a change in name to the Commission on Genetic Resources for Food and Agriculture and recognised the harmony between the *International Undertaking* and other international agreements on biological resources.

#### **1.4.2 International Convention for the Protection of New Varieties of Plants (UPOV)**

Prior to the *International Undertaking*, the International Convention for the Protection of New Varieties of Plants (the *UPOV Convention*) was adopted in 1961, and revised in 1972, 1978 and 1991. The mission of *UPOV*, based on the Convention is: '*to provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants for the benefit of society*'.<sup>64</sup> This perspective recognised the need to both protect and encourage innovation and research in plant breeding by permitting a system of registration of new plants by varietal type. This system allows the plant breeder to access plant genetic material to continue to develop new varieties and to be able to benefit from the commercial sale of these varieties by receiving a royalty. UPOV considers that plant breeding is a fundamental aspect of the sustainable use and development of genetic resources, and that access to genetic resources is a key requirement for sustainable and substantial progression in plant breeding.

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<sup>63</sup> FAO, Progress Report on the FAO Global System for the Conservation and Utilization of Plant Genetic Resources for Food and Agriculture, UNEP/CBD/COP/3/15, <<ftp://ftp.fao.org/docrep/fao/meeting/015/aj433e.pdf>> accessed on 14 March 2008.

<sup>64</sup> International Union for the Protection of New Varieties of Plants (UPOV), Mission Statement and General Information contained at <<http://www.upov.int/en/about>> accessed on 13 March 2008.

The concept of the ‘breeders’ rights exemption’<sup>65</sup> in the *UPOV Convention* illustrates that the global community of plant breeders require continued access to all forms of breeding material to sustain the greatest progression and maximize the use of genetic resources for the benefit of society.

Under the *UPOV Convention*, the requirement for ‘distinctiveness’<sup>66</sup> means that protection shall only be granted after an examination to ensure that the variety is clearly distinguishable from all other known varieties, regardless of geographical location. The Convention also provides for the voiding of granted breeder’s rights should information be subsequently provided that demonstrates that a variety is not distinct.<sup>67</sup>

Benefit sharing is addressed under the *UPOV Convention* in terms of usage of the plant variety material through a compulsory exemption to the breeder’s right, particularly concerning acts done privately and for non-commercial purposes. This compulsory exemption captures the activities of subsistence farmers, who freely benefit from the availability of new plant varieties.<sup>68</sup>

Concerning the concept of ‘farmer’s privilege’<sup>69</sup>, this is an optional benefit sharing mechanism provided by the *UPOV Convention*. Under this exemption, UPOV members may permit farmers to use a proportion of their harvest of a protected variety for the planting of a future crop, also

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<sup>65</sup> This exemption provides that acts done for the purpose of breeding other varieties are not subject to any restriction. There is also a research exemption under the *UPOV* art 14, Scope of Breeder’s Right.

<sup>66</sup> Ibid art 7, Distinctiveness.

<sup>67</sup> Ibid art 21, Nullity of the Breeder’s Right.

<sup>68</sup> Ibid art 15, Exceptions to the Breeder’s Right.

<sup>69</sup> This concept is also known as ‘farm-saved seed’.

known as farm-saved seed.<sup>70</sup> If granted, this optional exemption is subject to reasonable limits and the requirement that the legitimate interests of the plant breeder are protected to ensure continued incentives for future development of new plant varieties.

### **1.4.3 Rio Declaration, the Convention on Biological Diversity (CBD) and the Nagoya Protocol**

#### **Rio Declaration**

By 1992 the Rio Declaration on Environment and Development<sup>71</sup> and Agenda 21<sup>72</sup> had been negotiated between nation state participants at the Rio Earth Summit in June. Agenda 21 provided the strategic future-based plan for achieving sustainable environmental and developmental goals by setting targets and review periods.<sup>73</sup> In order to facilitate the governance structure for the implementation and review of Agenda 21 at all levels of engagement (local, regional, national and international), the Commission on Sustainable Development was created in December 1992.<sup>74</sup> The Rio Earth Summit was the precursor to the change in 1993 of the view of the ‘common heritage of mankind’ which altered with the United Nations CBD stating that biological resources were the jurisdiction and property of each nation state in accordance with their geographical boundaries.

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<sup>70</sup> This optional exemption only applies to ‘own farms’ and has been limited by some *UPOV* members to apply to certain species or using criteria such as the size of the farm holding or the level of production to be undertaken.

<sup>71</sup> *Rio Declaration on Environment and Development*, accessed at <<http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm>> on 20 October 2010. (*Rio Declaration*).

<sup>72</sup> *Rio Declaration Agenda 21* accessed at <<http://www.unep.org/documents.multilingual/default.asp?documentid=52>> on 20 October 2010.

<sup>73</sup> N. Meyers, ‘An EIA for Rio: Assessing the Environmental Impacts of the United Nations Conference on Environment and Development’ (1994) 1(2) *The Australasian Journal of Natural Resources Law and Policy* 1, 15.

<sup>74</sup> *Rio Declaration Agenda 21* <<http://www.un.org/esa/dsd/agenda21>> accessed on 20 October 2010.

## **Convention on Biological Diversity (CBD)**

The *CBD* is prefaced with the agreement on the nation state sovereignty of all genetic resources, with the concept of country of origin (source of the biological resources) being a reflection of the sovereign rights paradigm, particularly where repatriation of any benefits derived from the exploitation and development of genetic resources is concerned. The *CBD* is built on three distinct pillars: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilisation of biological resources.

The first objective concerning the conservation of biological resources is one that recognises the importance of these resources to the taxonomic base of the world and to the future production of commodities based on biological resources, particularly food and fodder production. The second of these objectives concerning sustainable use imposes a burden on the nation states who are parties to the convention to ensure that no use will restrict or eliminate the use of the biological resources in the future. The latter objective includes appropriate access to genetic resources, the equitable sharing of the benefits from the use of biological resources including monetary and non-monetary benefits such as the transfer of relevant technologies with due reference to all rights and appropriate funding. This final objective is termed 'access and benefit sharing' (ABS), where the benefits referred to are both monetary and non-monetary, with particular reference to the transference of associated technology utilised in the development of commodities based on biological resources.<sup>75</sup> This emphasis on technology transfer

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<sup>75</sup> *CBD* art 16–18.

incorporates other articles of the *CBD* which are designed to ensure that the potential capacity of each nation state party to the convention is on an equitable footing, particularly those developing nation states that do not possess the necessary infrastructure to foster such innovation and advancement for biological resources.<sup>76</sup> The *CBD* determined that nation states have sovereign rights over their genetic resources<sup>77</sup> and, specifically, the '*authority to determine access to genetic resources rests with national governments and is subject to national legislation*'.<sup>78</sup>

The *CBD*, under Article 15, charges Parties to 'endeavour to create conditions to facilitate access to genetic resources ... and not to impose restrictions that run counter to the objectives of this Convention'.<sup>79</sup> It also charges Parties to ensure that all access is on Mutually Agreed Terms (MAT)<sup>80</sup> and subject to Prior Informed Consent (PIC)<sup>81</sup>, particularly if indigenous peoples and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity possess associated knowledge, innovations and practices related to

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<sup>76</sup> Ibid art 16(2) provides a specific obligation to provide to developing nations information relevant to the advancement of invention – 'Access to and transfer of technology referred to in paragraph 1 above to developing countries shall be provided and/or facilitated under fair and most favourable terms, including on concessional and preferential terms where mutually agreed, and, where necessary, in accordance with the financial mechanism established by Articles 20 and 21. In the case of technology subject to patents and other intellectual property rights, such access and transfer shall be provided on terms which recognize and are consistent with the adequate and effective protection of intellectual property rights.'

<sup>77</sup> Ibid art 2.

<sup>78</sup> Ibid art 15(1).

<sup>79</sup> Ibid art 15(2).

<sup>80</sup> Ibid art 15(4).

<sup>81</sup> Ibid art 15(5).

the utilisation of genetic resources. This is subject to the national legislation of the Party to the Convention.<sup>82</sup>

Further to these charges is the additional obligation created:

[T]o 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 benefits arising from the utilization of such knowledge, innovations and practices.<sup>83</sup>

This charge is subject to the national legislation of the Party and was originally directed at in-situ<sup>84</sup> conservation; however, the ambit of the provision's reach has substantially exceeded this original intent.

Coupled with these charges to the Parties is one relating to the utilisation of the current patent and other intellectual property rights systems, with Parties to 'cooperate ... subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives'.<sup>85</sup>

This conceptual change attempted to create a new linear model for the management, control, access, utilization, protection of associated rights, distribution of genetic resources and any benefits that may therefore arise. These benefits are both monetary and non-monetary, with a

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<sup>82</sup> Ibid art 8(j).

<sup>83</sup> Ibid.

<sup>84</sup> This term is used to describe biodiversity within the evolutionary dynamic ecosystems of the original habitat or natural environment.

<sup>85</sup> CBD art 16(5).

particular reference to the transference of associated technology utilised in the development of commodities based on genetic resources.<sup>86</sup>

The new model is one that relies on the premise of all genetic resources having an inherent latent value<sup>87</sup> and of the genetic resources being able to be assigned to a particular geographical location that recognises state jurisdictional boundaries. This model begins with the extraction of these genetic resources by another party, under MAT and with the PIC from concerned indigenous and local communities, and ceases with the commercialisation of the product which utilises the genetic resources. At this end point of commercialisation, any benefits arising from the utilisation of the genetic resources are to be equitably distributed amongst all who have a perceived or vested interest. The return of these benefits to the provider state would take the form of royalty payments and the transference of developed technology, subject to any internationally recognised intellectual property or property rights protection,<sup>88</sup> subject to the national legislation of the provider state.

The *CBD*, recognising that nation states who are parties to the convention have sovereign jurisdiction over biological resources within their territorial limits, allows these nation states to enact legislation to control the access and use of these biological resources. This includes recognition of the sovereign right of nation states to exploit their own biological resources

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<sup>86</sup> Ibid art 16–18.

<sup>87</sup> *CBD* Article 2 stipulates the value to be actual or potential in an attempt to capture both current non-improved and subsequent transferred value dependent upon genetic components when modified into a commercialised product or a research lead.

<sup>88</sup> This is a reference to the various international agreements for the proprietary protection of, for instance, industrial knowledge, as covered by the agreements administered by WIPO and WTO.

pursuant to their own environmental policies.<sup>89</sup> This includes the ability to recognise private ownership of such resources on privately owned land or in water and the right to engage in innovation and development of those biological resources. The scope of this ownership ability has been tempered by the case law in nation state jurisdictions, with Australia limiting the ownership of the subset of animal genetic resources on the element of the inability to exercise appropriate control.<sup>90</sup> This recognition of nation state sovereign jurisdiction also allows the subsequent recognition of other proprietary rights such as patents to be available to the users of these biological resources who construct related commodities. It also allows nation states to enter into other international agreements concerning biological resources and the subsets that it contains, such as plant and animal genetic resources.

### **Nagoya Protocol**

This Protocol was agreed to in Nagoya in 2010 and is yet to enter into force in international law.

The objective of the Protocol:

[I]s the fair and equitable sharing of benefits arising from 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, thereby contributing to the conservation of biological diversity and the sustainable use of its components.<sup>91</sup>

The scope of the Protocol:

[S]hall apply to genetic resources within the scope of Article 15 of the Convention and to the benefits arising from the utilization of such resources. This Protocol shall also apply to traditional

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<sup>89</sup> *CBD* art 3.

<sup>90</sup> *Yanner v Easton* (1999) HCA 53.

<sup>91</sup> *Nagoya Protocol* art 1.

knowledge associated with genetic resources within the scope of the Convention and to the benefits arising from the utilization of such knowledge.<sup>92</sup>

Article 15 of the *CBD* restricts these genetic resources to the contracting parties who are the countries of origin of the resources or for resources that have been acquired in accordance with the *CBD*.<sup>93</sup>

As with the *CBD* all measures are subject to nation state sovereign jurisdiction over the natural resources contained within their geographical boundaries, whether terrestrial or marine.

However, the Protocol charges each party to give special consideration to the development and implementation of its ABS legislation or regulatory requirements. One of these charges is to 'consider the importance of genetic resources for food and agriculture and their special role for food security.'<sup>94</sup>

#### **1.4.4 The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)**

The *International Undertaking* was the precursor agreement to the *ITPGRFA*, which entered into force in 2004. The *ITPGRFA* recognised the significant role that plant genetic resources and farmers have to play in the attainment of sustainable agriculture, food security and food integrity for all countries. Given this recognition, this subset of plant genetic resources<sup>95</sup> have been distinguished and excluded from the realm of the *CBD* to ensure the continued global agreement over their long-term value as the integral building blocks of food provision. These

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<sup>92</sup> Ibid art 3.

<sup>93</sup> *CBD* art 15.3.

<sup>94</sup> *Nagoya Protocol* art 8(c).

<sup>95</sup> Annex 1 of the *ITPGRFA* contains a listing of 64 major crop and forage genera which have been specifically excised from the realm of the *CBD*.

plant genetic resources are listed in Annex 1 of the Treaty.<sup>96</sup> This annex is not a static list for the future and is open to the placement of other significant crops such as soybeans, garlic, tomato, peanuts and most tropical forages by the ITPGRFA Governing Body, with the consensus of the contracting parties.

The *ITPGRFA* has been drafted to be in harmony with the *CBD*, given the later has the scope of all biological resources.<sup>97</sup>

The objectives of the *ITPGRFA* mandate the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of benefits arising out of their use.<sup>98</sup> These objectives led to the creation of a multilateral system (MLS) which is the efficient, effective and transparent mechanism that will facilitate access to plant genetic resources for food and agriculture and share the benefits arising from such utilisation.<sup>99</sup> This is the instrument that gene bank managers, collectors, breeders and researchers will work with in the future<sup>100</sup> to ensure continued access to agricultural breeding stock to enable future developments to contribute to the enhancement of food integrity and food security.

The MLS is based on the recognition of the sovereignty of nation states over their plant genetic resources that are in the public domain. It also allows for the placement of plant genetic

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<sup>96</sup> Ibid.

<sup>97</sup> Ibid art 1.2 — These objectives will be attained by closely linking this Treaty to the FAO Organization of the United Nations and to the *CBD*.

<sup>98</sup> Ibid art 1.1 — The objectives of this Treaty are the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the *CBD*, for sustainable agriculture and food security.

<sup>99</sup> Ibid art 10.1, 11.1.

<sup>100</sup> C Fowler, 'Accessing Genetic Resources: International Law Establishes Multilateral System' (2004) 51 *Genetic Resources and Crop Evolution* 610.

resources that are subject to proprietary protection to be placed within the MLS if the proprietary rights holder has consented to such conduct. If plant genetic resources subject to proprietary protection are accessed from the MLS, any further innovation can be protected by the innovator and the original proprietary rights holder will obtain any benefits that ensue from the use of the protected plant genetic material.

The concept of facilitated access to these plant genetic resources permits, at little cost, the provision of the plant genetic resources to all, for the purposes of food and agriculture only.

This expeditiously provided access, with all available passport data, and, subject to applicable law, any other associated non-confidential descriptive information, is contained in Article 12.

The accession and transfer of these plant genetic materials will be undertaken using a Standard Material Transfer Agreement (SMTA). This Agreement sets out the terms and conditions under which the recipient may access the listed material and the rights and obligations of the provider of the material. The SMTA has specific threshold triggers for the payment of monetary benefits (for example, intellectual property rights restrictions), which is dependent on the commercialisation of agricultural products. This will provide greater legal certainty for both providers and recipients of plant genetic material for food and agriculture.

The fair and equitable sharing of benefits arising from the use of plant genetic resources placed in the multilateral system will occur for all contracting parties to the Treaty, with both monetary and non-monetary benefits being equally distributed. This accords with the recognition of the Treaty that 'the management of plant genetic resources for food and agriculture are at the

meeting point between agriculture, the environment and commerce' with a commitment that 'there should be synergy among these factors'<sup>101</sup>, and that 'this Treaty and other international agreements relevant to this Treaty should be mutually supportive with a view to sustainable agriculture and food security'.<sup>102</sup>

#### **1.4.5 International Plant Protection Convention (IPPC)**

The IPPC<sup>103</sup> is a multilateral agreement for cooperation in plant health and protection under the auspices of the United Nations Food and Agriculture Organisation (FAO). The *IPPC* addresses health protection by the establishment and use of international standards to meet phytosanitary needs. This is a legally binding international agreement, although the standards developed and adopted by the Convention are not.

The *IPPC* entered into force in October 2005 and the governing body, the Commission on Phytosanitary Measures (CPM) held its first meeting in April 2006 where rules of procedure were established.

The International Standards for Phytosanitary Measures (ISPMs) were developed through an agreed and defined process of draft development and country consultation.

The *IPPC* and the WTO Agreement on the Application of Phytosanitary and Sanitary Measures (SPS) Agreement<sup>104</sup> is the legal framework under which the ISPMs are developed. WTO Parties

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<sup>101</sup> *ITPGRFA* Preamble vi.

<sup>102</sup> *Ibid.* v.

<sup>103</sup> *International Plant Protection Convention*, 17 November 1997, A-1963, (entered into force 21 October 2005) ('*IPPC*').

<sup>104</sup> *Marrakesh Agreement Establishing the World Trade Organization*, opened for signature 15 April 1994, 1867 UNTS 3 (entered into force 1 January 1995) Annex 1A ('*General Agreement on Phytosanitary and Sanitary Measures (SPS Agreement)*').

are required to base their phytosanitary measures on international standards developed within the framework of the *IPPC*.<sup>105</sup>

All phytosanitary measures that conform to the ISPMs are presumed consistent with the relevant provisions of the *SPS Agreement*; however, measures which deviate from international standards or measures in the stead of international standards must be developed through the assessment of the risk to plant life or health. These must be based on scientific principles and evidence.<sup>106</sup>

The *IPPC* recognises countries' rights to use phytosanitary measures to regulate imports of plants, plant products and objects that may harbour pests. Parties to the *IPPC* have obligations to comply with the *IPPC* principles of necessity, technical justification and transparency in regulating imports.<sup>107</sup>

Benefits to parties to the *IPPC* include standard setting, international trade agreements, technical assistance and information exchange as the components of ABS rather than the access to the genetic resources and the benefits that may flow from their use. This extension of the use of ABS is in line with the concept as the international standards used to protect and safeguard plant life or health are based on technical expertise that needs to be shared.

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<sup>105</sup> Established International Standards for Phytosanitary Measures and Obligations are agreed under the *WTO SPS Agreement* as general principles which will ensure health of plants, plant material, generated products from plants or plant material and safeguard the domestic markets of WTO Parties to ensure minimal disease and pest transference. These measures were not to impede trade by becoming a technical barrier at the border. Draft International Phytosanitary Measures (ISPMs) continue to be developed under this framework by the CPM.

<sup>106</sup> *SPS Agreement* art 2.2 <[http://www.wto.org/english/tratop\\_e/sps\\_e/spsagr\\_e.htm](http://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm)> accessed on 20 October 2010.

<sup>107</sup> *IPPC* art IV, V <[https://www.ippc.int/file\\_uploaded/1329129099\\_IPPC\\_2011-12-01\\_Reformatted.pdf](https://www.ippc.int/file_uploaded/1329129099_IPPC_2011-12-01_Reformatted.pdf)> accessed on 22 October 2010.

This framework is used to evaluate the interface between the environmental, trade, commercialisation and proprietary protection considerations for agricultural commodities . This is particularly critical for those agricultural commodities constructed from genetic resources that contain traditional knowledge associated with those genetic resources.

This can be viewed as complex given that most historical genetic resources have traditional knowledge embedded in them. This lens provides a live and dynamic arena through which due consideration can be given to all of the arms of the issues.

### ***1.5 Traditional Knowledge or Rights to Biological Resources — How has the Construction Developed and Been Treated in the International Agreements?***

The issue of traditional knowledge had only been given cursory consideration in the international discussions prior to the *International Undertaking*. This was the first formal mention of the role that indigenous people had played in the utilisation and conservation of biological resources. The acknowledgement came in the form of the Farmers' Rights, which was recognition that small scale subsistence indigenous farmers had a role to play in the conservation, usage and development of plant genetic resources for agricultural purposes.

#### ***1.5.1 The Rio Declaration and Agenda 21***

A next more formal recognition of the issue came in the environment-focused *Rio Declaration* in Principle 22 which stated that:

Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional

practices. States should recognise and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.<sup>108</sup>

This was an overt statement of the vital role that indigenous people and their communities played in the continued use and advancement of plant genetic resources cultivated for the purposes of food production. It recognised that the knowledge possessed by traditional people and their communities was used to sustainably produce agricultural crops and associated commodities. It formally recognised the role that traditional knowledge had in the sustainable development of plant genetic resources.

Agenda 21, signed at the same time as the *Rio Declaration*, set out a comprehensive plan of action that seeks to address the actions of humans on the environment. Chapter 26 of Agenda 21 sought to explicitly outline the relationship that existed between indigenous peoples and their traditional lands. The Agenda, at paragraph 26.3(a), charged governments in partnership with indigenous people and their communities:

[T]o establish a process to empower indigenous peoples and their communities' through measures that include:

Recognition that the lands of indigenous people and their communities should be protected from activities that are environmentally unsound or that indigenous people concerned consider to be socially and culturally inappropriate;

Recognition that traditional and direct dependence on renewable resources and ecosystems, including sustainable harvesting, continues to be essential to the cultural, economic and physical well-being of indigenous people.<sup>109</sup>

In conjunction with these recognitions of traditional knowledge of indigenous people and their communities, paragraphs 17.80 to 17.83 of Agenda 21<sup>110</sup> also placed additional requirements on

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<sup>108</sup> *Rio Declaration* Principle 22 <<http://www.unep.org/Documents.Multilingual/Default.asp?documentd=78&articleid=1163>> accessed on 20 October 2010.

<sup>109</sup> S Jentoff, H Minde, R Nilsen (eds), *Indigenous Peoples: Resource Management and Global Rights* (Deltif Eubron, 2004) 56.

<sup>110</sup> *Rio Declaration* Agenda 21, para 17.80–17.83 <[http://www.un.org/esa/dsd/agenda21/res\\_agenda21\\_17.shtml](http://www.un.org/esa/dsd/agenda21/res_agenda21_17.shtml)> accessed on 20 October 2010.

nation states to take into account the special needs and interests of indigenous peoples in fisheries, including nutritional and other development needs. Nation states were also charged with protecting indigenous peoples and their communities' right to subsistence agriculture in all international treaties.<sup>111</sup>

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17.80 Coastal States, individually or through bilateral and/or multilateral cooperation and with the support, as appropriate of international organizations, whether subregional, regional or global, should *inter alia*:

- (a) Assess the potential of marine living resources, including underutilised or unutilised stocks and species, by developing inventories, where necessary, for their conservation and sustainable use;
- (b) Implement strategies for the sustainable use of marine living resources, taking into account the special needs and interests of small-scale artisanal fisheries, local communities and indigenous people to meet human nutritional and other development needs;
- (c) Implement, in particular in developing countries, mechanisms to develop mariculture, aquaculture and small-scale, deep-sea and oceanic fisheries within areas under national jurisdiction where assessments show that marine living resources are potentially available;
- (d) Strengthen their legal and regulatory frameworks, where appropriate, including management, enforcement and surveillance capabilities, to regulate activities related to the above strategies;
- (e) Take measures to increase the availability of marine living resources as human food by reducing wastage, post-harvest losses and discards, and improving techniques of processing, distribution and transportation;
- (f) Develop and promote the use of environmentally sound technology under criteria compatible with the sustainable use of marine living resources, including assessment of the environmental impact of major new fishery practices;
- (g) Enhance the productivity and utilization of their marine living resources for food and income.

17.81 Coastal States should explore the scope for expanding recreational and tourist activities based on marine living resources, including those for providing alternative sources of income. Such activities should be compatible with conservation and sustainable development policies and plans.

17.82 Coastal States should support the sustainability of small-scale artisanal fisheries. To this end, they should, as appropriate:

- (a) Integrate small-scale artisanal fisheries development in marine and coastal planning, taking into account the interests and, where appropriate, encouraging representation of fishermen, small-scale fishworkers, women, local communities and indigenous people;
- (b) Recognize the rights of small-scale fishworkers and the special situation of indigenous people and local communities, including their rights to utilization and protection of their habitats on a sustainable basis;
- (c) Develop systems for the acquisition and recording of traditional knowledge concerning marine living resources and environment and promote the incorporation of such knowledge into management systems.

17.83 Coastal States should ensure that, in the negotiation and implementation of international agreements on the development or conservation of marine living resources, the interests of local communities and indigenous people are taken into account, in particular their right to subsistence.

<sup>111</sup> Jentoff, above n 109, 56.

The implementation of Agenda 21 was placed within the ambit of the United Nations Permanent Forum on Indigenous Issues, which is an advisory body to the Economic and Social Council, with a mandate to discuss indigenous issues related to economic and social development, culture, the environment, education, health and human rights.<sup>112</sup> This body also seeks to implement the United Nations Declaration on the Rights of Indigenous Peoples<sup>113</sup> which was adopted by the General Assembly on 13 September 2007. In the Preamble,<sup>114</sup> signatories recognised the value of traditional knowledge of indigenous peoples and their communities by stating:

*Convinced* that control by indigenous peoples over developments affecting them and their lands, territories and resources will enable them to maintain and strengthen their institutions, cultures and traditions, and to promote their development in accordance with their aspirations and needs,

*Recognizing* that respect for indigenous knowledge, cultures and traditional practices contributes to sustainable and equitable development and proper management of the environment.<sup>115</sup>

This inclusion of the recognition of the role that indigenous peoples and their communities play in the sustainable management of biological resources formalised the recognition of traditional knowledge for most nation states.

### ***1.5.2 The Convention on Biological Diversity (CBD) and the Nagoya Protocol***

#### **The CBD**

The Preamble to the *CBD* recognised the:

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<sup>112</sup> Accessed at <<http://www.un.org/esa/socdev/unpfii/>> on 22 October 2010.

<sup>113</sup> *United Nations Declaration on the Rights of Indigenous Peoples*, adopted by the United Nations General Assembly on 13 September 2007 by a majority of 144 votes to 4 ('*Declaration on the Rights of Indigenous Peoples*').(not a treaty as such).

<sup>114</sup> *Ibid* Preamble.

<sup>115</sup> *Declaration on the Rights of Indigenous Peoples* 5 <[http://www.un.org/esa/socdev/unpfii/documents/DRIPS\\_en.pdf](http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf)> accessed on 22 October 2010.

[C]lose and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of sharing equitably arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and sustainable use of its components.<sup>116</sup>

This established the framework for the consideration of traditional and associated knowledge of indigenous people in reference to biological resources, primarily in relation to that knowledge being applied in a manner for the production of food and the sustainable preservation of those resources for future use. This placed the traditional and associated knowledge in the context of agricultural production, as these resources were utilised to provide the basic staples of life both in the present and future. Indigenous people did not seek to commercialise these resources but rather developed them for the provision of food with a duty of guardianship of these resources for the future food needs of humanity.

The *CBD* coupled this preamble recognition with the formal requirement contained in Article 8(j) of the Convention. This required each signatory to

[S]ubject to its national legislation, 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 utilization of such knowledge, innovations and practices.<sup>117</sup>

The key recognition in this Article is the value of the preservation of the traditional and associated knowledge of indigenous people living in a traditional manner. This Article requires nation states who are parties to the *CBD* to actively ensure that this is protected. This entails preserving and encouraging the subsistence agricultural knowledge for biological resources in

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<sup>116</sup> *CBD* preamble.

<sup>117</sup> *CBD* art 8(j).

the production of food. This captures all forms of biological resources (plant, animal and aquatic) that may have been utilised by indigenous people living a traditional lifestyle.

### **The Nagoya Protocol**

The Protocol, at Article 12.1 states that Parties 'shall in accordance with domestic law take into consideration indigenous and local communities' customary laws, community protocols and procedures, as applicable, with respect to traditional knowledge associated with genetic resources'. The Protocol also seeks the support of parties in creating and supporting mechanisms to equitably share the benefits arising from the utilisation of the traditional knowledge associated with the genetic resources<sup>118</sup> and their support for the development of community protocols for access to traditional knowledge associated with genetic resources, including MAT and model contractual clauses.<sup>119</sup>

### **1.5.3 The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)**

The *ITPGRFA* examines traditional knowledge associated with genetic resources in the context of 'Farmers' Rights' in Article 9. This Article recognises:

[T]he enormous contribution that the local and indigenous communities and farmers of all regions of the world, particularly those in the centres of origin and crop diversity, have made and will continue to make for the conservation and development of plant genetic resources which constitute the basis of food and agriculture production throughout the world.<sup>120</sup>

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<sup>118</sup> *Nagoya Protocol* art 12.2.

<sup>119</sup> *Ibid* art 12.3(a-c).

<sup>120</sup> *ITPGRFA* art 9.1.

#### **1.5.4 World Intellectual Property Organization Agreements and the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore**

WIPO have established the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) to examine these constructions as they are classed as:

[E]conomic and cultural assets of indigenous and local communities and their countries. WIPO's work addresses the role that intellectual property principles and systems can play in protecting traditional knowledge and traditional cultural expressions (folklore) from misappropriation, and in generating and equitably sharing benefits from their commercialisation and the role of IP in access to and benefit-sharing in genetic resources.<sup>121</sup>

The IGC has a mandate from the WIPO General Assembly to undertake text-based negotiations for the achievement of an international legal instrument that will achieve the objective of providing effective protection for traditional knowledge, genetic resources and traditional cultural expressions. As yet, no agreement has been reached.

This thesis considers the relevance of the use of traditional knowledge associated with genetic resources *in the commercial production* of agricultural commodities constructed from biological resources with the intent of CBD Article 8(j). Is the intent to include commercial commodities or to preserve the traditional production of food? Further examination of the interface of Article 8(j) with the other elements of the Convention is discussed in Section Two.

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<sup>121</sup> World Intellectual Property Organization, Traditional Knowledge, Genetic Resources and Traditional Cultural Expressions/Folklore accessed at <<http://www.wipo.int/tk/eng>> on 21 August 2010.

## ***Section Two: Issues Under Consideration***

International debate<sup>122</sup> continues concerning the global recognition and possible legal advancement of the key constructions of traditional knowledge, and traditional knowledge associated with genetic resources, in conjunction with ABS as they relate to biological resources. The main thrust of these debates is the proprietary legal status<sup>123</sup> that may result from the use of such knowledge for the purpose of commercialisation<sup>124</sup> of biological resources.

Traditional knowledge as a construction refers to the multifaceted concept that encompasses several components,<sup>125</sup> including ‘tradition-based’ knowledge. This 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’.<sup>126</sup> This type of knowledge is culturally produced by communities as they respond to their environment and is usually held collectively by those communities over time.<sup>127</sup> It is usually transmitted orally

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<sup>122</sup> The forums of debate include the FAO of the United Nations, WIPO (Tradition and Folklore Committee), the CBD and the United Nations General Assembly Permanent Indigenous Forum. The main thrust of these discussions is the proprietary legal status, both at international and domestic law, that indigenous/traditional knowledge may possess when this is utilised in the commercialisation of biological resources.

<sup>123</sup> The intellectual property rights that attach to this knowledge are, primarily, confined to the sphere of technicalities rather than recognised material forms of intellectual rights.

<sup>124</sup> Commercialisation in this context is the act of placing a product or process in the channels of commerce for the specific purposes of trade and profit.

<sup>125</sup> World Intellectual Property Organization International Forum on ‘Intellectual Property and Traditional Knowledge: Our Identity, Our Future’ para 2 <[http://www.wipo.int/arab/en/meetings/2002/muscat\\_forum\\_ip/tpk\\_mct02\\_j3.htm](http://www.wipo.int/arab/en/meetings/2002/muscat_forum_ip/tpk_mct02_j3.htm)> accessed on 28 August 2011.

<sup>126</sup> Ibid note 1.

<sup>127</sup> Ibid.

rather than through a written text, as knowledge that is passed from one generation to another and built upon over time.

At present, intellectual proprietary protection is available for rights relating to:

[L]iterary, artistic and scientific works; performances of performing artists, phonograms and broadcasts; inventions in all fields of human endeavour; scientific discoveries; industrial designs; trademarks, service marks and commercial names and designations; protection against unfair competition and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields.<sup>128</sup>

This schematic does not allow for the specific protection of traditional knowledge, or traditional knowledge and associated genetic resources, when it is used in conjunction with other knowledge to produce a commodity. However, if such knowledge is used to produce a commodity, there is no current impediment to that commodity seeking proprietary protection without due reference to the traditional knowledge associated with genetic resources. The commodity once commercially produced, if the subject of a patent<sup>129</sup> for example, would be required to demonstrate that it is novel, inventive and useful<sup>130</sup> in order to be granted proprietary protection.

The current new commodities with their genesis in biological resources<sup>131</sup> seeking proprietary protection commonly use patents to obtain enforceable rights, either for the process of

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<sup>128</sup> *WIPO Convention* art 2(vii).

<sup>129</sup> A form of proprietary protection designed to grant a set of exclusive rights to the inventor, usually in the form of a monopoly, for a specified period of time. This does not, however, prevent the inventor from licencing others to use the invention in return for payment (eg royalties).

<sup>130</sup> The commodity cannot be granted protection if it already exists in the prior art base, it is not inventive and has no particular use.

<sup>131</sup> These commodities include pharmaceuticals, cosmeceuticals, agricultural genetically modified seeds and germplasm to produce particular traits (eg increased head yield in rice, maize and wheat) or to prevent diseases or plant damage from pests (eg use of spider venom in fruit trees to kill mites) and transgenic animals bred for specific uses or traits.

manufacture or for the completed product.<sup>132</sup> Others, particularly pharmaceutical<sup>133</sup> and agricultural cropping<sup>134</sup> companies, will usually seek enforceable rights through patent protection for both to ensure continued scientific advancements can also be protected. This may lead to a significant market share for the companies, even to a monopoly trading position, which has seen non-governmental organisations (NGOs)<sup>135</sup> and peak bodies representing indigenous interests<sup>136</sup> to seek a halt to such conduct if it does not disclose the contribution made by traditional and associated knowledge to the development of the product. The non-disclosure of this contribution prevents the payment of financial reward or the flow of other benefits such as technology transfer on a continual basis, unless this has been previously negotiated in a contract by the indigenous community prior to the utilisation of their traditional and associated knowledge on MAT coupled with PIC. At times, these pre-development contracts have included a one-off payment for the use of the traditional knowledge, or traditional knowledge associated with genetic resources. However, some private contractual agreements have been subsequently declared void or voidable by the courts on the grounds of equitability.<sup>137</sup> In addition, those researchers that have subsequently taken out patent

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<sup>132</sup> Patents are able to offer a greater range of protection to the inventor given that the process, the final product and any innovative additions to that product in the future can all be captured. This may also be accompanied by a trademark protection, usually the company corporate logo, to further strengthen the visible ownership. These rights are then enforceable in a court of law and compensation is also available.

<sup>133</sup> Astra Zeneca and Glaxco Smith Kline have a corporate policy of patent protection for both the process of manufacture and the completed product for all new medicinal substances that they have developed prior to their placement in the domestic market or in the global channels of commerce. This policy is based on their risk management strategy of litigation.

<sup>134</sup> Crop Life is the major agricultural company in the global market based on market share. This company holds the majority of plant patents for genetically modified seeds and germplasm.

<sup>135</sup> NGOs including Greenpeace, Ban Terminator, SEED.

<sup>136</sup> These include the UN Permanent Indigenous Forum and the Indigenous People's Forum under the UN CBD.

<sup>137</sup> United States Patent and Trademark Office granted patent US 5401504 for the medicinal properties of turmeric to two expatriate Indians of the University of Mississippi Medical Center. This was challenged on the grounds of providing evidence

protection have had the patent declared invalid or been ordered by the courts to re-apply for the patent with all relevant information disclosed. This is to ensure that all parties entitled at law to exercise rights and receive benefits from the commercialisation are noted. The Enola Bean Patent application will be discussed in these terms under the section on patents in Section Four.

This lack of available proprietary protection for the use of traditional knowledge, and traditional knowledge associated with biological resources, to develop commodities in the current legal schematic raises a number of issues. Agricultural commodities manufactured from biological resources are traded domestically and internationally for the further production of crops for food, forage, alternative fuel sources and the base elements in other manufactured materials such as fabric. All of the associated transactions in the supply chain require a level of legal certainty that guarantees the parties that the right to use and trade is absolute. This may entail some restrictions, particularly if the genus commodities are subject to proprietary protection; however, this does not negate the right to on-sell the use of those commodities.

These issues and the impact they have on the agricultural commodities constructed from biological resources provides the competing frame of reference for the resolution of the research question.

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of prior art. The patent was cancelled as it failed to meet the novelty criteria required. Likewise, the European Patent Office finally arbitrated on the issuing of a patent for the anti-fungal properties of Neem which had been granted to the United States Department of Agriculture and the W R Grace Corporation. This original patent was for the fungicide derived from seeds of the Neem tree which is indigenous to the Indian subcontinent. It had a wide application traditionally (insect repellent, soap, cosmetics, teeth cleaner and contraceptive substance). The patent was challenged on the grounds of prior art even though the initial grant of the patent was made in 1995.

## **2.1 The Forum for Consideration**

The forum which should decide the legal status of traditional and associated knowledge is a question that is rather vexed given the cross-cutting nature of the use of both the resources and the knowledge. At present, various forums within the United Nations schematic (General Assembly or other conventions such as the *CBD*), the WIPO, *ITPGRFA*, the WTO under *TRIPS Agreement* and other international bodies are all considering this question using their scope and intent as a frame of reference. This leads to a fragmentation based on use and application, rather than a holistic approach to the evaluation of whether proprietary rights exist. This places agricultural commodities constructed from biological resources, or the subset genetic resources that have traditional and associated knowledge attached, at a significant disadvantage as they are the most traded commodity globally given they primarily provide food for human or animal consumption and comprise approximately one-third of the global trade.

### **2.1.1 Consent to Use**

The obtaining of PIC from the indigenous community holding the traditional knowledge, or traditional knowledge associated with the biological resource, before any further use of that resource is made is an issue that has been raised by indigenous communities seeking to assert proprietary rights over such knowledge. This has led some domestic jurisdictions to enact legislation to ensure that such PIC is obtained when the knowledge is to be utilised. This has mainly been restricted to commercial usage, with pure research being primarily excluded<sup>138</sup>. Given agricultural commodities are developed from biological resources or the subset genetic

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<sup>138</sup> The nation states that have enacted such legislation include Peru and Brazil.

resources that have attached traditional knowledge, the issue of PIC to utilise that knowledge becomes a critical element in the level of legal certainty that can be provided to all transactions involving those commodities. This becomes further vexed when similar agricultural commodities are developed from the same resources in different domestic jurisdictions with similar or indistinguishable attached traditional knowledge, and traditional knowledge associated with the genetic resource. One would be a transaction covered by the required level of legal certainty while the other would not if an international schematic demanding PIC were constructed. At a fundamental level this situation would place at risk the basic provision of food as a tradable agricultural commodity.

### **2.1.2 Alignment of Domestic and International Provisions**

The alignment of nation state domestic provisions concerning access to and use of terrestrial, aquatic and seabed biological resources with international principles of PIC and mandatory disclosure in applications for proprietary protection<sup>139</sup> is necessary to avoid a conflict of law. Without this, commercial transactions will not have the required level of legal certainty to guarantee both the right to use and the right to possess. This is particularly important if the future proprietary protection of any advancement in the use of the biological resources, either the process or the final product, is being considered for patent protection.

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<sup>139</sup> For instance, the Marine and Coastal Area (Takutai Moana) Act 2011 of New Zealand guarantees free public access in, on or over the entire common marine and coastal area. Under the Act whanau, hapu and iwi can seek recognition and protection for longstanding customary interests. The Act also preserves and protects existing recreational fishing rights, navigation rights and all other existing uses.

If the international proprietary protection schematic mandates PIC and the disclosure<sup>140</sup> of the use of traditional and associated knowledge<sup>141</sup> concerning biological resources or the subset plant genetic resources used to construct agricultural commodities, this may contravene the established international legal principle that nation states have exclusive sovereignty in their territory. Alternatively, if the view is that such resources are the common heritage of mankind, domestic jurisdictions that do not have similar provisions will be in conflict. This conflict will be limited to those nation states not mandating similar domestic requirements that are signatories to the international schematic. Those nation state jurisdictions who are not signatories will still legally be able to legislate other requirements concerning proprietary protection. However, if a legal entity such as a natural person or a corporation seeks to obtain global proprietary protection, this will require that entity to demonstrate compliance with the international legal requirements of PIC and disclosure. The latter requirement will be able to be met, but unless the entity can demonstrate through another means such as a private contract that PIC had been obtained, the application for proprietary protection will be invalid.

For agricultural commodities constructed from biological resources, or the subset plant genetic resources, the inability to obtain proprietary protection may stifle continuing research and trade as the certainty of future transactions would be in jeopardy. This is particularly important for

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<sup>140</sup> This requirement would be included in the administrative formalities of the filing of an application for patent protection under the *PCT* for the filing of global protection patents. This may also cause a review of domestic nation state administrative procedures to ensure legal formalities are consistent. It may also necessitate a review of the conditions of the *PLT* as they refer to disclosure.

<sup>141</sup> This may result in a conflict with the *Vienna Convention on the Law of Treaties* (opened for signature 23 May 1969, 1155 UNTS 331 (entered into force 27 January 1980)) given the recognition of nation state sovereignty (particularly the right to determine the regulations that operate within their state jurisdiction) and the legal necessity of all signatory nation states to agree to such an obligation in an international forum.

developing nation states that rely on the use of the traditional knowledge to further their trade aspirations.

If the developing nation state is a signatory to both the *CBD* and a member of the World Trade Organization (WTO), which incorporates adherence to *TRIPS*, the protection of traditional knowledge, and traditional knowledge associated with genetic resources, may well be fundamental to their ability to competitively trade in genetic-based commodities.<sup>142</sup> This protection would offer a sustainable trade platform that could be further developed as advances were utilised, enabling the developing nation state to be competitive on the global trading market.

### **2.1.3 'Benefit Flow'**

The characterisation of the concept of 'benefit flow'<sup>143</sup> being distinct from the established legal construction of royalty<sup>144</sup> and conditional to disclosure is a technical splitting of the financial and non-financial gains made from the commercialisation of biological resources that have disclosed traditional knowledge. The enmeshing of these two requirements would see a broadening of the scope of gains that could be attributed to commodities constructed from biological

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<sup>142</sup> World Intellectual Property Organization International Forum, above n 125, para 4 accessed on 20 December 2010.

<sup>143</sup> 'Benefit flow' is a term used to describe all things that may result from the utilisation of traditional and associated knowledge including, but not limited to, technology transfer, analogue derivatives, additional innovations that may result from the research and development process, access to and use of the original biological resource and any ensuing advancements at no financial cost to the traditional knowledge holder and their community. This is predicated on the disclosure of the traditional and associated knowledge prior to the market release of the commercialised tradable commodity.

<sup>144</sup> Royalty is used to denote the financial payment made to the holder of the proprietary rights attached to the commodities which are traded commercially. This payment can be triggered by a threshold which can be based on the volume of units sold, the gross costs of production, the net costs of production, a gross sales figure, a net sales figure or other condition as agreed between the right holder and the legally permitted user of that right for the purpose of commercialisation.

resources to include technology transfer, either concerning the process of construction or the use of the final commodity.

For agricultural commodities constructed from biological resources, or the subset plant genetic resources, this would require the release of all relevant technology associated with the process of construction and the optimal cultivation techniques without the payment of any financial benefit. This would negate or seek to significantly limit the rights that could be held under proprietary protection and impact on the commercialisation of the commodity.

#### **2.1.4 Concept of 'Control'**

The removal of the concept of 'control'<sup>145</sup> from property ownership when defining traditional knowledge would potentially allow more than one claim to be exercised over biological resources which are attached to real property — land. This could occur when the traditional knowledge, or the traditional knowledge associated with genetic resources, is shared between various indigenous people, potentially in various nation states. The removal of 'control' as an element of property ownership would seek to vest the traditional knowledge or the traditional knowledge associated with genetic resources, as a property in itself, rather than that knowledge being contingent on the exercising of an overt act over land by the title holder.

For the agricultural commodities constructed from biological resources or the subset plant genetic resources, this would potentially entail the necessity of a contractual agreement with

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<sup>145</sup> Possession is a property right or interest through which one can exercise dominion or control over something to the exclusion of all others. The owner of a property has the right to exclusive possession of their land, which includes the airspace above and the space below the surface within the exterior boundaries of the property. *Berstein v Skyviews* [1978] QB 479, (Griffiths J); *Yanner v Eaton* (1999) 201 CLR 351.

both the real property title holder and all indigenous people seeking to exercise the proprietary rights to their traditional knowledge, or traditional knowledge associated with genetic resources. This would potentially create an inability to obtain the necessary level of legal certainty required to both utilise and develop these commodities for commercial purposes or for research.

#### ***2.1.5 Proprietary Protection of Traditional Knowledge and Traditional Knowledge Associated with Genetic Resources***

The application of legal forms of proprietary protection for traditional knowledge, and traditional knowledge associated with genetic resources, only in situations of commercialisation, not research initiatives,<sup>146</sup> is sought to provide both an entitlement to commercial benefit flow and to encourage research primarily in the environmental taxonomic area. This is a policy consideration on the scope of proprietary protection for traditional knowledge, and traditional knowledge associated with genetic resources, should such protection be granted.

This split in the protection that is dependent on the purpose of use of the traditional knowledge raises significant expectations on the viable commercialisation of the biological resources or the subset plant genetic resources that have attached traditional knowledge. This split also places a high value on the aspect of research as a common global community goal for the benefit of all, but only to the point prior to commercialisation. Once this threshold is breached, the

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<sup>146</sup> The breadth of the exemption for 'research' is complicated by the subsequent use of the analogue derivative of the biological resource in the commodification process.

expectation is that any form of traditional knowledge, and traditional knowledge associated with genetic resources, must be granted proprietary protection.

For the agricultural commodities constructed from biological resources or the subset genetic resources, this would entail the developer of the new commodity disclosing the use of the traditional knowledge, and traditional knowledge associated with genetic resources, in the application for proprietary protection if such protection does not already exist and only if that commodity was seen as a commercialised non-global beneficial common good item. Given the majority of agricultural commodities relate to the increased production of food<sup>147</sup> in its broadest sense, it would become a policy consideration as to whether these would be included in the requirement.

### **2.1.6 Compliance Obligations for Disclosure**

Should disclosure of traditional knowledge, and traditional knowledge associated with genetic resources, be made mandatory, the resulting interface between contract law and the patent system would become quite complex. This may require significant amendment to existing legal schematics to enable the required level of legal certainty to be obtained and to provide a basis for compliance. The WTO's arrangements for the trade in commodities generated from biological resources as outlined in *GATT* and the annexes (such as the current articles of the *TRIPS Agreement*<sup>148</sup> as they relate to biological resources and the non-disclosure provisions for traditional knowledge, and traditional knowledge associated with genetic resources), may not

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<sup>147</sup> In this context, 'food' encompasses sustenance for both human and animal needs (including forage crops); given both are essential elements in the food supply chain.

<sup>148</sup> Specifically *TRIPS* art 27.3(b).

be able to ensure compliance regarding disclosure of such knowledge. Nor may they be capable of tracking the trade benefits to ensure a monetary flow back to the traditional knowledge holder without amendment. If these are tracked, it would prove to be hugely costly. This is recognised in the *ITPGRFA* in Article 12.3(B) which states:

Access shall be accorded expeditiously, without the need to track individual accessions and free of charge, or, when a fee is charged, it shall not exceed the minimal cost involved.<sup>149</sup>

This has the capacity to require substantial amendments to the international trade schematic and other associated mechanisms for both the rules of trade and the classification of commodities. The later may require amendments to the International Convention on the Harmonized Commodity Description and Coding System<sup>150</sup>, the classification of goods nomenclature used by the World Customs Organization to classify goods based on description to ensure that they are recognisable at any port in the globe. This schedule is utilised primarily for the purposes of importation duties by member countries as it provides a common basis of denoting each class of good. If a tracking mechanism was required, this schematic would need to be altered to include subset classifications concerning the utilisation of traditional knowledge, and traditional knowledge associated with genetic resources, only in goods to be included in the policy. This would create a complex administrative schematic that may deem the collection of benefits unattainable, particularly as most border agencies do not assume the role

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<sup>149</sup> *ITPGRFA* art 12.3(B).

<sup>150</sup> *World Customs Organization International Convention on the Harmonized Commodity Description and Coding System*, opened for signature 14 June 1983, I-25910, (entered into force 1 January 1988).

of the collector of monies for privately held rights, or the enforcer of privately held rights, such as those held under patent or trademark.<sup>151</sup>

### **2.1.7 Transboundary Biological Resources**

How transboundary<sup>152</sup> biological resources would be 'owned' given shared traditional knowledge, and traditional knowledge associated with genetic resources, across more than one indigenous community and how subsequent benefits would flow is a demonstration of the difficulty of applying the tenants of property law to these resources. If the concept of control is removed from property law to accommodate this, it will still not resolve the issue of commonly held knowledge. The issue then becomes the identification of those who hold the knowledge and the apportionment of benefits that may flow from the commodification of the traditional knowledge, and traditional knowledge associated with genetic resources. The identification of the holders of the traditional knowledge, and traditional knowledge associated with genetic resources, may well be verifiable at a communal level, but unless that community can be identified as a legal personality,<sup>153</sup> any benefits may not flow. This would not be limited to monetary benefits, but could potentially include non-monetary benefits such as technology transfer.

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<sup>151</sup> Japan as a nation is one of the few border agencies that actually enforce the rights of a patent holder at the border. Most nation state jurisdictions have a mechanism for the right holder to register their privately held interest with the expectation that any enforcement action for a breach in that right be undertaken by the right holder.

<sup>152</sup> This term refers to the lack of recognition of nation state boundaries by biological resources and that the traditional and associated knowledge attached to these resources may also be shared. Identifying 'ownership' of both the biological resource and the traditional and associated knowledge would prove complicated.

<sup>153</sup> The community would need to be identified as a cooperative, corporation, trust or partnership to hold a legal personality to be able at law to identify the owner. This could be avoided if the nation state was the receiver of the benefit flow and it apportioned the benefits at a communal level similar to a grant which could be bestowed on a local geographical level.

### **2.1.8 Role of International Union for the Protection of New Varieties of Plants (UPOV)**

The continued role of UPOV and the availability of it to protect plant genetic resources, the subset of biological resources, as they emerge as new plant varieties which will be commercialised, particularly for the flower market (e.g. roses and bulbs) will be questionable.

The role of *UPOV* at present is to provide a system of encouragement for continued ornamental and flowering plant breeding and a system of registration of rights<sup>154</sup> attached to those new varieties. This enables the breeder to develop new varieties secure in the knowledge that this advancement can be protected once the variety is commercialised or used as a basis for further development. If a new system of protection is brought into force to incorporate the traceability of genetic resources that have been commodified, it may render the *UPOV* system obsolete unless it is incorporated within the new regime.

### **2.1.9 Patent Law Treaty (PLT) and the Budapest Treaty**

The ability of the *PLT* and the *Budapest Treaty* to include a mandatory disclosure provision relating to traditional knowledge is yet to be tested.

The *PLT* is the main treaty that establishes the essential elements required for an application for proprietary protection in the form of a patent to be approved. At present, the only disclosure requirement is for prior art. This requirement directs the applicant to disclose the use of any prior invention or advancement that has been used in the development of the new innovation or invention. This prior invention can be publicly known and unencumbered by proprietary

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<sup>154</sup> *UPOV* has a system of Plant Breeder's Rights which is a registration system for breeders to register new varieties in order to protect at law their invention. This enables the registered breeder to collect royalties from the propagation of the varieties once they are made available for commercial release.

protection, or it can be the utilisation of a previously registered innovation already subject to patent protection. In the case of the later, express permission from the existing right holder is required for the application of a patent of addition to be successful.

If traditional knowledge, or traditional knowledge associated with genetic resources, was required to be disclosed under the *PLT*, this would have the potential to require an additional amendment under the *PCT* to ensure that all administrative requirements for patent protection applications were aligned. The *PCT*'s purpose is to ensure that the administrative burden is not onerous for both the applicant and the administration body.

The *Budapest Treaty* allows for the recognition of the deposit of a microorganism<sup>155</sup> for the purposes of patent application procedure with any 'international depository authority',<sup>156</sup> even if that authority is outside the jurisdiction of the contracting party to the Treaty. This deposit removes the necessity to deposit a sample of the microorganism in the repository of every nation state where proprietary protection is being sought.

The Budapest Treaty requires disclosure of the invention that involves the microorganism or the use of the microorganism through the provision of a deposit of the sample of the microorganism, rather than the usual written description. This allows the examination phase for the patent application to be undertaken at the place of deposit and the resultant information to be available to inform applications in other jurisdictions or global applications. This creates a

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<sup>155</sup> The *Budapest Treaty* defines microorganisms broadly in terms of the biological material necessary for the purposes of disclosure. This is usually the active biological material in the invention, ie yeast varieties in food and beverages, gelatines in pharmaceuticals.

<sup>156</sup> *Budapest Treaty* art 3, which is usually a scientific institution that is capable of storing microorganisms, such as a gene bank or other culture collection facility.

uniform system of procedure for the application process. If an additional disclosure requirement was imposed for the use of traditional knowledge, or traditional knowledge associated with genetic resources, this would require significant amendment to the *Budapest Treaty* and the procedures it dictates.

#### **2.1.10 Traditional Knowledge in the Public Domain**

What status existing proprietary protected commodities utilising traditional knowledge will hold in the new schematic, particularly if that knowledge was in the public domain at the time the protected commodities were developed and made commercially available is a policy decision for the nation state parties to consider. If any new legal schematic sought to introduce a retrospective reach, it would become administratively unworkable and defeat the intent of the instrument.

#### **Legal Issues that Concern the Trade in Agricultural Commodities**

While all of these issues are valid and demand attention, only those that are housed within international law will be considered. This will include international legal issues such as the most appropriate international forum to consider the central question concerning the status of traditional knowledge, and traditional knowledge associated with genetic resources, in the intellectual property rights schematic. This forum will also need to consider the interconnected issues of mandatory disclosure of the use of traditional knowledge in applications for proprietary protection; the lack of a prior art base of traditional knowledge that is publicly available to applicants seeking patent protection; how 'benefit flow' can best be captured, either in a private contract or as a defined obligation in a legally binding international instrument; how traditional knowledge, and traditional knowledge associated with genetic

resources, which is collectively held by a community rather than a recognised legal entity can exercise 'control' over the property; and the capacity of the current elements of the current intellectual proprietary rights schematic (e.g. *UPOV*, *TRIPS*, *PLT*, *Budapest Treaty*) to capture mandatory disclosure of traditional knowledge, and traditional knowledge of genetic resources, particularly as it relates to transboundary biological resources and shared traditional knowledge between indigenous communities.

This discussion will exclude matters that reside within the national government public policy space or the domestic legal base, such as the access to and usage of biological resources within a specific domestic jurisdiction, as this would be covered by the existing public and private property laws. Also excluded from discussion is the alignment of nation state domestic provisions with international principles, as this may contravene the *Vienna Convention on the Law of Treaties*<sup>157</sup> unless the nation state is a signatory to a voluntary legally enforceable instrument that deals with these issues. Nor will it cover the issue of the possible exclusion of the use of traditional knowledge, or traditional knowledge associated with biological resources, for research purposes given that this is a public policy decision to be made by nation state governments concerning their economic and scientific incentives.

One policy issue that is particularly vexing is the possible retrospective reach of the proposed mandatory disclosure of traditional knowledge for commodities currently in the market with proprietary protection, particularly if the utilised traditional knowledge was in the public domain at the time the commodity was developed. The application of any such provision will

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<sup>157</sup> *Vienna Convention on the Law of Treaties*, opened for signature 23 May 1969, 1155 UNTS 331 (entered into force 27 January 1980).

need to be carefully considered by both domestic public policy makers and nation state representatives in international forums considering which, if any, legal obligations to attach.

## **2.2 Forum for the Discussion on the Legal Status of Traditional Knowledge**

At present, international law does not grant the required legal certainty to the construction to allow proprietary protection.<sup>158</sup> In contrast, domestic nation state jurisdictions have granted differing levels of legal certainty to the construction. This ranges from a regulatory requirement to obtain permission to access and utilise the traditional knowledge<sup>159</sup> regarding biological resources, through to the requirement to ensure that a financial benefit flow to the indigenous community for the use and further development of the traditional knowledge, and traditional knowledge associated with genetic resources, is captured in any commercial agreements.<sup>160</sup> However, an overall legal schematic at an international level in a relevant forum is required to give both uniformity and certainty to all interested parties.

There are a range of forums currently considering the issue of what, if any, legal construction should be granted to traditional knowledge, and traditional knowledge associated with genetic resources. These include the peak organisation for intellectual property, WIPO; the peak international organisation for international affairs, the United Nations; the peak international organisation for trade, WTO; and a range of peak environmental bodies, primarily auspiced

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<sup>158</sup> World Intellectual Property Organization, *Technical Study on Disclosure Requirements in Patent Systems related to Genetic Resources and Traditional Knowledge Study No3*, UN Doc UNEP/CBD/COP/7/INF/17 (February 2004) 7 <[http://www.wipo.int/export/sites/www/tk/en/publications/technical\\_study.pdf](http://www.wipo.int/export/sites/www/tk/en/publications/technical_study.pdf)> accessed on 4 February 2010.

<sup>159</sup> For example, The Australian Environment Protection and Biodiversity Conservation Act (1999) Pt 8A. See also Mgbeoji, I. 'Beyond Rhetoric: State Sovereignty, Common Concern, and the Inapplicability of the Common Heritage Concept to Plant Genetic Resources,' *Leiden Journal of International Law*, 16 (2003) pp.821-837 accessed at <http://ssrn.com/abstract=1569632> on 23 May 2013.

<sup>160</sup> *Peruvian Law No 27,811*.

under the United Nations umbrella.<sup>161</sup> Given that this issue affects all interests, particularly as the level of legal certainty required for trade in commercial commodities with their genus in biological resources is critical, WIPO may obviously present as the most appropriate discussion forum, but not the most appropriate decision making one.

WIPO was established to promote the global protection of intellectual property rights and to administer industrial property rights<sup>162</sup>. WIPO today primarily serves as the international governance arm for intellectual proprietary rights, with specific working groups and committees to advise other international organisations on the application of proprietary protection and to ensure compliance measures are appropriate for existing agreements. Whether WIPO has the capacity to drive amendments to existing agreements or shape future agreements is currently being tested by the *Anti-Counterfeiting Trade Agreement (ACTA)*,<sup>163</sup> which is being negotiated without WIPO input. This agreement seeks to reduce the governance function of WIPO by superseding and promulgating the current copyright and trademark schematics into one supra text to be governed by the World Customs Organization (WCO) in conjunction with the WTO. The text is also considering the possible extension of such reach to the enforcement of patents and geographical indicators (GIs) by non-right holders.<sup>164</sup> Should this text become operative, it will signal a watershed moment for WIPO in that it will highlight the inability of the organisation

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<sup>161</sup> These include; the *CBD*, *ITPGRFA*, *UPOV*, the *International Undertaking*.

<sup>162</sup> WIPO art 3–4 <[http://www.wipo.int/treaties/en/convention/trtdocs\\_wo029.html#P68\\_3059](http://www.wipo.int/treaties/en/convention/trtdocs_wo029.html#P68_3059)> accessed on 28 February 2009.

<sup>163</sup> *Anti-Counterfeiting Trade Agreement (ACTA)* under negotiation.

<sup>164</sup> Situation of enforcement of patent holder rights by non-right holders currently operates in several domestic jurisdictions with Japan being the most prominent in this space. All goods subject to patent protection have these rights enforced at the territorial borders of the nation and in the courts of competent domestic jurisdiction by the border agency.

to adequately consider emerging issues, drive robust debate or provide a forum for considered amendments to the current legal schematic and its capacity to continue to function as the governance centre for all proprietary rights.

If WIPO is an active discussion and advisory forum, but not a robust and rigorous decision making organisation able to determine and enforce agreed measures, are there other international multilateral forums which are able to fill this role?

‘The multilateral trading system, with the World Trade Organization (WTO) at its centre, is the most important tool of global economic management and development we possess’<sup>165</sup> and under the *TRIPS Agreement* minimum international standards for the protection of intellectual property rights have been established. These include copyright and related rights, trademarks, GIs, industrial designs, patents, and layout designs of integrated circuits and the protection of undisclosed information. Could this be the most appropriate forum to tackle the juxtaposition between environmental objectives, which rest on the protection and conservation of biological resources from the perspective of the ecologically sustainable use of natural resources, and trade in commodities constructed from biological resources where clarity of the level of legal certainty in terms of ownership, exploitation and proprietary protection are evident?

‘It is evident that, for their operation, markets ... Require the establishment of legal rules governing the rights and duties of those carrying out transactions ... To realize all the gains of trade ... There has to be a legal system and political order.’<sup>166</sup> Given that WTO provides such an

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<sup>165</sup> P Sutherland, J Sewell and D Weiner, ‘Challenges Facing the WTO and Policies to Address Global Governance’ in G Sampson (ed), *The Role of the World Trade Organization in Global Governance*, (United Nations University Press, 2001) 81.

<sup>166</sup> Ronald Harry Coase, *The Firm, The Market and The Law* (University Of Chicago Press, 1988) 95.

order regarding the rules and norms of international trade, and WIPO is charged with the governance function of the rules that apply to proprietary protection, it would be prudent to place any discussion and decisions regarding future proprietary protection advancements at an international level within this sphere. This would satisfy the

Greatest economic challenge facing the world ... the need to create an international system that not only maximizes global growth but also achieves a greater measure of equity (benefit sharing), a system that both integrates emerging powers and assists currently marginalized countries in their efforts to participate in worldwide economic expansion ... The most important means available to secure peace and prosperity into the future is to develop effective multilateral approaches and institutions.<sup>167</sup>

The larger question is whether the WTO is able to grapple with the challenge of these complex issues and move the debate to an equitable and legal conclusion with the required level of legal certainty to ensure that existing and future commercial undertakings are sound. This capacity will be examined in later sections.

### ***2.2.1 Mandatory Disclosure of Traditional Knowledge Associated with Genetic Resources in Proprietary Protection***

If traditional knowledge of biological resources has been utilised in the development of a tradable commodity, there is a call for the use of such knowledge to be mandatorily disclosed if proprietary protection is being sought. Some perceive that such a disclosure would resolve the current impediments to protection and provide scope to encompass future technological and scientific advancements with regard to biological resources.<sup>168</sup>

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<sup>167</sup> Peter D Sutherland, 'Beyond the Market, a Different Kind of Equity', *International Herald Tribune* (Paris), 20 February 1997, 8.

<sup>168</sup> United Nations Department of Economic and Social Affairs (DESA), *Report of the International Expert Group Meeting on the Convention on Biological Diversity's International Regime on Access and Benefit Sharing and Indigenous People's Human Rights*, UN Doc E/C.19/2007 (14 -25 May 2007) para 35 <<http://social.un.or/index/IndigenousPeoples/MeetingsandWorkshops/EGMCBD.aspx>> accessed on 4 February 2010.

If the use of such knowledge was disclosed, the scope and character of any protection that this disclosure may trigger would require consideration. This would initially require consideration of the legal principles upon which such a disclosure would be based. This is particularly relevant given the technical cultural delineation in the current intellectual and other proprietary rights legal systems. Any movement towards legal recognition of the construction of traditional knowledge associated with genetic resources would require verification of the existence of the knowledge, proof of ownership of the knowledge and an acknowledgement that the claimed knowledge is not also the property of others if it or a similar knowledge is also held by other indigenous peoples.

For potential proprietary rights holders, if that utilised knowledge is currently in the public domain, the question to be answered is the legal ownership of such knowledge; are the indigenous people to be credited as the source of such knowledge or is it the common holding of mankind?

If mandatory disclosure of traditional knowledge with regard to biological resources was made, it would require substantial amendments to international agreements such as the *PLT* and the *Budapest Treaty*, and possible flow-on amendments to proprietary rights legislation in nation state domestic jurisdictions to ensure continuity and legal consistency.

If the objective of such a disclosure is to bestow legal rights similar to those held by the right holder of proprietary protection, then the extent of the protection and the right to receive any financial or other benefit that may flow would need to be apportioned. The ability of mandatory disclosure to provide this will be examined in detail in Part Two.

## 2.2.2 Characterisation of Benefit Flow

Under the current legal schematic for proprietary rights, the benefit that flows to the rights holder is financial, for instance, brand recognition and promotion of market share through the use of a trademark applied to goods<sup>169</sup> has a substantial financial value; or a royalty payment for use calculated on a per units manufactured basis for commodities that are subject to a patent will generate a financial benefit flow to the right holder. Nowhere in the current schematic is there consideration of other more general benefits being subject to a transfer flow, however, the *ITPGRFA* has made mention of non-monetary benefit sharing:

13.1 The Contracting Parties recognize that facilitated access to plant genetic resources for food and agriculture which are included in the Multilateral System constitutes itself a major benefit of the Multilateral System and agree that benefits accruing therefrom shall be shared fairly and equitably in accordance with the provisions of this Article.

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<sup>169</sup> Top 10 Brand Names flash largest in the world:

1. **Prada brand:** Brand value: 2.7 billion USD Rank in 2008: No. 12.
2. **Fendi Brand:** Brand value: 3.47 billion USD 2008 ranking: 10. Although Karl Lagerfeld, the creative director of Chanel, is also the designer for fashion garments available by Fendi, the brand is still more popular for accessories. For the hand-held style of the 90's out in the TV movie series *Sex and the City* has become one of the leading brands of 2009.
3. **Trademarks Moët & Chandon:** Brand value: 4.85 billion USD 2008 ranking: No.9.
4. **Brand Cartier:** Brand value: 4.91 billion USD Rank 2008: No.4.
5. **Trade marks Hennessy:** Brand value: 5.4 billion USD 2008 ranking: 7. This is one brand name popular in new markets such as in China and South Korea. LVMH, owner of this name for the location of Hennessy still stand firm in this market in 2009 quarter 1.
6. **Rolux Trade marks:** Brand value: 5.53 billion USD 2008 ranking: No.6.
7. **Brand Chanel:** Brand value: 6.22 billion USD 2008 ranking: No. 5.
8. **Brand Gucci:** Brand value: 7.47 billion USD 2008 ranking: 3. This is a brand should I eat in the market anywhere. Although sales of parent company PPR decreased 2.6% in quarter 1 / 2009 to 6.4 billion USD, but the individual brand Gucci has increased 5% to USD 1.1 billion in the same period, with sales in new emerging markets increased by 21%.
9. **Brand Hermes:** Brand value: Unknown 2008 ranking: No. 2. Brand has high ratings of this famous French with a bag from 5000 USD or more. Revenue in 2008 increased 9% to USD 2.4 billion, but the company predicted sales will not increase in fiscal 2009.
10. **Brand Louis Vuitton:** Brand value: 19.4 billion USD 2008 ranking: No. 1. While sales of jewellery and of LVMH in the first quarter 1 / 2009 decreased 27% to 204 million USD over the same period in 2008, but sales chart fashion bags and the 11% increase to 2.1 billion USD.

Results obtained in April 2009 survey of top 100 most powerful brands by Millward and Brown *BrandZ* <<http://www.top1business.net/top-10-trade-marks-largest-in-the-world>> accessed on 20 September 2008.

13.2 The Contracting Parties agree that benefits arising from the use, including commercial, of plant genetic resources for food and agriculture under the Multilateral System shall be shared fairly and equitably through the following mechanisms: the exchange of information, access to and transfer of technology, capacity-building, and the sharing of the benefits arising from commercialization, taking into account the priority activity areas in the rolling Global Plan of Action, under the guidance of the Governing Body:

(a) Exchange of information:

The Contracting Parties agree to make available information which shall, *inter alia*, encompass catalogues and inventories, information on technologies, results of technical, scientific and socio-economic research, including characterization, evaluation and utilization, regarding those plant genetic resources for food and agriculture under the Multilateral System. Such information shall be made available, where non-confidential, subject to applicable law and in accordance with national capabilities. Such information shall be made available to all Contracting Parties to this Treaty through the information system, provided for in Article 17.

(b) Access to and transfer of technology

(i) The Contracting Parties undertake to provide and/or facilitate access to technologies for the conservation, characterization, evaluation and use of plant genetic resources for food and agriculture which are under the Multilateral System. Recognizing that some technologies can only be transferred through genetic material, the Contracting Parties shall provide and/or facilitate access to such technologies and genetic material which is under the Multilateral System and to improved varieties and genetic material developed through the use of plant genetic resources for food and agriculture under the Multilateral System, in conformity with the provisions of Article 12. Access to these technologies, improved varieties and genetic material shall be provided and/or facilitated, whilst respecting applicable property rights and access laws, and in accordance with national capabilities.

(ii) Access to and transfer of technology to countries, especially to developing countries and countries with economies in transition, shall be carried out through a set of measures, such as the establishment and maintenance of, and participation in, crop-based thematic groups on utilization of plant genetic resources for food and agriculture, all types of partnership in research and development and in commercial joint ventures relating to the material received, human resource development, and effective access to research facilities.

(iii) Access to and transfer of technology as referred to in (i) and (ii) above, including that protected by intellectual property rights, to developing countries that are Contracting Parties, in particular least developed countries, and countries with economies in transition, shall be provided and/or facilitated under fair and most favourable terms, in particular in the case of technologies for use in conservation as well as technologies for the benefit of farmers in developing countries, especially in least developed countries, and countries with economies in transition, including on concessional and preferential terms where mutually agreed, *inter alia*, through partnerships in research and development under the Multilateral System. Such access and transfer shall be provided on terms which recognize and are consistent with the adequate and effective protection of intellectual property rights.

(c) Capacity-building

Taking into account the needs of developing countries and countries with economies in transition, as expressed through the priority they accord to building capacity in plant genetic resources for food and agriculture in their plans and programmes, when in place, in respect of those plant genetic resources for food and agriculture covered by the Multilateral System, the Contracting Parties agree to give priority to

- (i) establishing and/or strengthening programmes for scientific and technical education and training in conservation and sustainable use of plant genetic resources for food and agriculture,
- (ii) developing and strengthening facilities for conservation and sustainable use of plant genetic resources for food and agriculture, in particular in developing countries, and countries with economies in transition, and
- (iii) carrying out scientific research preferably, and where possible, in developing countries and countries with economies in transition, in cooperation with institutions of such countries, and developing capacity for such research in fields where they are needed.<sup>170</sup>

However, this construction is being challenged to include other characteristics such as technology transfer, which would see the processing knowledge utilised to construct the commodity being made available without cost to the holders of traditional knowledge associated with genetic resources. For some commodities with their genus in biological resources, this would equate to free access to the commodity and free ability to replicate the commodity without payment.

### **2.2.3 Removal of 'Control' from Property Ownership**

In a legal sense, property is defined as the legal relationship with a 'thing' and the power that is able to be exercised over the 'thing', rather than the 'thing' itself.<sup>171</sup> It is important to remember that this is a legal construction to describe the relationship, not to identify the asset or 'thing'.<sup>172</sup> Property rights are defined as 'rights that govern the use and ownership of a resource',<sup>173</sup> with the association mainly used to describe the ownership and use of land.

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<sup>170</sup> ITPGRFA art 13.1–13.2(C)(ii).

<sup>171</sup> *Yanner v Eaton* (1999) HCA 53 per the majority (Gleeson CJ; Gaudron, Kirby and Hayne JJ).

<sup>172</sup> K Gray and S Gray, 'The Idea of Property in Land' in S Bright and J Dewar (eds), *Land Law; Themes and Perspectives* (Oxford University Press, 1998).

<sup>173</sup> Industry Commission, *A Full Repairing Lease: Inquiry into Ecologically Sustainable Land Management* (Industry Commission, 1998), 12.

Rights in relation to real property (land) are ‘a systematic expression of the degrees and forms of control, use, and enjoyment that are recognised and protected by law’.<sup>174</sup> These rights include the right to manage, the right to possess, the right to dispose or transfer, the right to receive income from and the right to unfettered enjoyment.<sup>175</sup>

One of the main elements of property ownership is the ability to exercise control over the asset, including anything that may be attached to or have access to the asset. This usually includes the erection of structures, the access of vehicles or persons and the general use of the asset itself. The ability to exercise control over animals seeking to enter or use the property has also been considered as a facet of control.<sup>176</sup> If the requirement of the ability to exercise control was removed from the concept of ownership, this would allow claims of mere association to be given a legal standing even if the title to the property was held by another legal entity.

For agricultural commodities constructed from genetic resources, a subset of biological resources, this construction would prevent the further development of tradeable commodities as the required level of legal certainty for contractual undertakings would be removed.

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<sup>174</sup> F Pollock, *A First Book of Jurisprudence* (MacMillan & Co, 1929), 159.

<sup>175</sup> R Chambers, *An Introduction to Property Law in Australia* (Law Book Company, 2001).

<sup>176</sup> *Yanner v Eaton* (1999) 201 CLR 351, 27–37.

### ***Section 3: The Issue of Traditional Knowledge***

The research question: *'Can traditional knowledge be characterised to give it the required level of certainty to recognise it as a legal construction? And are we able to then apply proprietary protection to that knowledge when it is used to develop agricultural commodities for international trade?'* focuses on the development and commercialisation of agricultural commodities based on genetic resources that are offered in the course of international trade and the component of traditional knowledge that may attach to these agricultural commodities. If these commodities do have attached traditional knowledge, the subsequent question is whether or not this traditional knowledge should be afforded proprietary protection and the owners of such knowledge afforded the rights that such protection grants. In particular some of the rights would include:

- the right to benefits in terms of financial gain whether from royalties for the production of the analogue derivative of the trigger resource, or on a per unit of production threshold as the financial trigger for the flow of benefits
- the rights of technology transfer for the incremental or otherwise additions that have been made throughout the development phase, which would include processing technology for the final commodity or any element of advancement throughout the development phase
- the right to use and further develop the commodity in future research, particularly in terms of varietal-specific traits such as increased head yield for grain crops or increased protein levels for forage crops.

In order to assess the possible rights that may attach to the final commodity or the process by which it is developed, an assessment of the elements of the construction of traditional knowledge with an analysis of which of those elements may well meet the requirements for proprietary protection is required. The subsequent question to be asked involves the form such proprietary protection could take and the possible changes to the administration of such proprietary protection that may need to be made to ensure that this proprietary protection has the necessary level of legal certainty to continue to place the developed agricultural commodities in the course of international trade.

### ***3.1 Why International Action should be Taken Concerning Traditional Knowledge***

The context for the international call for action on the protection of traditional knowledge has mainly come from the proponents' basing their desire for such protection on two main footings: to alleviate the concerns relating to the granting of patents or other forms of proprietary protection covering traditional knowledge to entities or persons other than the holders of the traditional knowledge; and to alleviate the subsequent concern that traditional knowledge is being utilised without the consent of the holders of the traditional knowledge, whether they be individual indigenous peoples or communities, and that the benefits (monetary and non-monetary) ensuing from that utilisation are not being shared with those holders of traditional knowledge.<sup>177</sup>

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<sup>177</sup> TRIPS art 2-3 <[http://www.wto.org/English/tradop\\_e/trips\\_e/ipcw370r1.doc](http://www.wto.org/English/tradop_e/trips_e/ipcw370r1.doc)> accessed on 22 May 2012.

The proponents have placed on record to the WTO through the Council for TRIPS in document IP/C/W/370/Rev.1 the following reasons as to why international action is required to remedy the identified concerns:<sup>178</sup>

(a) **Common economic interest.** It has been said that traditional knowledge is a valuable global resource and hence international efforts to secure its protection should be actively supported.<sup>179</sup> More specifically, it has the potential of being translated into commercial benefits by providing leads for the development of useful products and processes, in particular in the pharmaceutical and agricultural sectors, saving time and cost for the biotechnology industry.<sup>180</sup> For these reasons it is in the common interest of mankind to provide conditions that would be favourable to the preservation of traditional knowledge and the continuing vitality of the peoples and communities which generate and develop it.<sup>181</sup>

(b) **Equity.** It has been said that, given the important economic value of traditional knowledge, the holders of traditional knowledge should share in the economic benefits derived from that knowledge.<sup>182</sup> Given that the *TRIPS Agreement* requires countries with traditional and indigenous communities to provide intellectual property protection for a broad range of subject matters including new ones such as plant varieties, biological materials, lay-out designs and computer software, it is only equitable that traditional knowledge should be

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<sup>178</sup> Ibid art 3–5.

<sup>179</sup> Bolivia, IP/C/M/37/Add.1, para 241; Indonesia, IP/C/M/32, para 134; Kenya, IP/C/M/37/Add.1, para 254; Switzerland, IP/C/W/284; Peru, IP/C/W/447, IP/C/M/49, para 82, IP/C/M/48, para 18; Venezuela, IP/C/M/32, para 136.

<sup>180</sup> Brazil, IP/C/W/228, IP/C/M/28, para 136; Peru, IP/C/W/447, IP/C/M/48, para 18; India, IP/C/W/198.

<sup>181</sup> Ecuador, IP/C/M/30, para 184; Peru, IP/C/M/30, para 153.

<sup>182</sup> Bolivia, Colombia, Ecuador, Nicaragua and Peru, IP/C/W/165; Peru, IP/C/W/447, IP/C/M/48, para 18.

given legal recognition.<sup>183</sup> Indeed, it is the responsibility of the international community to create an egalitarian system for the availability, acquisition, maintenance and enforcement of intellectual property rights, which does not *a priori* exclude any section of the society.<sup>184</sup>

(c) **Food security.** Local farming communities have over the years developed knowledge systems for the conservation and sustainable use of biological diversity, including through the selection and breeding of plant varieties. The well-established practices of saving, sharing and replanting seeds sustain these communities and ensure their food security.<sup>185</sup> International recognition and protection of traditional knowledge would help maintain and promote such systems.

(d) **Culture.** The traditional knowledge of traditional communities is put into practice in a way which is part of the day-to-day lives of these peoples and thus part of their culture.<sup>186</sup> International action to protect traditional knowledge would help sustain such cultures.<sup>187</sup>

(e) **Environment.** The traditional knowledge of indigenous peoples and local communities is central to their ability to operate in an environmentally sustainable way and to conserve genetic and other natural resources. Protection of traditional knowledge is therefore closely linked to the protection of the environment.<sup>188</sup>

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<sup>183</sup> Bolivia, Colombia, Ecuador, Nicaragua and Peru, IP/C/W/165; Cuba, Honduras, Paraguay and Venezuela, IP/C/W/166.

<sup>184</sup> Bolivia, Colombia, Ecuador, Nicaragua and Peru, IP/C/W/165; Cuba, Honduras, Paraguay and Venezuela, IP/C/W/166; India, IP/C/M/28, para 128.

<sup>185</sup> Kenya, IP/C/M/28, para 142; the African Group, IP/C/W/206; Peru, IP/C/M/29, para 175.

<sup>186</sup> India, IP/C/M/28, para 125.

<sup>187</sup> The African Group, IP/C/W/404; Bolivia, IP/C/M/38, para. 246, IP/C/M/37/Add.1, para 241; India, IP/C/M/28, para 127, IP/C/M/25, para 70; Peru, IP/C/W/447, IP/C/M/48, para 18.

<sup>188</sup> Ecuador, IP/C/M/30, para 184.

- (f) **Development.** The point has been made that for the various reasons set out above, protection of traditional knowledge could contribute significantly to the fulfilment of developmental objectives.<sup>189</sup>
- (g) **Coherence of international and national law.** International recognition of traditional knowledge, including farmers' rights, as protectable subject-matter would be in conformity with the obligation to respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities provided for under Article 8(j) of the *CBD*.<sup>190</sup> Other international systems such as the *International Undertaking*<sup>191</sup> and the model law of the Organization of African Unity (OAU) also recognise and protect the rights of local communities, farmers and breeders, and there is a need to reconcile these with the *TRIPS Agreement* which considers intellectual property rights to be private rights.<sup>192</sup> Without the existence of an international mechanism, national and regional laws which acknowledge the collective rights of indigenous and local communities over their traditional knowledge and folklore could be undermined.<sup>193</sup> Moreover, the legal protection of traditional knowledge would improve confidence in the international intellectual property system.<sup>194</sup>

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<sup>189</sup> Venezuela, IP/C/M/29, para 201.

<sup>190</sup> Bolivia, Colombia, Ecuador, Nicaragua and Peru, IP/C/W/165.

<sup>191</sup> *International Undertaking* the precursor to the *ITPGRFA*, which was adopted on 3 November 2001 in Rome. See <[www.fao.org/biodiversity/doc\\_en.asp](http://www.fao.org/biodiversity/doc_en.asp)> accessed on 21 March 2010.

<sup>192</sup> Brazil, IP/C/W/228; Cuba, Honduras, Paraguay and Venezuela, IP/C/W/166; Indonesia, IP/C/M/36/Add 1, para 217; the African Group, IP/C/W/206, IP/C/W/163.

<sup>193</sup> The African Group, IP/C/W/404; Bolivia, Brazil, Cuba, Dominican Republic, Ecuador, India, Peru, Thailand, Venezuela, IP/C/W/403 (hereinafter Bolivia et al IP/C/W/403); China, IP/C/M/40, para 120; Ecuador, IP/C/M/30, para 184; Peru, IP/C/W/447, IP/C/M/48, para 18.

<sup>194</sup> EC, IP/C/M/35, paras. 238–239, IP/C/M/30, para 145.

(h) **Transboundary use of traditional knowledge.** Misappropriation of traditional knowledge often involves the acquisition of such knowledge in one country and the seeking of patents in other countries. Such actions may be illegal under the law of the country of origin, but nothing could be done under that law once the knowledge is being used and patented outside that jurisdiction.<sup>195</sup> Transparency and predictability in the regime of protection of traditional knowledge could be established only through international action, which could regulate the relationships between entities, persons and activities taking place in different countries.<sup>196</sup>

The concerns raised can be grouped into the following categories:

- (a) **Trade and economy** — common economic interest, equity and development
- (b) **Preservation of traditional practice and the environment** — culture, environment and food security
- (c) **Legal certainty** — transboundary use of traditional knowledge, coherence of international and national law.

These concerns are all relevant to the research question as they are at the centre of the ability to use the knowledge with the required amount of legal certainty to develop and trade globally in the agricultural commodities generated from that traditional knowledge as it is associated with genetic resources. The concerns raised crystallise the required nexus between the

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<sup>195</sup> The African Group, IP/C/W/404; Brazil, IP/C/M/46, paras 79–81, IP/C/M/37/Add 1, para 238, IP/C/M/36/Add 1, para 220; India, IP/C/M/48, para 49, IP/C/M/46, para 38, IP/C/M/45, para 25, IP/C/M/37/Add 1, para 223; Indonesia, IP/C/M/36/Add 1, para 217; Kenya, IP/C/M/42, para 114; Pakistan, IP/C/M/36/Add 1, para 211; Peru, IP/C/M/46, para 50, IP/C/M/40, para 84, IP/C/M/36/Add 1, para 203.

<sup>196</sup> Brazil and India, IP/C/W/443.

knowledge and the eventual commodity. These concerns provide some of the elements necessary for traditional knowledge to attain proprietary protection, either under the existing international proprietary rights structure or under a *sui generis* regime. The first of these required elements is a definition of traditional knowledge, or in the alternative, a list of the essential criteria that would identify the knowledge as being traditional in terms of agricultural commodities.

### ***3.2 Traditional Knowledge – A Definition of the Construction?***

There is no universally accepted definition of traditional knowledge. There are a myriad of definitions in international agreements, undertakings and conventions concerning the construction of traditional knowledge and the elements that the construction may possess. In order to obtain a perspective on the development of the construction in a formalised sense and to clarify its common elements, a brief review is necessary of the history of the development and definition of the construction from an international setting.

#### ***3.2.1 An Overview of the Development and International Recognition of the Construction***

The constructions of traditional knowledge and folklore were examined internationally in 1981 by both the United Nations Educational, Scientific and Cultural Organization and WIPO when both organisations adopted a model law on folklore to seek to enable nation states to draft legislation to protect expressions of folklore at Section Two such as tales, poetry, dances and songs, as well as tangible expressions including such products as drawings, sculptures, paintings

and musical instruments.<sup>197</sup> This was the first formal recognition by international multilateral organisations of the constructions and an attempt to provide a legal mechanism to protect one of these constructions at a national state level.

In 1989 the FAO of the United Nations released its *International Undertaking* with an acknowledgement of the conceptual construction of Farmers' Rights in Resolution 5/89 which stated:

Farmers' Rights means rights arising from the past, present and future contributions of farmers in conserving, improving and making available plant genetic resources, particularly those in the centres of origin/diversity. These rights are vested in the International Community, as trustee for present and future generations of farmers, for the purpose of ensuring full benefits to farmers, and supporting the continuation of their contributions, as well as the attainment of the overall purposes of the International Undertaking.<sup>198</sup>

The *International Undertaking* was the first formal introduction and recognition of the conceptual construction of Farmers' Rights and it gave an endorsement of the construction to ensure that farmers were engaged in the continuation of the development of plant genetic resources and the sharing of any benefits that might accrue from this development. This endorsement recognised that the farmers in developing countries provided the bulk of the plant genetic resources for agriculture that would be the subject of future development,<sup>199</sup> particularly given the knowledge possessed was in nature.

This formal introduction and acknowledgement of the conceptual construction of Farmers' Rights by WIPO, the United Nations Educational, Scientific and Cultural Organization and the

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<sup>197</sup> UNESCO & WIPO, *Model Provisions for National Laws on the Protection of Expressions of Folklore Against Illicit Exploitation and Other Prejudicial Actions*, (1985) <<http://www.wipo.int/tk/en/documents/pdf/1982-folklore-model-prvisions.pdf>> accessed on 10 January 2011.

<sup>198</sup> Food and Agriculture Organization (FAO), *Report on the Commission on Plant Genetic Resources*, 3<sup>rd</sup> Session Rome 17–21 April 1989 <<ftp://ftp.fao.org/docrep/fao/meeting/015/aj401e.pdf>> accessed on 11 January 2011.

<sup>199</sup> *Ibid.*

FAO of the United Nations was followed in 1992 by the *CBD* which further endorsed the conceptual constructions and linked them to the need to protect traditional knowledge by stating in Article 8(j) that each contracting party to the *CBD* should:

Subject to its national legislation, 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 utilization of such knowledge, innovations and practices.<sup>200</sup>

Given the endorsement of the equitable sharing of benefits in the above Article, the *CBD* also set out in Article 15 principles to govern the access to genetic resources, which stated:

1. Recognizing the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation.
2. Each Contracting Party shall endeavour to create conditions to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties and not to impose restrictions that run counter to the objectives of this Convention.
3. For the purpose of this Convention, the genetic resources being provided by a Contracting Party, as referred to in this Article and Articles 16 and 19, are only those that are provided by Contracting Parties that are countries of origin of such resources or by the Parties that have acquired the genetic resources in accordance with this Convention.
4. Access, where granted, shall be on mutually agreed terms and subject to the provisions of this Article.
5. Access to genetic resources shall be subject to prior informed consent of the Contracting Party providing such resources, unless otherwise determined by that Party.
6. Each Contracting Party shall endeavour to develop and carry out scientific research based on genetic resources provided by other Contracting Parties with the full participation of, and where possible in, such Contracting Parties.
7. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, and in accordance with Articles 16 and 19 and, where necessary, through the financial mechanism established by Articles 20 and 21 with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources. Such sharing shall be upon mutually agreed terms.<sup>201</sup>

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<sup>200</sup> *CBD* art 8j <<http://www.biodiv.org/convention/articles.asp>> accessed on 10 January 2011.

<sup>201</sup> *Ibid* art 15 <<http://www.cbd.int/convention/articles/?a=cbd-15>> accessed on 20 January 2011.

Articles 16 and 19 of the *CBD* refer to the access to and the transfer of technology associated with genetic resources and the handling of biotechnology and the distribution of its benefits respectively. Both of these articles seek to establish mechanisms whereby the access to and the use of any developed technology concerning genetic resources remain open without impediment to all contracting parties of the *CBD*, particularly those communities covered by Article 8(j). These mechanisms would all be subject to the ability of each contracting party to the *CBD* to do so within their domestic jurisdictional frameworks, given the *CBD* recognises the sovereignty each contracting party has 'over their own biological resources.'<sup>202</sup>

Further development of the construction can be evidenced in the United Nations Declaration on the Rights of Indigenous Peoples which stated at Article 31 (1) that:

Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions.<sup>203</sup>

Against this backdrop of growing international recognition and endorsement of the conceptual construction of traditional knowledge, debate as to the actual definition of this concept to obtain an agreed definition or at best an agreed list of the characteristics of the construction continued. It is important to note at this juncture that the terms 'traditional knowledge', 'indigenous knowledge', 'traditional environmental knowledge', 'indigenous environmental knowledge', 'traditional ecological knowledge', 'indigenous technical knowledge' and

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<sup>202</sup> Ibid preamble <<http://www.cbd.int/convention/articles/?a=cbd-00>> accessed on 20 January 2011.

<sup>203</sup> *Declaration on the Rights of Indigenous Peoples*, Res 61/295, adopted by the General Assembly at the 107<sup>th</sup> Plenary Meeting, 13 September 2007, 11 <[http://www.un.org/esa/secdev/unpfii/documents/DRIPS\\_en.pdf](http://www.un.org/esa/secdev/unpfii/documents/DRIPS_en.pdf)> accessed on 21 January 2011.

'knowledge of indigenous peoples and local communities' are often used interchangeably in the literature, with the only distinction being made between these descriptors of the one construction and 'folklore'. This latter construction is used to include expressions of culture such as music, signs and symbols, names, storytelling or narratives, art, handicrafts, designs, architectural forms and performances. These expressions of folklore or technical cultural expressions are seen as being 'integral to the cultural and social identities of indigenous and local communities as they embody know-how and skills, and they transmit core values and beliefs.'<sup>204</sup> This construction of technical cultural expressions or expressions of folklore will not be considered here as the construction is able to be differentiated from traditional knowledge as an identifiable individual construction. These technical cultural expressions are not linked to the broader construction of traditional knowledge and its association with genetic resources utilised to construct agricultural commodities for the purpose of international trade. This is not to seek to isolate folklore, but merely to recognise that it is linked to traditional knowledge but still able to be characterised and defined as a different conceptual construction and outside the scope of the research question.

### ***3.2.2 A Definition of the Conceptual Construction of Traditional Knowledge***

The first recognition of the construction of traditional knowledge came in the World Conservation Strategy of 1980 with the note at paragraph 10 that stated:

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<sup>204</sup> Definition of Traditional Cultural Expressions (expressions of folklore) by WIPO accessed at <<http://www.wipo.int/tk/en/folklore/>> on 20 December 2011.

Rural communities often have profound and detailed knowledge of the ecosystems and species with which they are in contact and effective ways of ensuring that they are used sustainably.<sup>205</sup>

This initial discussion of the construction sought to link the traditional knowledge with the environment in which communities resided and detailed it as a systematic process of understanding and utilising that environment.

In 1987 the United Nations World Commission on Environment and Development also recognised the construction of traditional knowledge with a note at paragraph 18 stating:

Traditional social systems recognized some aspects of this interdependence and enforced community control over agricultural practices and traditional rights relating to water, forests, and land. This enforcement of the 'common interest' did not necessarily impede growth and expansion though it may have limited the acceptance and diffusion of technical innovations.<sup>206</sup>

This further emphasised the linkages between traditional knowledge and the environment, specifically agricultural practices and innovation utilised by indigenous peoples and communities living in a traditional society.

In 1994 the Director-General of the United Nations Educational, Scientific and Cultural Organization, Federico Mayor, defined traditional knowledge:

The indigenous people of the world possess an immense knowledge of their environments, based on centuries of living close to nature. Living in and from the richness and variety of complex ecosystems, they have an understanding of the properties of plants and animals, the functioning of ecosystems and the techniques for using and managing them that is particular and often detailed. In rural communities in developing countries, locally occurring species are relied on for many – sometimes all – foods, medicines, fuel, building materials and other products. Equally, people's

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<sup>205</sup> IUCN, *World Conservation Strategy: Living Resource Conservation for Sustainable Development*, International Union for Conservation of Nature and Natural Resources (IUCN) 1980 48 <<http://www.data.iucn.org/dbtw-wpd/edocs/wcs-004.pdf>> accessed on 29 January 2011.

<sup>206</sup> United Nations World Commission on Environment and Development, *Our Common Future: Report of the World Commission on Environment and Development* presented to the General Assembly of the United Nations as an Annex to document A/42/427 Ch 2: Towards Sustainable Development 1987 para 18 <<http://www.un-documents.net/ocf-02.htm#l>> accessed on 27 January 2011.

knowledge and perceptions of the environment, and their relationships with it, are often important elements of cultural identity.<sup>207</sup>

Again, one of the main elements of traditional knowledge was seen as the ability to interact with the environment in which the community resided in a systematic manner.

The Beverly and Qamanirjuaq Co-operative Management Board, an entity established in Canada for the preservation of Caribou, stated that traditional ecological knowledge:

... is generally defined as the body of knowledge built up by a group of people through generations of living in close contact with nature. It includes a system of classification, empirical observations about the local environment, and certain rules and views that affect resource use.<sup>208</sup>

This specific definition also emphasised the systematic methodology of traditional knowledge and its ability to develop a regulatory structure for the use of the natural environment.

The CBD in an explanatory paper stated that:

Traditional knowledge refers to the knowledge, innovations and practices of indigenous and local communities around the world. Developed from experience gained over the centuries and adapted to the local culture and environment, traditional knowledge is transmitted orally from generation to generation. It tends to be collectively owned and takes the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices, including the development of plant species and animal breeds. Traditional knowledge is mainly of a practical nature, particularly in such fields as agriculture, fisheries, health, horticulture, and forestry.<sup>209</sup>

The CBD sought to categorise the use of traditional knowledge in terms of a systematic approach to the management of the natural environment for specific purposes that would benefit indigenous peoples and communities residing within the environment and the strong linkages that traditional knowledge had to cultural identity.

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<sup>207</sup> Native Science Organisation, *What is traditional knowledge?* <[http://www.nativescience.org/html/traditional\\_knowledge.html](http://www.nativescience.org/html/traditional_knowledge.html)> accessed on 28 January 2011.

<sup>208</sup> Beverly and Qamanirjuaq Caribou, *Management Board Management Plan – Part II Action Plans November 1996*, 13 <<http://www.arctic-caribou.com/PDF/actionplans.pdf>> accessed on 21 January 2011.

<sup>209</sup> CBD 'What is traditional knowledge?' <<http://www.biodiv.org/programmes/socio-eco/traditional/default.asp>> accessed on 13 March 2011.

Given these definitions of the construction and the strong linkages of traditional knowledge to the environment in which indigenous peoples and communities reside, it would be prudent to establish a set of characteristics or elements for traditional knowledge or traditional ecological knowledge from which to then measure the relevance of this construction to the research question, particularly the linkages to agricultural commodities generated from genetic resources for the purposes of trade.

### ***3.3 Traditional Knowledge — A List of Characteristics***

A Canadian anthropologist, Martha Johnson, compared Traditional Ecological Knowledge (TEK) to Western science in order to identify some of the characteristics of the construction.

Her list included:

- TEK is recorded and transmitted through oral tradition (often through stories); Western science employs the written word.
- TEK is learned through observation and hands-on experience; Western science is taught and learned in a situation usually abstracted from the applied context.
- TEK is based on the understanding that the elements of matter (earth, air, fire, and water), which are classified as inanimate, also have a life force. All parts of the natural world — plant, animal, and inanimate element — are therefore infused with spirit.
- TEK does not view human life as superior to other animate and inanimate elements: all life-forms have kinship and are interdependent. Unlike Western science, humans are not given the inherent right to control and exploit nature for their own interests at the expense of other life-forms.

- TEK is holistic; Western science is reductionist. Western science deliberately breaks down data into smaller elements to understand whole and complex phenomena. For TEK, all elements of matter are viewed as interconnected and cannot be understood in isolation.
- TEK is intuitive in its mode of thinking; Western science is analytical. Intuitive thought emphasises emotional involvement and subjective certainty of understanding.
- Analytical thought emphasises abstract reasoning and the need to separate oneself from that being observed and to learn about it through various replicable measurements.
- TEK is mainly qualitative; Western science is mainly quantitative. In TEK, detailed qualitative knowledge about wildlife is gained through ongoing intimate contact with the resource. Aboriginal harvesters are more concerned with trends, such as whether a population is increasing or decreasing, than with actual numbers. The indigenous system makes population predictions based on detailed behavioural observations and the principle of harvesting at a level in accordance with individual and community needs. Western scientists gather quantitative information to build mathematical models of population dynamics. The models are then used to calculate sustainable yields for the resource. The yields are then recommended for implementation to decision-makers as wildlife harvest regulations.
- TEK 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.
- TEK is based on diachronic data (long time series of information on one locality); Western science is largely based on synchronic data (short time series over a large area).

- TEK is rooted in a social context that sees the world in terms of social and spiritual relations between all life-forms. Relations are based on reciprocity and obligations toward both community members and other life-forms and communal resource management institutions are based on shared knowledge and meaning. Western science is hierarchically organised and vertically compartmentalised. Managers become distinct from harvesters; authority becomes centralised and flows from the top down. The environment is reduced to conceptually discrete components that are managed separately.
- TEK explanations of environmental phenomena are often spiritual and based on cumulative, collective experience. It is checked, validated, and revised daily and seasonally through the annual cycle of activities. In direct contrast, Western science employs methods of generating, testing, and verifying hypotheses and establishes theories and general laws as its explanatory basis.<sup>210</sup>

The work of Johnson in identifying the characteristics of traditional knowledge has been valuable, particularly the key characteristic of the collective nature of traditional knowledge and its contextual linkages to the environment in which indigenous peoples and communities reside. This has been further refined in other arenas to give prominence to the point that the complexity of the communal nature of the knowledge makes it impossible to distinguish a particular individual as the creator of the knowledge.<sup>211</sup>

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<sup>210</sup> M Johnson (ed), *LORE: Capturing Traditional Environmental Knowledge* (Dene Cultural Institute and International Development Research Centre, 1992) 6–7 <<http://www.mtnforum.org/sites/default/files/pub/1418.pdf>> accessed on 24 January 2012.

<sup>211</sup> World Intellectual Property Organization, *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) <<http://www.wipo.int/tk/en/tk/ffm/report/final/pdf/part1.pdf>> accessed on 13 October 2011.

However, the other characteristics identified by Johnson are based on the assumption that traditional societies and communities can be identified as discreet non-interacting societal systems. This is not a reasonable assumption to hold as all societies interact with others and transfer or exchange their knowledge to enhance their way of life. From the work of Johnson, it is interesting to note that traditional knowledge is a systematic mechanism for ordering the environment within which communities live, but the question that needs to be posed is whether traditional knowledge is time bound or lifestyle bound to 'local communities embodying traditional lifestyles'<sup>212</sup> as suggested by the CBD.

These two questions seek to determine the nature of traditional knowledge as knowledge that is predominately old given that it is passed, usually orally, from one generation to the next. With the passing of this knowledge comes some incremental refinement and addition as nuances to the existing knowledge are added by the people handing down the knowledge to the next generation, rather than vast leaps forward with new knowledge. This shows the adaptive nature of traditional knowledge in that it '... is dynamic in nature and changes its character as the needs of the people change.'<sup>213</sup> This adaptive and dynamic nature of traditional knowledge is also recognition of the application of intellectual effort of indigenous peoples and local communities

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<sup>212</sup> CBD art 8(j) <<http://www.cbd.int/convention/articles/?a=cbd-8>> accessed on 20 January 2011.

<sup>213</sup> J Mugabe, 'Intellectual Property Protection and Traditional Knowledge: An Exploration in International Policy Discourse' 4. Panel Discussion Paper provided to WIPO <<http://www.wipo.int/tk/en/hr/panrldiscussion/papers/pdf/mugabe.pdf>> accessed on 20 November 2011.

that has enabled them to interact harmoniously with the environment in which they live throughout each generation and contribute to modern society.<sup>214</sup>

These two questions concerning the nature of traditional knowledge in terms of the construction of time were addressed by Roy Ellen and Holly Harris in an analysis which sought to crudely determine the characteristics of traditional knowledge using the definition of

[L]ocal *environmental* knowledge (knowledge of plants, animals, soils and other natural components) with *practical* applications, rather than the more encompassing sense of IK associated with environmental philosophies or world-views, or even ITK (indigenous technical knowledge) in its wider sense.<sup>215</sup>

They determined that the characteristics of Indigenous Knowledge (IK) or traditional knowledge were:

1. IK is local: it is rooted to a particular place and set of experiences, and generated by people living in those places. The corollary of this is that transferring that knowledge to other places runs the risk of, quite literally, dis-locating it.
2. IK is orally-transmitted, or transmitted through imitation and demonstration. The corollary is that writing it down changes some of its fundamental properties. Writing, of course, also makes it more portable and permanent, reinforcing the dislocation referred to in 1.
3. IK is the consequence of practical engagement in everyday life, and is constantly reinforced by experience and trial and error. This experience is characteristically the product of many generations of intelligent reasoning, and since its failure has immediate consequences for the lives of its practitioners its success is very often a good measure of Darwinian fitness.
4. 1 and 3 support a further general observation, that it is empirical rather than theoretical knowledge. To some extent, its oral character hinders the kind of organisation necessary for the development of true theoretical knowledge.
5. Repetition is a defining characteristic of tradition even when new knowledge is added. Repetition (redundancy) aids retention and reinforces ideas; it is also partly a consequence of 1 and 2.

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<sup>214</sup> M Ruiz, *The International Debate on Traditional Knowledge as Prior Art in the Patent System: Issues and Options for Developing Countries*, Center for International Environmental Law, October 2002, 3  
<[http://www.ciel.org/Publications/PriorArt\\_ManuelRuiz\\_Oct02.pdf](http://www.ciel.org/Publications/PriorArt_ManuelRuiz_Oct02.pdf)> accessed on 21 November 2011.

<sup>215</sup> R Ellen and H Harris, *Concepts of indigenous environmental knowledge in scientific and development studies literature – A critical assessment*, University of Kent at Canterbury, Draft Paper for the East-West Environmental Linkages Network Workshop 3, Canterbury 8–10 May 1996, 1  
<[http://lucy.ukc.ac.uk/Rainforest/SML\\_files/Occpap/indigknow.occpap\\_1.html#Section0](http://lucy.ukc.ac.uk/Rainforest/SML_files/Occpap/indigknow.occpap_1.html#Section0)> accessed on 20 December 2011.

6. Tradition is 'a fluid and transforming agent with no real end' when applied to knowledge; negotiation is a central concept. IK is, therefore, constantly changing, being produced as well as reproduced, discovered as well as lost; though it is often represented as being somehow static.
7. IK is characteristically shared to a much greater degree than other forms of knowledge, including global science. This is why it is sometimes called 'people's science', an appellation which also arises from its generation in contexts of everyday production. However, its distribution is still segmentary, that is socially clustered. It is usually asymmetrically distributed within a population, by gender and age, for example, and preserved through distribution in the memories of different individuals. Specialists may exist by virtue of experience, but also by virtue of ritual or political authority.
8. Although IK may be focussed on particular individuals and may achieve a degree of coherence in rituals and other symbolic constructs, its distribution is always fragmentary: it does not exist in its totality in any one place or individual. Indeed, to a considerable extent it is devolved not in individuals at all, but in the practices and interactions in which people themselves engage.
9. Despite claims for the existence of culture-wide (indeed universal) abstract classifications of knowledge based on non-functional criteria where IK is at its densest and directly applicable its organisation is essentially functional.
10. IK is characteristically situated within broader cultural traditions; separating the technical from the non-technical, the rational from the non-rational is problematic.<sup>216</sup>

From this list and utilising the other explanations and analysis of the construction of traditional knowledge, it would seem prudent to identify the characteristics or nature or elements of traditional knowledge that will be used for the research question. This would provide a contextual framework with which the traditional knowledge and agricultural commodification of genetic resources can be analysed. It would also provide the ability to determine what level of proprietary protection could be made available to traditional knowledge in that context. This could either be within the existing proprietary protection framework or through other means such as a *sui generis* system.

Given this, the nature of traditional knowledge and its characteristics that will be utilised to address the research question: *'Can traditional knowledge be characterised to give it the required level of certainty to recognise it as a legal construction? And are we able to then apply*

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<sup>216</sup> Ibid 5–7 <[http://lucy.ukc.ac.uk/Rainforest/SML\\_files/Occpap/indigknow.occpap\\_5.html](http://lucy.ukc.ac.uk/Rainforest/SML_files/Occpap/indigknow.occpap_5.html)> accessed on 20 December 2011.

*proprietary protection to that knowledge when it is used to develop agricultural commodities for international trade?’ are:*

1. Traditional knowledge is a systematic method of understanding and engaging with the environment in which indigenous peoples and communities live.
2. Traditional knowledge is based in time in the sense that it has a history that is passed onto and added to by each subsequent generation in an oral manner.
3. Traditional knowledge cannot be identified as belonging to an individual person as it is communally held in a guardianship manner for the benefit of current and future generations.
4. Traditional knowledge is used by indigenous peoples and communities to undertake specific activities such as farming, where genetic resources are developed and cultivated for the purposes of food and the preservation of biological diversity.
5. Traditional knowledge while held in a communal manner can be identified as being held by discreet groups of indigenous peoples and communities, with the exception of shared traditional knowledge concerning transboundary resources used for the cultivation of agricultural commodities and the preservation of biological diversity.
6. Traditional knowledge is practical in its application and primarily developed as a means of survival within the environment that indigenous peoples and communities lived.
7. Traditional knowledge is geographically based given it is dependent on the interaction with the local environment of indigenous peoples and communities.
8. Traditional knowledge is dynamic in an incremental manner as is the development of Western science.

9. Traditional knowledge is repetitive in its use and development.

10. Traditional knowledge is qualitatively based on the experience of indigenous peoples and communities of their environment.

Using these characteristics, traditional knowledge of agricultural practices such as cultivation, crossing of varieties to form new ones, companion cultivation and different uses of the harvested crop for purposes of either food or medicinal use, are all linked to the genetic resources utilised to produce agricultural commodities. However, some of this traditional knowledge is already within the public domain given the wealth of sociological research that has been conducted.

The next issue that requires attention is the extent to which this traditional knowledge that is within the public domain can be identified as belonging to a particular group of indigenous peoples and communities and whether the placing of that knowledge within the public domain occurred with their consent. This dimension will be considered in Part Three when the ability to protect traditional knowledge using either the existing proprietary framework or another means such as a *sui generis* system will be considered.



## **PART TWO: THE EXISTING LEGAL FRAMEWORK**

## ***Section Four: The Current Intellectual Property Rights Legal Paradigm***

The research question: *'Can traditional knowledge be characterised to give it the required level of certainty to recognise it as a legal construction? And are we able to then apply proprietary protection to that knowledge when it is used to develop agricultural commodities for international trade?'* requires an examination of the proprietary rights framework at both a domestic and international jurisdictional level to ascertain the opportunity for traditional knowledge to be afforded proprietary protection and the impact that such protection would have on the continued development and supply of agricultural commodities in the course of international trade. In order to achieve this analysis, the current proprietary rights schematic will be detailed and then applied to the research question. As each element of the proprietary rights schematic is detailed, it will be applied to the research question to achieve a comprehensive analysis of both the opportunities available within the existing schematic for the capacity of each form of proprietary protection to include traditional knowledge and the impact that such protection would have on the developed and developing agricultural commodities.

### ***4.1 The Existing Global Legal Schematic for Intellectual Property***

The legal landscape in which the right to access and use biological resources for commodification purposes is the space occupied by proprietary rights at both a domestic and international level that offers protection to the holder of the right to the exclusion of all others. This proprietary right can be varied by contract between the initial holder of the proprietary rights and the other contracting parties to enable either the transference of the existing proprietary right, the licencing for the use and acknowledgement of the proprietary right or the

establishment of the future holder of proprietary rights created from the contractual obligations. The other mechanism by which this proprietary right entitlement can be varied is through the use of international agreements that may seek to confer proprietary rights to signatory parties. This proprietary rights structure involves all forms of protection for the rights holder, whether they are under copyright, trademarks, patents, design or varietal plant protection, or a combination of these and other proprietary protection measures. These measures are designed to protect the creations of the mind such as inventions, literary and artistic works, and symbols, names, images, and designs used in commerce.<sup>217</sup> The protection is granted to the identified legal entity (e.g. natural person, company, or corporation) responsible for the creation, unless this is varied to allow the proprietary right to be conferred or transferred to others.

Traditionally, the forms of protection offered were generally divided into two categories: intellectual property, which included copyright afforded to authors of literary works, and industrial property, which included patents and trademarks. This distinctive historical division is evidenced by the initial international protection regimes developed by the 1886 Berne Convention for the Protection of Literary and Artistic Works (the Berne Convention)<sup>218</sup> and the 1883 International Convention for the Protection of Industrial Property (the Paris Convention).<sup>219</sup> The Berne Convention gave protection to the authors of literary and artistic works through

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<sup>217</sup> World Intellectual Property Organization, *What is intellectual property?* <<http://www.wipo.int/about-ip/en/>> accessed on 1 July 2009.

<sup>218</sup> *Berne Convention for the Protection of Literary and Artistic Works*, signed 9 September 1886, I-4757 (entered into force 4 May 1896) ('*Berne Convention*').

<sup>219</sup> M Rafiqul Islam, above n 46, 278.

copyright of the material representation of the intellectual expressions of the creator or author.

This granted a set of rights to the author that prevented the intellectual expressions being reproduced in a material form without consent as stipulated by Articles 1–21. Moral rights, which view the artistic or literary work as a reflection of the creator’s personality and create a linkage through the creator’s name as a representation of this personality, were added to the *Berne Convention* in Article 6 *bis*. The *Paris Convention* granted a set of rights to the inventor in the form of trademarks and service marks. These marks were applied to the industrial goods to denote them as being created by a particular entity. Using marks as protection was based on a system of registration, with the marks only being enforceable in the jurisdictions in which they were registered. The *Paris Convention* provides such a registration in all member countries for these marks.

From this distinctive base, the breadth of intellectual proprietary protection has expanded to include all new forms which are represented in a variety of material forms, in keeping with advancements in technology.

The listed forms of protection are globally recognised at law, both within international and domestic jurisdictions, with some slight variances when jurisdictions are compared. Each set of proprietary rights attaching to the form of protection allows the rights holder the ability to exploit the protected intangible concept exclusively. These measures were developed to both protect the original creative ideas and to facilitate further development within the mantle of protection. It meant that development, including the ensuing investment of time and finance, could and would continue without fear of theft or misappropriation and misrepresentation.

Globally this protection is administered by the regime governed by WIPO.<sup>220</sup> WIPO has two main goals: firstly to promote the development of intellectual property globally, and secondly to ensure administrative cooperation between the intellectual property unions created by the treaties that WIPO administers.<sup>221</sup>

The *WIPO Convention* creates no obligations on Member States towards the numerous treaties that WIPO administers. WIPO is an intergovernmental organisation that seeks to promote its two goals through four significant activities. These activities are:

- (a) The setting of norms and standards for the protection and enforcement of intellectual property rights through the conclusion of international treaties. These are known as WIPO's normative activities.
- (b) Provision of legal technical assistance to Member States concerning intellectual property. These are known as WIPO's program activities.
- (c) Promoting the cooperation between industrial property offices concerning patents, trademarks and industrial design documentation. These are known as WIPO's international classification and standardisation activities.
- (d) The provision of services concerning international applications for patents relating to inventions and the processes of the registration of international marks and industrial designs. These are known as WIPO's registration activities.<sup>222</sup>

WIPO as an organisation is the prime international body for the advancement of intellectual property, whether that is in an administrative or technical form, through the continued discussion and advancement of intellectual protection classification and registration. It endeavours to undertake these tasks through one of its three main organs of operation under its charter concerning the goods and services that the intellectual property takes in its material form.

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<sup>220</sup> The *WIPO Convention* established in 1967 WIPO to promote the protection of intellectual property through the cooperation and collaboration of member states. The *WIPO Convention* charges these member states with the duty to collaborate with other international organisations on the issue of intellectual property.

<sup>221</sup> WIPO administers 24 different treaties related to intellectual property.

<sup>222</sup> Accessed at <[http://www.wipo.int/treaties/en/convention/summary\\_wipo\\_convention.html](http://www.wipo.int/treaties/en/convention/summary_wipo_convention.html)> on May 21 2010.

Interfaced with this, mainly when these commodities are placed in the channels of commerce, is trade law, primarily governed by the *WTO Agreement* and *GATT* and related agreements. The *WTO Agreement* has as its central tenet the achievement of global economic development through open and free trade. The *GATT Agreement* is a multilateral inter-nation state agreement to provide a framework for private transnational trade.<sup>223</sup> Together these two agreements are the principal source of multilateral trade law for all Member countries of the WTO and provide a set of common trade rules for all trade in goods and services. This includes agricultural commodities generated from biological resources.

*WTO*, as one of its objectives, seeks to

achieve global trade liberalisation through progressive tariff cut commitments and wide market-opening agreements on goods and services, and protection to the *Agreement on Trade-Related Aspects of Intellectual Property Rights* including Trade in Counterfeit Goods (*TRIPS*), providing increased predictability and security for all WTO members.<sup>224</sup>

*WTO* also seeks to 'usher in a balanced and integrated global trading partnership between all WTO members, by conferring differential yet more favourable treatment for developing countries, and special attention to the least developed countries and the net food-importing countries'.<sup>225</sup> These net food-importing countries are those nation states that rely on the commercial imports of basic foodstuffs from external sources, and receive food aid and financial assistance under the various food aid programs that are operated by developed nation states.

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<sup>223</sup> World Trade Organization, *The Legal Texts: The Results of the Uruguay Round of Multilateral Trade Negotiations*, (Cambridge University Press, 2000), ii–v.

<sup>224</sup> M Rafiqul Islam, above n 46, 5.

<sup>225</sup> *Ibid.*

At present, sixty-four developing countries are eligible as net food-importing countries as stated by the WTO Committee on Agriculture.<sup>226</sup>

Under *WTO*, the main agreement covering the intellectual property associated with the goods and services is *TRIPS*. Trade-related intellectual property is product-specific forms of creativity of commercial value in the marketplace that is able to be traded. This protection survives the sale of the product and has its own independent value which is the subject of the protection. This protection is given to the idea or the knowledge that is given a material form in the product that is produced for trade.<sup>227</sup>

This interface is also embellished by the various bilateral and regional preferred trade agreements, sometimes also known as closer economic partnerships, which all contain chapters on intellectual property rights and obligations for the signatory nation states. These preferred trade agreements confer exclusive rights over the use and marketing of the products and processes that result from the use of the intellectual property. This certainty at trade provides considerable attractiveness for investors seeking an economic gain for their investment on a global market.

These free trade or preferred trade agreements can be between two or more countries to link the economies of the signatories in legally binding agreements that seek to liberalise trade between the signatories. This allows for liberalised access to the markets of signatories for all

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<sup>226</sup> WTO Press Brief: 'Measures Concerning the Possible Negative Effects of the Uruguay Round Agricultural Reform Programme on Least Developed and Net Food-Importing Developing Countries'  
<[http://www.wto.org/English/theWTO\\_e/minist\\_e/min96\\_e/netfood.htm](http://www.wto.org/English/theWTO_e/minist_e/min96_e/netfood.htm)> accessed on 20 May 2010.

<sup>227</sup> M Rafiqul Islam, above n 46, 378–382.

goods and services and promotes investment certainty. These agreements will also contain chapters dealing with amongst other matters, intellectual property, government procurement and competition policy.

These free trade agreements are usually signed with existing trading partners and emerging trading partners who possess markets of growing interest and value. For instance, Australia has presently signed six such trade agreements: with New Zealand, the United States of America, Singapore, Chile and the Association of Southeast Asian Nations (ASEAN). These six trade agreements comprise 28 per cent of Australia's total trade.<sup>228</sup> Australia is currently negotiating a further nine such agreements with nations such as China, Japan, the Republic of South Korea, Malaysia and the nations involved in the Trans-Pacific Partnership. These nations account for a further 44 per cent of Australia's total trade.<sup>229</sup>

Across the Tasman Sea, New Zealand, one of Australia's trading partners, has presently signed eight free trade agreements with nations such as Australia, China, Malaysia, Singapore and Thailand. There are also seven new free trade agreements currently being negotiated with nations including the Republic of South Korea, India and Russia.<sup>230</sup>

These agreements are then underpinned by the real property legislative framework of each source country for biological resources, the point at which access and exploitation rights are determined. This domestic legal base provides a framework for the accession and exploitation

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<sup>228</sup> Department of Foreign Affairs and Trade, *Australia's Free Trade Agreements* <<http://www.dfat.gov.au/fta/>> accessed on 10 October 2011

<sup>229</sup> Ibid.

<sup>230</sup> Ministry of Foreign Affairs and Trade, *Trade Relationships and Agreements* <<http://www.mfat.govt.nz/Trade-and-Economic-Relations/2-Trade-Relationships-and-Agreements/index.php>> accessed on 10 October 2011.

of all biological resources that form the basis of traded goods. The domestic property framework also attempts to embrace the dynamic between the knowledge of the inventor and the traditional knowledge of the indigenous people of the domestic nation state. Each domestic jurisdiction imposes specific obligations and rights concerning the use of the biological resources for the purposes of commodification. Some also impose further restrictions by way of obligation concerning the use of attached traditional knowledge.<sup>231</sup>

This space is also cross-cut with the myriad of agreements concerning environmental law, with most domestic legislative regimes being devolved from the international schematic of the United Nations environmental agreements, particularly the *CBD*. This creates a diverse suite of legally enforceable rights to the exclusion of all others, even those who hold traditional knowledge associated with the biological resources that form the basis of the commodity, unless there is a domestic protection of this knowledge in the source country of the biological resource.

In order to analyse this legal landscape, each component of the current structure requires examination to determine the subject of the protection, the scope of the protection and the enforceability of the protection available for the base units of plant and animal genetic resources utilised to produce agricultural goods able to be traded in international channels of commerce. This level of protection can be at the initial stage of production, for instance the analogue derivative of the genetic resource, or at various stages of production of the

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<sup>231</sup> In Australia the use of biological resources is governed by legislation that also seeks to regulate the use of traditional knowledge when it attaches to the commodification of these resources. This legislation is the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

agricultural goods through to the protection of the final marketable good. This will enable a greater discussion of the interface between the global system and that of the domestic jurisdiction where commodities are traded for commercial gain. The specific environment of agricultural commodities afforded proprietary protection will then be able to be examined.

The issue of the associated traditional knowledge to the biological resources forming the basis of the agricultural commodities that are the subject of the protection will be examined briefly here as an issue of legal technicality, with a more detailed examination of the construction of the concept in the next section. This detailed examination will look at the construction itself and the possibilities for protection.

#### ***4.2 Proprietary Rights – The Global Regime and Genetic Resources Protection***

The intellectual proprietary rights legal paradigm at an international level is governed by the WTO's *TRIPS Agreement*, the various agreements under WIPO<sup>232</sup> and a vast array of bilateral and regional trade agreements with intellectual property rights obligations. This schematic is the overarching framework by which intellectual proprietary rights are governed for all goods and services. As stated, WIPO was established as a forum for the advancement of intellectual proprietary protection and development in conjunction with the advancement of invention and creativity. The WTO's *TRIPS Agreement*, however, sought to place intellectual proprietary protection as specified in the agreements governed by WIPO within the space of international trade in goods and services. This specifies the purpose of the development being protected as

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<sup>232</sup> There are 24 treaties administered by WIPO under three general headings: intellectual property protection, global protection system and classification. These broad headings cover all of the international agreements relating to the type, form, function and scope of protection.

commercialisation of the invention for the purpose of financial gain by means of trade between nation states. Given this, it also sought to promote the continued development of ingenuity within a sphere of confidence for both the inventor and the investor. But what are the objectives of *TRIPS* and what is the matter that is covered by this global intellectual property regime? How does the regime afforded to Farmers' Rights fit this WIPO paradigm?

#### **4.2.1 Farmers' Rights – the 'Unofficial Intellectual Property Right'?**

This concept is one that has caused consternation amongst those negotiating many of the international trade or conservation agreements, as the conceptual technical splintering of Farmers' Rights was one that recognised the contribution of farmers to the expanding plant gene pool for the purpose of the continued management and advancement of agrobiodiversity. Farmers' Rights were seen as one mechanism to ensure that the developments undertaken by farmers, particularly indigenous subsistence farmers and their communities, in plant breeding and conservation for the purpose of the improved use of agrobiodiversity in the present and in the future, were recognised by nation states.<sup>233</sup>

In this declaration from the United Nations FAO, Farmers' Rights were defined as arising from the past, present and future contributions of farmers in conserving, improving and making plant genetic resources available. This was like a type of intellectual property rights protection for farmers who continually developed cropping varieties for the benefit of their communities. This can be seen in two types of forms: firstly, the identification by the farmer of mutants within the cropping varieties or the active selection by the farmer of various traits in cropping varieties

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<sup>233</sup> Report of the Conference of FAO, *Farmers' Rights*, Res 5/89, 25<sup>th</sup> sess Rome, 11–29 November 1989, Document C89/REP 29 November 1989.

similar to the breeding selections that a plant breeder would make; and secondly, the decisions that a community, particularly subsistence ones, would make as a collective to the overt development of particular germplasm.<sup>234</sup>

These two instances permit the farmers to retain and deal with, either by way of exchange or internal community sharing, the seeds and plant germplasm for the future generation of crops. The ability to utilise farm-saved seed is often termed ‘farmer’s privilege’, and is usually cited in regard to traditional indigenous communities or traditional cropping practices of communities.<sup>235</sup>

The concept of Farmers’ Rights is recognised in the *ITPGRFA* at Article 9 which states:

9.1 The Contracting Parties recognize the enormous contribution that the local and indigenous communities and farmers of all regions of the world, particularly those in the centres of origin and crop diversity, have made and will continue to make for the conservation and development of plant genetic resources which constitute the basis of food and agriculture production throughout the world.

9.2 The Contracting Parties agree that the responsibility for realizing Farmers’ Rights, as they relate to plant genetic resources for food and agriculture, rests with national governments. In accordance with their needs and priorities, each Contracting Party should, as appropriate, and subject to its national legislation, take measures to protect and promote Farmers’ Rights, including:

- (a) protection of traditional knowledge relevant to plant genetic resources for food and agriculture;
- (b) the right to equitably participate in sharing benefits arising from the utilization of plant genetic resources for food and agriculture; and
- (c) the right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of plant genetic resources for food and agriculture.

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<sup>234</sup> B Greengrass, ‘UPOV and Farmers’ Rights’ in M S Swaminathan (ed), *Agro-biodiversity and Farmers’ Rights* (Konark, 1996) 50–53.

<sup>235</sup> This is noted in the *CBD* in the preambular paragraphs at page 2 with the reference ‘Recognizing the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of sharing equitably benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components.’

9.3 Nothing in this Article shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material, subject to national law and as appropriate.<sup>236</sup>

This definition, explanation and contextual placement of the concept of Farmers' Rights into the intellectual property rights paradigm as a pseudo legal right first appeared in the United Nations *CBD*. This international agreement reduced the concept of traditional knowledge concerning agrobiodiversity to a practice, Farmers' Rights. This can be seen in Article 8 (j):

Subject to its national legislation, 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 utilization of such knowledge, innovations and practices.<sup>237</sup>

The technical legal difficulty with the recognition of Farmers' Rights as a form of intellectual property protection rests with the technical legal splits between culture and identity of the creator. This is significant as the current legal paradigm does not recognise collectively held rights by a non-legal person, a community. The enshrining of some forms of protection in international conventions and agreements provides some movement in the law, but falls short of the formal legal recognition that indigenous communities would require. This can be altered at national domestic law by nation state governments legislating the level of protection that Farmers' Rights will be afforded within the national jurisdictional boundaries.

However, given that this construction is now recognised at international law as a practice, rather than a formal right, it needs to be included in the considerations of the existing legal paradigms.

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<sup>236</sup> *ITPGRFA* art 9.

<sup>237</sup> *CBD* art 8(j).

In terms of plant genetic resources utilised to generate agricultural commodities for the purposes of trade, Farmers' Rights provides an element of protection for the conservation of plant genetic material that seeks to maintain the existing biodiversity of a specific geographical area. Domestic legislative recognition of the importance of this function allows the practice to continue for this purpose and for the maintenance of a certain genetic food base for the inhabitants of the geographical area where traditional farming practices are undertaken. In the current schematic, Farmers' Rights remain an essential mechanism to maintain both traditional farming practices and continue to provide a sound genetic base for future use.

The research question raises the issue of affording the construction of Farmers' Rights greater protection in the intellectual property schematic. At present, the domestic protection afforded to the construction is mirrored in the *ITPGRFA* but is not formally afforded the level of legal certainty that can be obtained through other forms of protection such as Plant Varietal Protection under *UPOV* or through patents. Even with the protection afforded by the *ITPGRFA*, a benefit flow is established for a share in the commercialisation of the plant genetic resources that are afforded Farmers' Rights protection through the provision of implemented programs for farmers from the financial mechanism established by the *ITPGRFA*<sup>238</sup>. This allows both environmental protection concerning biodiversity and economic benefit concerning commercialisation to be preserved.

Given this level of existing protection of both environmental and economic benefit, the degree to which the determination of the characteristic and quantity of the economic benefit comes

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<sup>238</sup> *ITPGRFA* art 18.5.

into question. Under the present schematic the determination as to the share of the economic benefit is restricted to the implementation of the *ITPGRFA* and does not allow any proprietary right claim to be brought by those holding Farmers' Rights over the plant genetic material, nor does it prevent the utilisation of the other existing proprietary rights protection frameworks by a third party. This lack of legal certainty over the future use of those plant genetic resources afforded Farmers' Rights protection is at the heart of the fundamental issue — how can future use and availability of the plant genetic resources be legally guaranteed if proprietary rights protection is granted? This can be undertaken to some extent through the process established in the *ITPGRFA* but it could also entail the payment of royalties by the users of the plant genetic resources if they are afforded plant varietal protection or patent protection.

This was examined in Sections Five and Eight when the construction of traditional knowledge and the possible levels of protection that it may be afforded are considered.

#### **4.2.2 The TRIPS Agreement**

The objectives of the *TRIPS Agreement* can be isolated into three tranches which are embedded in the commercialisation of the intellectual idea for the purposes of trade. The first tranche is the promotion of technological innovation which aims to both induce and protect investment in the advancement of technologically based research and development for commercialisation purposes. The second tranche relates to the sharing or transfer of the emerging technology to developing countries to enable them to increase their productivity and increase their economic

growth. The final tranche is the contribution that is made to the mutual benefit of the owners and users of this new technology.<sup>239</sup>

The specific provisions that must be provided by each nation state member concerning the minimum standards of protection within the eight sections of the *TRIPS Agreement* are detailed in Part II of the Agreement. These include:

- (a) Copyright and related rights covering the means of expression of the ideas rather than the ideas themselves<sup>240</sup> and excluding moral rights covered under Article 6 *bis* of the *Berne Convention*<sup>241</sup>
- (b) Trademarks that are registered, with the rights only able to be exercised by the holder of the mark in the jurisdiction of registration.<sup>242</sup> Jurisdictional registration is necessary for trademark protection in each nation state, except in the European Union where a single registration process operates for all members. International recognition of the registered marks can be obtained through WIPO under the 1989 Protocol to the *Madrid Agreement Concerning the International Registration of Marks* 1981.<sup>243</sup>
- (c) Geographical indicators (GIs), which denote the geographical location of the good by stating the country or region of origin of a good, provide recognition similar to that of a known

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<sup>239</sup> *TRIPS* art 3.2.5.

<sup>240</sup> *Ibid* art 9.

<sup>241</sup> A Dietz, 'The Moral Rights of the Author: Moral Rights and Civil Law Countries' (1995) 19/199 *Columbia Journal of Law and Arts* 213.

<sup>242</sup> M Rafiqul Islam, above n 46, 390.

<sup>243</sup> *Ibid*. *Madrid System for the International Registration of Marks*, signed 27 June 1989, I-11852 (entered into force 1 December 1995).

trademark. One of the best known examples of a GI is French 'Champagne'.<sup>244</sup> These GIs have been incorporated into the *TRIPS Agreement* from the *Paris Convention*.

- (d) Industrial designs, being the creative applied artworks that have commercial and industrial value, such as the schematics for a wind turbine, are also protected under Articles 25 and 26.<sup>245</sup>
- (e) Patents, for both the processes of production and the invention, involving an inventive step that is capable of industrial application are protected under Article 27(1).<sup>246</sup> This protection is available in the jurisdictions in which the patent has been granted under domestic law, with the *PCT* assisting in the administrative processes for each jurisdiction to enable effective global protection.
- (f) Topographies of integrated circuits, more commonly known as layout-designs, are also afforded protection under Articles 35 to 38.<sup>247</sup> This protection, through a licencing agreement for the payment of royalties, covers the unauthorised importation, selling and distribution for commercial purposes of these designs for specified periods without the consent of the registered owner.
- (g) Undisclosed information, such as data provided to government agencies as part of a regime of information provision for safety reasons relating to the use of the product (for instance,

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<sup>244</sup> J Armistead, 'Whose Cheese is it Anyway? Correctly Slicing the European Regulation Concerning Protections for Geographical Indications' (2000) 10(1) *Transnational Law and Contemporary Problems* 307.

<sup>245</sup> *TRIPS* art 25(1) – (2) Industrial Designs, *TRIPS* art 26 (1)–(3) Protection.

<sup>246</sup> *Ibid* art 27(1).

<sup>247</sup> *Ibid* art 35–38.

agricultural or veterinary chemicals) is protected to ensure that there is no unfair commercial use or competitive advantage. This protection is granted under Article 39 which does not preclude disclosure for the protection of public health.<sup>248</sup>

The matter that is the subject of the protection under the intellectual property rights contained in the *TRIPS Agreement* is the creative idea or knowledge that is then given a material form in a product or its constituent parts. The legal form that this protection takes ranges from the traditional core rights of copyright, patents and trademarks to the newer rights of design, circuits, confidentiality agreements and PBR. This range of protection was contemplated in the drafting of the *WIPO Convention* in Article 2 (viii) as the rights relating to:

[L]iterary, artistic and scientific works; performances of performing artist, phonograms and broadcasts; inventions in all fields of human endeavour; scientific discoveries; industrial designs; trademarks, service marks and commercial names and designations; protection against unfair competition; and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields.<sup>249</sup>

From this initial conception of intellectual property rights in terms of biological resources, PBR became enshrined in the *UPOV Convention* and later this was extended in the *ITPGRFA* to include commodities generated solely for the purpose of agricultural production. The legal construction of PBR was also included in the contemplation of the United Nations *CBD*.<sup>250</sup> However, the legal landscape became more intricate with the availability of scientific

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<sup>248</sup> Ibid art 39.

<sup>249</sup> *WIPO Convention* art 2(viii) <[http://www.wipo.int/treaties/en/convention/trtdocs\\_wo029.html#P50\\_1504](http://www.wipo.int/treaties/en/convention/trtdocs_wo029.html#P50_1504)> accessed on 13 March 2009.

<sup>250</sup> United Nations *CBD*, Relationship with Other International Conventions, Article 22(1) 'The provisions of this Convention shall not affect the rights and obligations of any contracting party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity.' *UPOV*, the main international convention enshrining plant breeders' rights falls into the contemplation and scope of this provision.

advancement and the ability to protect analogue derivatives<sup>251</sup> of the genetic components utilising patents as the domestic and global vehicle.

In relation to the research question plant and animal genetic resources, but not microorganisms, and the biological processes for producing them can be excluded from proprietary rights protection by signatory countries under *TRIPS*. These signatory nations are required under *TRIPS* to provide for the provision of proprietary protection for plant genetic resources whether that is through a *sui generis* system of plant variety protection or through the registration of patents.

*TRIPS* has raised several issues for developing countries and countries in economic transition in terms of the objectives of Article 7 (the contribution to technology transfer), Article 23 (the extension of the GIs protection from wines and spirits to all other GIs), Article 27.3(B) (the extent to which proprietary protection should be granted to living forms such as microorganisms and the obligation to provide proprietary protection for plant genetic resources), and Article 31 (the limitations on conditions that are stipulated for the issuing of compulsory licences). The impact of these will be considered in terms of the types of proprietary protection available to be granted.

In order to examine the proprietary protection offered to biological resources by the current legal schematic, particularly the obligations under *TRIPS*, the elements of the PBR registration system, patents and the law of copyright require explanation.

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<sup>251</sup> 'A structural derivative of a parent compound that often differs from it by a single element' that is usually mapped as a DNA profile, from Webster's New World Dictionary <<http://www.yourdictionary.com/analogue>> accessed on date 14 March 2009.

### **4.2.3 Plant Breeder's Rights (PBR)**

Under *UPOV*, a breeder is granted a monopoly right to produce, condition, sell or import stock or offers to deal in propagating material for distinctive, uniform and stable plant varieties which have not been previously offered or exploited.<sup>252</sup> This is usually known as 'PBR' (Plant Breeder's Rights) or 'PVR' (Plant Varietal Rights) in domestic legislation seeking to give effect to the *UPOV Convention*. It is important to note that this protection is afforded to the registered breeder of the new plant variety regardless of the method of breeding; whether it be through conventional back-crossing to perpetuate various desired traits (shape, colour, fragrance, size, uniformity), or through genetic manipulation often termed biotechnology in which the active gene traits are isolated and then combined to evolve the new variety. This use of biotechnology can also isolate a desired trait within the variety, such as shape or colour, and reproduce it with certainty throughout the new variety. The PBR or PVR protection rests on a system of registration that allows the holder of the right to licence the variety to another breeder for commercial propagation, either through the use of root stock or tissue culture provided by the right holder. This licence is usually collected in the form of a royalty based on the number of unit sales of the seeds, seedlings or cells provided.

In order to register a new variety, the breeder must meet the threshold test which is contained in the source country legislation. The Australian *Plant Breeder's Rights Act 1994* in Section 43 provides that a plant variety is able to be registered if:

(a) The variety has a breeder

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<sup>252</sup> *UPOV* ch5 covers The Rights of the Breeder; *UPOV* art 14 covers the Scope of the Breeder's Right.

- (b) The variety is distinct
- (c) The variety is uniform
- (d) The variety is stable and
- (e) The variety has not been exploited or has only recently been exploited.<sup>253</sup>

These registration requirements for a new variety ensure that unstable or one-off plant propagations do not receive protection, particularly given that plants will naturally mutate spontaneously. This, however, is not the case in Canada where PBR legislation allows the protection of asexually propagated ornamentals, which are largely one-off plants.<sup>254</sup> The varieties given protection must be able to mutate successfully or be maintained in a stable form by the breeder.

The elements of each component of registration are further defined in Section 43 as:

For the purposes of this section, a plant variety is distinct if it is clearly distinguishable from any other variety whose existence is a matter of common knowledge.

For the purposes of this section, a plant variety is uniform if, subject to the variation that may be expected from the particular features of its propagation, it is uniform in its relevant characteristics on propagation.

For the purposes of this section, a plant variety is stable if its relevant characteristics remain unchanged after repeated propagation.

For the purposes of this section, a plant variety is taken not to have been exploited if, at the date of lodging the application for PBR in the variety, plant material of the variety has not been sold to another person by, or with the consent of, the breeder.

For the purposes of this section, a plant variety is taken to have been only recently exploited if, at the date of lodging the application for PBR in the variety, plant material of the variety has not been sold to another person by, or with the consent of, the breeder, either:

- (a) in Australia—more than one year before that date; or

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<sup>253</sup> *Plant Breeder's Rights Act 1994* (Cth) s 43(1) <<http://www.comlaw.gov.au/Series/C2004AO4783>> accessed on 21 March 2009.

<sup>254</sup> *Plant Breeders' Rights Act, SC 1990*, c 20, s 14(3) <<http://laws-lois.justice.gc.ca/eng/acts/P-14.6/page-5.html#h-7>> accessed on 21 March 2009.

- (b) in the territory of another contracting party:
  - (i) in the case of trees or vines—more than 6 years before that date; or
  - (ii) in any other case—more than 4 years before that date.<sup>255</sup>

This articulation of the elements of registration is mirrored in the domestic provisions of New Zealand in Article 10(2)(d) of the *Plant Variety Rights Act (No 5) 1987*<sup>256</sup>, Canada in Section 4(2) of the *Plant Breeders' Rights Act 1990*<sup>257</sup> and the United States of America in Section 42(a)(2)–(4) of the *Plant Variety Protection Act and Regulations and Rules of Practice 1987*<sup>258</sup>. These provisions are the domestic embodiment of each nation states obligations concerning the elements of registration of plant varieties for protection as parties to the *UPOV Convention*.

The rights granted as a result of the registration process to the breeder are also reasonably uniform across the four domestic jurisdictions<sup>259</sup> and embody the domestic nation states

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<sup>255</sup> *Plant Breeder's Rights Act 1994* (Cth) s 43(2) –(6)

<sup>256</sup> This provision states that a variety is able to be registered and subject to protection if the Commissioner is satisfied that the 'variety is new, distinct, homogeneous, and stable'. *Plant Variety Rights Act (No 5) 1987* (NZ) art 10(2)(d).

<sup>257</sup> *Plant Breeder's Rights Act SC 1990*, c 20 at Section 4(2) states:

- (2) A plant variety is a new variety if it
  - (a) is, by reason of one or more identifiable characteristics, clearly distinguishable from all varieties the existence of which is a matter of common knowledge at the effective date of application for the grant of the plant breeder's rights respecting that plant variety;
  - (b) is stable in its essential characteristics in that after repeated reproduction or propagation or, where the applicant has defined a particular cycle of reproduction or multiplication, at the end of each cycle, remains true to its description; and
  - (c) is, having regard to the particular features of its sexual reproduction or vegetative propagation, a sufficiently homogeneous variety.

<sup>258</sup> *Plant Variety Protection Act and Regulations and Rules of Practice 1987* at Section 42 states:

- (2) distinct, in the sense that the variety is clearly distinguishable from any other variety the existence of which is publicly known or a matter of common knowledge at the time of the filing of the application;
- (3) uniform, in the sense that any variations are describable, predictable, and commercially acceptable; and
- (4) stable, in the sense that the variety, when reproduced, will remain unchanged with regard to the essential and distinctive characteristics of the variety with a reasonable degree of reliability commensurate with that of varieties of the same category in which the same breeding method is employed.

<sup>259</sup> United States of America, *Plant Variety Protection Act and Regulations and Rules of Practice 1987*, 7 USC § 2483a(1); Canada, *Plant Breeder's Rights Act SC 1990*, c 20 s 5(1); New Zealand, *Plant Variety Rights Act (No 5) 1987* (NZ) s 17(1); Australia, *Plant Breeder's Rights Act 1994* (Cth) s 11.

obligations under *UPOV* to provide exclusive rights to the plant breeder for the propagation, reproduction, importation, exportation or distribution for sale of the plant variety.

This exclusive right does not extend to all varieties derived from the registered variety as this would significantly impede or provide a disincentive to further innovation. However, some aspects of the PBR legislation can extend the protection to cover all products of the plant variety. This is primarily used to address instances where the protected material is used to produce other material that can be harvested from the propagated material, such as grain being grown into wheat and then harvested to make bread.

The extent to which this protection could be exhausted was examined in Australia in *Cultivaust Pty Ltd v Grain Pool Pty Ltd*.<sup>260</sup> This case involved the Western Australian Grain Board exporting barley for malting, with some of the seed being purchased from or under licence from the holder of the PBR protection, with other seed being farm-saved seed of either first or subsequent generations. Barley as a grain is a propagating material and the product of the harvest of a propagating material. The variety dealt with by the Western Australian Grain Board was the subject of PBR protection.

This case examined the doctrine of exhaustion<sup>261</sup> contained in the *Plant Breeder's Rights Act* and the farm-saved seed defence to the breach of PBR<sup>262</sup>. The doctrine of exhaustion is normally

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<sup>260</sup> *Cultivaust Pty Ltd v Grain Pool Pty Ltd* [2004] FCA 683.

<sup>261</sup> *Plant Breeder's Rights Act 1994* (Cth) Section 23, which states:

- (1) PBR granted in a plant variety does not extend to any act referred to in section 11:
  - (a) in relation to propagating material of the variety; or
  - (b) in relation to propagating material of any essentially derived variety or dependent plant variety; that takes place after the propagating material has been sold by the grantee or with the grantee's consent unless that act:

applied to the holder of the PBR in the terms of the right being exhausted once the propagated or reproduced material has been sold, either with the right holder's express consent or directly by the right holder themselves. This doctrine therefore dictates that the rights of the owners of intellectual property do not extend to enable control over uses of material objects embodying the intellectual property.<sup>263</sup> In terms of PBR, this would allow the purchaser of the reproduced material to on-sell, condition, import or stock the material but not reproduce it. The purchaser may only export the material to a nation state that has PBR protection and the objective of the exportation is for the final consumption of the material. The only exemption to this doctrine is

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(c) involves further production or reproduction of the material;

or

(d) involves the export of the material:

(i) to a country that does not provide PBR in relation to the variety; and

(ii) for a purpose other than final consumption.

(2) If:

(a) a plant variety is declared to be an essentially derived variety of another plant variety (the *initial variety*); and

(b) PBR in the essentially derived variety is held both by the grantee of PBR in the essentially derived variety and by the grantee of PBR in the initial variety; the reference in subsection (1) to propagating material sold by the grantee or with the grantee's consent is a reference to propagating material sold by, or with the consent of, both of the grantees referred to in paragraph (b).

(3) If, under subsection 18(1), equitable remuneration is paid, or arranged to be paid, to the grantee of PBR in a plant variety in respect of an act (the *first act*) in relation to propagating material of that variety before the person does the act, PBR in that variety does not extend to any later act (the *later act*) referred to in section 11 in relation to that propagating material unless the later act:

(a) involves the further production or reproduction of that propagating material; or

(b) involves the export of the material:

(i) to a country that does not provide PBR in relation to the variety; and

(ii) for a purpose other than final consumption.

(4) To avoid doubt, nothing in subsection (1) or (3) prevents the exercise of the rights of the grantee of PBR in a plant variety in relation to any propagating material of that variety that is obtained by reproduction of the propagating material to which that subsection applies.

<sup>262</sup> Ibid.

<sup>263</sup> Jeremy F DeBeer and Robert J Tomkowicz, 'Exhaustion of Intellectual Property Rights in Canada' (2009) 25(3) *Canadian Intellectual Property Review* 3. Available at <<http://ssrn.com/abstract=1636425>> accessed on 1 July 2010.

the use of licencing by the right holder which allows a reach through to the ensuing use and a flow of benefit.<sup>264</sup>

In *Cultivaust Pty Ltd v Grain Pool Pty Ltd* the matter was the exportation of barley for malting purposes by the Western Australian Grain Board. This export consignment comprised barley from various sources including barley harvested from first and subsequent generation farm-saved seed. The other sources of the barley were from propagated material that had been harvested and from barley purchased from the right holder, either directly or under licence. Here, barley as a grain is a propagating material (a genetic resource) and the product of the harvest of a propagating material (a commodity) giving it a dual personality. This duality is a common feature of plant genetic resources.

The Western Australian Grain Board declined to pay royalties to the holder of the PBR concerning the harvest of the barley from the use of farm-saved seed. The Western Australian Grain Board asserted its right to reproduce farm-saved seed for use as food, a food ingredient or fuel as contained in Section 18 of the *Plant Breeder's Rights Act*.

In this case, Mansfield J made the assumption that propagating material which was harvested from second or subsequent generation farm-saved seed could not have been sold and was therefore not subject to the doctrine of exhaustion. This was a curious assumption given the farmer had originally purchased the seed and then kept the harvest from which the second and

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<sup>264</sup> Ibid.

third generation crops were cultivated which was within their statutory right under Section 17.<sup>265</sup>

In Canada in the case of *Monsanto Canada Inc v Schmeiser*<sup>266</sup> the Supreme Court considered the doctrine of exhaustion in terms of genetically modified seed. Monsanto had developed a genetically modified canola seed that was patented as an herbicide-resistant transgenic canola. This seed was only sold under licence to purchasers who had to sign a contract stipulating that they would not use this seed as part of farm-saved seed<sup>267</sup>. Monsanto had learned that, Percy Schmeiser, a Saskatchewan farmer, had some of the patented genes in his canola crop. They accused him of making, using, and selling its patented herbicide-resistant transgenic canola without a licence. He had never purchased any of Monsanto's canola seed, but had followed his usual practice of planting farm-saved seed from his past harvests. In order to offer an explanation as to how the patented genes entered his crop, Schmeiser stated that the genes may have been spread by wind or insects and then evolved as his crop grew naturally to

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<sup>265</sup> *Plant Breeder's Rights Act 1994 (Cth) s 17.*

Conditioning and use of farm-saved seed does not infringe PBR

(1) If:

(a) a person engaged in farming activities legitimately obtains propagating material of a plant variety covered by PBR either by purchase or by previous operation of this section, for use in such activities; and

(b) the plant variety is not included within a taxon declared under subsection (2) to be a taxon to which this subsection does not apply; and

(c) the person subsequently harvests further propagating material from plants grown from that first-mentioned propagating material;

the PBR is not infringed by:

(d) the conditioning of so much of that further propagating material as is required for the person's use for reproductive purposes; or

(e) the reproduction of that further propagating material.

<sup>266</sup> *Monsanto Canada Inc v Schmeiser* [2004] SCC 34.

<sup>267</sup> *Ibid* para 11.

harvest. Schmeiser was stating that he did not create the patented trait gene in the crop, but that this gene had naturally cultivated itself with his farm-saved generational crop.

The Supreme Court concurred that he had not infringed Section 42 of the *Patent Act 1985*<sup>268</sup> in that he had not made, created or constructed the gene, the expression vector, a plant transformation vector, or plant cells into which the chimeric gene had been inserted.<sup>269</sup> This decision basically ignored the doctrine of exhaustion and settled the matter on the basis of patent infringement.

The doctrine of exhaustion has posed a significant challenge for some jurisdictions, with it being limited to some particular proprietary rights protections such as copyright, and being removed from consideration in others.<sup>270</sup> This doctrine will continue to evolve in terms of genetic resources, particularly as the technology to extract specific trait genes and mutate them in future propagations is already afoot.

PBRs are often perceived as a weakened form of patent protection, given that they permit the simultaneous breeding activities in the private sector while allowing commercial production of a protected variety.<sup>271</sup> PBRs are seen as a tool to stimulate continued private sector research into plant breeding activities for the development of new varieties of plants while providing an

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<sup>268</sup> *Patent Act 1985* RSC.

<sup>269</sup> *Ibid* para 26.

<sup>270</sup> For example this is limited to copyright in the United States of America as outlined by the Supreme Court in *Kirtsaeng v John Wiley & Sons Inc* (11-697) 654 F 3d.

<sup>271</sup> K Bosselmann, 'Plants and Politics: The International Legal Regime Concerning Biotechnology and Biodiversity' (1996) 7 *Colorado Journal International Environmental* 111.

advantage for the ingenuity of plant breeders who have obtained protection.<sup>272</sup> While PBRs are seen as a quasi-patent, they miss the salient point that they are a mechanism that both protects ingenuity and inspires continued development for the further expansion of the plant genetic breeding base. Fortunately, this point was not lost when the *ITPGRFA* was negotiated.<sup>273</sup>

In relation to the research question PBR proprietary protection gives an effective *sui generis* system of protection to distinct plant varieties that both encourages further plant breeding in the pursuit of newer varieties while still permitting the use of those varieties already protected. The most common form of PBR proprietary protection is that available under *UPOV*, where a certificate outlining the varietal protection can be issued to ensure that the commercial advantages attaching to the development of new plant varieties remain with the registered breeder. This permits the use of these protected varieties by other breeders as long as the requirements of acknowledgement and royalty payments are followed. This is in accordance with the obligations of signatory nations to *TRIPS* concerning Article 27.3(b) to provide protection for plant genetic resources, with each signatory nation making a determination as to what proprietary protection, if any, microorganisms should have.

This later point has caused some developing countries and countries in economic transition to question the use of PBR proprietary protection as a mechanism to restrict the access to these

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<sup>272</sup> U Menon, 'Designing a Regime of Access to Genetic Resources: Beyond the Popular Logic of Farmers' Rights and Breeders' Rights' (1997) in International Plant Genetic Resources Institute (ed) *Ethics and Equity in Conservation and Use of Genetic Resources for Sustainable Food Security* (proceedings of a workshop to develop guidelines for the CGIAR, 21-25 April 1997 Foz do Iguacu Brazil, International Plant Genetic Resources Institute, Rome).

<sup>273</sup> The multilateral system that is the basis of the *ITPGRFA* seeks to recompense plant breeders with existing proprietary protection while still incentivising new breeders to further develop protected varieties for the continuation of the development of the various varieties. This incentivisation adds to the future development and expansion of the plant genetic resource base for both food and ornamental security.

varieties for future use or breeding through the obligation to remit a financial benefit to the registered breeder. This has raised the issue of Article 7 of *TRIPS* concerning technology transfer where proprietary protection should provide a contribution to the ‘transfer and dissemination of technology’. Article 7 states:

The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations.

This creates an obligation for the signatory nations to *TRIPS* to encourage the promotion of the dissemination of the available technological advancements including the international transfer of that technological knowledge as stipulated in Article 8.2. This Article seeks to prevent the misuse of proprietary protection to prevent such technological transfers by stating:

Appropriate measures, provided that they are consistent with the provisions of this Agreement, may be needed to prevent the abuse of intellectual property rights by right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology.

To further strengthen this obligation, Article 40.1–40.2 specifies:

1. Members agree that some licensing practices or conditions pertaining to intellectual property rights which restrain competition may have adverse effects on trade and may impede the transfer and dissemination of technology.
2. Nothing in this Agreement shall prevent Members from specifying in their legislation licensing practices or conditions that may in particular cases constitute an abuse of intellectual property rights having an adverse effect on competition in the relevant market. As provided above, a Member may adopt, consistently with the other provisions of this Agreement, appropriate measures to prevent or control such practices, which may include for example exclusive grantback conditions, conditions preventing challenges to validity and coercive package licensing, in the light of the relevant laws and regulations of that Member.

This permits individual signatory nations to domestically enact provisions within their own intellectual proprietary protection legislative framework to counter practices that would be seen as restrictive or abusive in terms of technology transfer and dissemination. The obligation to ensure that such practices are controlled within the domestic jurisdiction rests with individual

signatory nations. The extent to which each signatory nation performs this obligation is not uniform and may well be dependent upon other factors such as available infrastructure to enact the provisions or the political capacity to undertake such action from a public policy perspective. Some signatory nations to *TRIPS* have justified their inaction by stating that the system of plant varietal protection is one that is commercially driven from a model of farming prevalent in developed countries rather than as a mechanism to provide an incentive for further advancement.<sup>274</sup>

#### **4.2.4 Patents**

Patents grant a monopoly right to the holder to exploit the 'patentable invention', that being the registered invention, either solely in a domestic nation state jurisdiction or together with a multi-jurisdictional patent for the term of the registered protection<sup>275</sup>. The latter is filed under the *PCT* which will effect an application in the domestic jurisdictions of the contracting party Member States to the *PCT* simultaneously rather than requiring individual applications for each nation state domestic jurisdiction. Each contracting party nation state will then grant the patent protection under the international application if all required criteria are met. This is the closest level of protection to a world or international patent at this point in the development of intellectual property law.

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<sup>274</sup> J Van Wijk. and W Jaffé, *Impact of Plant Breeders Rights in Developing Countries* (Inter-American Institute for Cooperation on Agriculture and University of Amsterdam, 1995).

<sup>275</sup> Domestic nation state jurisdictions will have different periods of time for the monopoly protection. A global registration will confer the level of monopoly protection for use in all nation states for a specific time period.

The patent can be for a process or for a product and must fulfil certain criteria for registration.

These criteria generally include that it must:

- be of practical use
- show an element of novelty, a new characteristic that is not contained in prior art (the existing body of knowledge in the field)
- be an inventive step that could not have been deduced by a person with average knowledge in the technical field and
- have subject matter that is able to be patented under law.<sup>276</sup>

The element of novelty has posed some restrictions for the ability to patent products utilising genetic resources, particularly plant genetic resources, as the knowledge of the characteristics of the plant genetic resource that is the key active ingredient in the product may well be contained in the knowledge base of indigenous people. One such example of this is the neem plant used as an insect repellent and which was subsequently permitted patent protection in the United States of America on the grounds of the development of similar products on an industrial basis.<sup>277</sup>

The prior art base is expanded when each new patent is granted as the grantee has an obligation to place the knowledge in the public domain to further increase the technical base and encourage continued innovation.<sup>278</sup> This placing of the knowledge in the public domain

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<sup>276</sup> Accessed at <[http://www.wipo.int/patentscope/en/patents\\_faq.html#patent](http://www.wipo.int/patentscope/en/patents_faq.html#patent)> on 10 July 2010.

<sup>277</sup> US Patent No 5 885 600, *Natural Insect Repellent Formula and Method of Making Same*, issued 23 March 1999.

<sup>278</sup> *Ibid.*

does not diminish it through disclosure, as such information may then be simultaneously utilised by an infinite number of entities.<sup>279</sup>

Patents were originally granted as monopoly protections to induce increased ingenuity and trade. On the surface, this appears to be a conflict between free trade or competition policy and intellectual property monopolisation. This paradox can be explained when the two are seen as complementary:

The intellectual property system serves to promote innovation, which is the key form of competition. Competition policy, by keeping markets open and effective, preserves the primary source of the pressure to innovate and diffuse innovations.<sup>280</sup>

This paradox is also explained in the preamble to the *TRIPS Agreement* and Article 7 which states the objectives of the agreement. These objectives for the promotion and enforcement of intellectual property are to contribute to:

- [T]he promotion of technological innovation and to the transfer and dissemination of technology;
- [T]he mutual advantage of producers and users of technological knowledge in a manner conducive to social and economic welfare; and
- [A] balance of rights and obligations.<sup>281</sup>

In some jurisdictions the ability to patent life forms, whether human or otherwise, has either been restricted or excluded.<sup>282</sup> Over time however, various jurisdictions have permitted the patenting of life forms. The United States of America was the first jurisdiction to allow the

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<sup>279</sup> K W Baer, 'A Theory of Intellectual Property and the Biodiversity Treaty' (1995) 21 *Syracuse Journal of International Law and Commerce* 259.

<sup>280</sup> Intellectual Property and Competition Review Committee (September 2000) *Review of Intellectual Property Legislation under the Competition Principles Agreement Final Report*, Executive Summary.

<sup>281</sup> *TRIPS* art 7.

<sup>282</sup> R S Eisenberg, 'Proprietary Rights and the Norms of Science in Biotechnology Research' (1987) 97 *Yale Law Journal* 177.

intellectual proprietary protection of life forms.<sup>283</sup> The European Union followed suit regarding the patent protection for products consisting of or containing biological material or processes by which biological material is produced, processed or used.<sup>284</sup>

This demonstrates the prominence of the patentability of biological material whether from the treatment of human intervention or the creation of nature,<sup>285</sup> particularly when those attributed to nature's creation have been excluded on a traditional basis from patentability.<sup>286</sup> Given this, there has been a significant drive to have genetically engineered life forms, whether plants or animals, covered by the protection of patent law.<sup>287</sup>

However, the element of novelty in patent protection for plant genetic resources has been a significant impediment to proprietary protection, particularly if the knowledge has a communal basis that has been utilised over time and in several geographical locations raising the issue of identifying the owner of the exclusive nature of the development<sup>288</sup>. This can be seen in the use of neem-based products for insecticide control as the Indian Central Insecticide Board denied registration to neem-based products under the 1968 Insecticide Act<sup>289</sup> given that such products had been in extensive use in communities for generations. Such an application that was sought

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<sup>283</sup> *Diamond v Chakrabarty* 447 US 303 (1980).

<sup>284</sup> *Directive 98/44/EC of the European Parliament and of the Council on the Legal Protection of Biotechnological Inventions*, 6 July 1998 [1998] OJ L 213, art 3.

<sup>285</sup> I Walden, 'Preserving Biodiversity: The Role of Property Rights' in T. Swanson (ed), *Intellectual Property Rights and Biodiversity Conservation* (Cambridge University Press, 1995) 176.

<sup>286</sup> R S Eisenberg, above n 282.

<sup>287</sup> J H Barton, 'The Biodiversity Convention and the Flow of Scientific Information' in K E Hoagland and A Y Rossman (eds), *Global Genetic Resources: Access, Ownership and Intellectual Property Rights* (Association of Systematic Collections, 1997), 51.

<sup>288</sup> C D Jacoby and C Weiss, 'Recognizing Property Rights in Traditional Biocultural Contribution', (1997) 16 *Stanford Environmental Law Journal* 74.

<sup>289</sup> *Insecticides Act 1968* [46 of 1986, Dt 2-9-1968].

in the United States for various neem-based products on an industrial and commercial basis was successful<sup>290</sup>.

An interesting example of a patent being challenged on both biopiracy and novelty grounds is that of the Enola bean, a yellow coloured bean seed originating from a common Mexican genus.

### **Case study: Enola Bean**

The utility patent application under United States of America Patent Law No 5,984,079 in 1996 and issued in 1999 for a yellow bean, the 'Enola Bean', has been one of the most controversial patent applications for what has been termed a 'common eating bean'. This bean is also the subject of a Plant Variety Protection Certificate under United States law issued in 1999. The latter is akin to a PBR protection for the exclusive use of the variety, with the general exceptions contained in *UPOV*.<sup>291</sup>

The application was made by Larry Proctor, Director of Pod-NERS, a Colorado company working in the bean industry, after he had visited Mexico and obtained some yellow bean seeds in 1994<sup>292</sup>. Larry Proctor cultivated these seeds and through a traditional selective breeding process developed a variety that had a consistent yellow colour and shape. He called this the 'Enola bean'. This variety, named after his wife, is a descendant of the Mexican bean found in the Andes, the Mayacoba.<sup>293</sup> The patented Enola bean seed is more uniform in size and colour

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<sup>290</sup> US Patent No 5 885 600, *Natural Insect Repellant Formula and Method of Making Same*, issue 23 March 1999.

<sup>291</sup> C Nottenburg, *The Enola Bean Controversy* (24 February 2009) Harvest Choice <<http://harvestchoice.org/files/Enola%20Beanpdf>> accessed on 21 October 2011.

<sup>292</sup> D Goldberg, *Jack and the Enola Bean* (December 2003) <<http://www1.american.edu/TED/enols-bean.htm>> accessed on 19 October 2011.

<sup>293</sup> *Ibid.*

under natural light, giving a distinct yellow colour when viewed than the original parent plant located in the Andes.<sup>294</sup>

As a result of the granted patent protection, Pod-NERS are able to collect royalties on all propagations of the variety, whether they are propagated in the United States of America and then sold on the domestic market, or propagated off-shore and then imported into the United States of America for sale on the domestic market. This includes yellow beans imported into the United States of America from Mexico.<sup>295</sup>

The utility patent issued in 1999 was the subject of challenge on the grounds of existing prior art and on not demonstrating the required element of novelty for a new variety. This challenge was mounted by ETC Group, a non-government organisation based in Canada who submitted a request for re-examination, along with the International Center for Tropical Agriculture (CIAT) a partner member of the Consultative Group on International Agricultural Research (CGIAR).

On re-examination the patent was found to be defective on two fronts. Firstly, there was an existing publication that disclosed a field bean with similar characteristics to those of the Enola bean as submitted by Proctor in the original application. The genetic characteristics of the variety were already known in an existing variety. Secondly, the patent application failed a number of administrative technical issues that had been added to the process since the original

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<sup>294</sup> Nottenburg, above n 284, 79.

<sup>295</sup> Goldberg, above n 285, 80.

application was filed.<sup>296</sup> Pod-NERS appealed this decision to the Federal Circuit Court, but this was rejected by the Court *In re POD-NERS, LLC*.<sup>297</sup>

The original grant of the patent to Pod-NERS raised specific issues concerning the element of novelty for the variety. This centred on the use of traditional breeding methods which were considered to be standardised practice rather than an inventive step. The other element of novelty that was challenged was the yellow colour of the bean given that in Southern America, particularly Mexico, yellow beans were common place.<sup>298</sup>

In relation to the research question, the application of patent protection to plant and animal genetic resources utilised for the purposes of the production of agricultural commodities raises some issues for the nations in which such protection is available. The use of a patent is the highest form of proprietary protection available as it allows the rights holder to assert a monopoly over the subject of the proprietary protection, the genetic resource.

The private commercial sector is the greatest holder of patent proprietary protection for genetic resources utilised for the production of agricultural commodities, with plant genetic resources being the subject of the majority of patent applications. Staple grain food crops have been the target of most patent applications concerning plant genetic material with rice production patents being of particular interest. In the United States of America the number of patents

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<sup>296</sup> Nottenburg, above n 291, 79.

<sup>297</sup> *In re POD-NERS, L.L.C.*, (Fed. Cir. 10 July 2009) (No. 2008-1492) accessed at <<http://docs.justia.com/cases/federal/appellate-courts/cafc/08-1492/08-1492-2011-03-27.pdf?1301278543>> on 15 February 2012.

<sup>298</sup> *Ibid.*

issued on an annual basis has climbed from less than one hundred in 1995 to over six hundred in 2000.<sup>299</sup>

The use of patents for the proprietary protection of genetic material utilised for the production of agricultural commodities in the area of plant genetic resources has seen a consolidation in the commercial sector of the holdings of several multinational corporations. This consolidation has been undertaken to both protect ongoing research and development while increasing the global market share for the products produced as a result of the patents. This is evident in both developed and developing countries, with the United States of America-based companies such as Syngenta and Monsanto by 1999 holding approximately 75 per cent of the United States of America biotechnology-issued patents for seed crops.<sup>300</sup> In Brazil, companies such as Monsanto increased their market share of the maize seed market from 0 per cent to 60 per cent between 1997 and 1999, along with companies such as Aventis who increased their market share of the seed market through acquisition of smaller Brazilian-based companies.<sup>301</sup>

This concentration of proprietary protection through the use of patents raises issues concerning access to the necessary plant genetic material by smaller farmers, particularly those operating in a traditional framework. Unless they can access the plant genetic material under the commercial terms stipulated by the companies holding the patents, they are restricted in the plant genetic base that they can cultivate. This reduction in the availability of diverse plant

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<sup>299</sup> J Barton and P Berger (2001) 'Patenting Agriculture' (2001) (Summer) *Issues in Science and Technology*, 4 <[http://www.nap.edu/issues/17.4/p\\_barton.htm](http://www.nap.edu/issues/17.4/p_barton.htm)> accessed on 10 January 2010.

<sup>300</sup> A De Janvry, G Graff, E Sadoulet and D Zilberman, *Technological Change in Agriculture and Poverty Reduction* (University of California, 2000) Concept paper for WDR on Poverty and Development 2000/2001, 6–7. <<http://www.worldbank.org/poverty/background/dejanvry.pdf>> accessed on 10 January 2011.

<sup>301</sup> Ibid.

genetic material has raised issues of equity and concerns for the protection of the biodiversity base. It may also have reduced the amount of plant genetic material available for research in some instances as developing countries may not be in a financial position to both access the necessary genetic material and then fund the research for further development. This issue has also been raised in the United States of America through the United States Department of Agriculture review of the use of proprietary protection in the agricultural area, with a comment as to 'whether the current intellectual property regime is stimulating or hampering research is unclear.'<sup>302</sup>

The effects of this type of proprietary protection on traditional communities, particularly for staple food-producing grain crops or animal genetic resources that are utilised for livestock, will be further examined in Section Five when the protection of traditional knowledge is discussed.

#### **4.2.5 Geographical Indications (GIs)**

Geographical indications (GIs) denote the region of geographical origin that the products, usually comprised of genetic resources or their derivatives, are from and denote their quality and characteristics, including their reputation<sup>303</sup>. These GIs offer protection based on the geographical origin of the product to the manufacturers or growers of the product under intellectual property law, by providing protection against false claims of origin for products placed into the channels of international trade and commerce. This protection of geographical

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<sup>302</sup> R Shoemaker, J Harwood, K Day-Rubenstein, T Dunahay, P Heisey, L Hoffman, C Klotz-Ingram, W Lin, L Mitchell, W McBride, J Fernandez-Cornejo, 'Economic Issues in Biotechnology' (2001) 762 *ERS Agriculture Information Bulletin* 36.

<sup>303</sup> World Trade Organization, *Geographical Indications* <[http://www.wto.org/eng/tratop\\_e/trips\\_e/gi\\_e.htm](http://www.wto.org/eng/tratop_e/trips_e/gi_e.htm)> accessed on 26 October 2011.

indicators was part of the *Paris Convention*, which was then incorporated into the *TRIPS Agreement*.

This protection for GIs is offered through two specific articles of the *TRIPS Agreement*, Articles 22 and 23. Article 22 provides the standard level of protection to avoid misleading of the public and unfair competition through the use of the GIs. Article 22 states:

1. Geographical indications are, for the purposes of this Agreement, indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin.
2. In respect of geographical indications, Members shall provide the legal means for interested parties to prevent:
  - (a) the use of any means in the designation or presentation of a good that indicates or suggests that the good in question originates in a geographical area other than the true place of origin in a manner which misleads the public as to the geographical origin of the good;
  - (b) any use which constitutes an act of unfair competition within the meaning of Article 10 *bis* of the Paris Convention (1967).
3. A Member shall, *ex officio* if its legislation so permits or at the request of an interested party, refuse or invalidate the registration of a trademark which contains or consists of a geographical indication with respect to goods not originating in the territory indicated, if use of the indication in the trademark for such goods in that Member is of such a nature as to mislead the public as to the true place of origin.
4. The protection under paragraphs 1, 2 and 3 shall be applicable against a geographical indication which, although literally true as to the territory, region or locality in which the goods originate, falsely represents to the public that the goods originate in another territory.<sup>304</sup>

This Article provides that the denoting of a geographical region will provide the consumer of the foods with a guarantee of specific characteristics and a certain level of quality for the product bearing the GI, for example ‘Champagne’ in relation to sparkling wine produced from the Champagne region in France or ‘Roquefort’ sheep’s cheese from the south of France.<sup>305</sup>

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<sup>304</sup> *TRIPS Agreement* Article 22.

<sup>305</sup> World Trade Organization, *Geographical Indications* <[http://www.wto.org/english/tratop\\_e/trips\\_e/gi\\_background\\_e.htm](http://www.wto.org/english/tratop_e/trips_e/gi_background_e.htm)> accessed on 26 October 2011.

This Article creates an obligation on Members of the WTO to provide legal protection to GIs applied to products, similar to trademarks, to denote the origin of the goods. This requirement entails the provision of intellectual property rights protection for goods bearing GIs in the domestic jurisdiction of Member States to prevent the misleading of the public through the misuse of GIs to denote origin, characteristics or qualities of specific products.

Article 23 provides a higher level of protection for specific products, namely wines and spirits, even if misuse would not misled the public. Article 23 of the *TRIPS Agreement* states:

1. Each Member shall provide the legal means for interested parties to prevent use of a geographical indication identifying wines for wines not originating in the place indicated by the geographical indication in question or identifying spirits for spirits not originating in the place indicated by the geographical indication in question, even where the true origin of the goods is indicated or the geographical indication is used in translation or accompanied by expressions such as “kind”, “type”, “style”, “imitation” or the like.
2. The registration of a trademark for wines which contains or consists of a geographical indication identifying wines or for spirits which contains or consists of a geographical indication identifying spirits shall be refused or invalidated, *ex officio* if a Member’s legislation so permits or at the request of an interested party, with respect to such wines or spirits not having this origin.
3. In the case of homonymous geographical indications for wines, protection shall be accorded to each indication, subject to the provisions of paragraph 4 of Article 22. Each Member shall determine the practical conditions under which the homonymous indications in question will be differentiated from each other, taking into account the need to ensure equitable treatment of the producers concerned and that consumers are not misled.
4. In order to facilitate the protection of geographical indications for wines, negotiations shall be undertaken in the Council for TRIPS concerning the establishment of a multilateral system of notification and registration of geographical indications for wines eligible for protection in those Members participating in the system.<sup>306</sup>

This Article imposes a more significant obligation on Member States to create a prohibition on the use of GIs for wines and spirits that do not originate from the specific geographical locations denoted by the GIs. This denies the use of the GI to wines and spirits not originating from that specific location, with ‘Champagne’ being the most known example in relation to white

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<sup>306</sup> *TRIPS Agreement* art 23.

sparkling wine. The term 'Champagne' cannot be used as a method description as this would be misleading, unless it is accompanied by 'Method de Champagne' on the label. This is an indicator to the consumer that while the method may mirror or be associated with the production of a product commonly known as 'Champagne', it does not originate from a specific geographical region of France. Hence, the characteristics and level of quality of a product labelled 'Method de Champagne' will not be as high as a product labelled with the GI 'Champagne' which denotes that it does originate from the specified region.

This Article also creates a multilateral register of wines and spirits that have attached GIs, to ensure that a comprehensive listing of all wines and spirits afforded protection on a GIs basis is current. This Article also seeks to prevent the registration of trademarks that incorporate a geographical place name if a recognised GI. This ensures that no misleading trademarks are utilised in relation to wines and spirits. This has caused some consternation in terms of the continuing use of GIs for products other than wines and spirits, particularly those products encompassing traditional knowledge.<sup>307</sup>

The other article in the *TRIPS Agreement* concerning GIs is Article 24 which seeks to denote the exceptions to the protection offered by GIs. This Article seeks to stipulate when the protection offered by a GI does not have to be used or where it can be limited. Article 24 states:

1. Members agree to enter into negotiations aimed at increasing the protection of individual geographical indications under Article 23. The provisions of paragraphs 4 through 8 below shall not be used by a Member to refuse to conduct negotiations or to conclude bilateral or multilateral agreements. In the context of such negotiations, Members shall be willing to consider the continued applicability of these provisions to individual geographical indications whose use was the subject of such negotiations.

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<sup>307</sup> The use of traditional knowledge attaching to genetic resources and being protected by GIs has formed part of the Doha Round of negotiations and is still as yet unresolved.

2. The Council for TRIPS shall keep under review the application of the provisions of this Section; the first such review shall take place within two years of the entry into force of the WTO Agreement. Any matter affecting the compliance with the obligations under these provisions may be drawn to the attention of the Council, which, at the request of a Member, shall consult with any Member or Members in respect of such matter in respect of which it has not been possible to find a satisfactory solution through bilateral or plurilateral consultations between the Members concerned. The Council shall take such action as may be agreed to facilitate the operation and further the objectives of this Section.
3. In implementing this Section, a Member shall not diminish the protection of geographical indications that existed in that Member immediately prior to the date of entry into force of the WTO Agreement.
4. Nothing in this Section shall require a Member to prevent continued and similar use of a particular geographical indication of another Member identifying wines or spirits in connection with goods or services by any of its nationals or domiciliaries who have used that geographical indication in a continuous manner with regard to the same or related goods or services in the territory of that Member either (a) for at least 10 years preceding 15 April 1994 or (b) in good faith preceding that date.
5. Where a trademark has been applied for or registered in good faith, or where rights to a trademark have been acquired through use in good faith either:
  - (a) before the date of application of these provisions in that Member as defined in Part VI; or
  - (b) before the geographical indication is protected in its country of origin;measures adopted to implement this Section shall not prejudice eligibility for or the validity of the registration of a trademark, or the right to use a trademark, on the basis that such a trademark is identical with, or similar to, a geographical indication.
6. Nothing in this Section shall require a Member to apply its provisions in respect of a geographical indication of any other Member with respect to goods or services for which the relevant indication is identical with the term customary in common language as the common name for such goods or services in the territory of that Member. Nothing in this Section shall require a Member to apply its provisions in respect of a geographical indication of any other Member with respect to products of the vine for which the relevant indication is identical with the customary name of a grape variety existing in the territory of that Member as of the date of entry into force of the WTO Agreement.
7. A Member may provide that any request made under this Section in connection with the use or registration of a trademark must be presented within five years after the adverse use of the protected indication has become generally known in that Member or after the date of registration of the trademark in that Member provided that the trademark has been published by that date, if such date is earlier than the date on which the adverse use became generally known in that Member, provided that the geographical indication is not used or registered in bad faith.
8. The provisions of this Section shall in no way prejudice the right of any person to use, in the course of trade, that person's name or the name of that person's predecessor in business, except where such name is used in such a manner as to mislead the public.
9. There shall be no obligation under this Agreement to protect geographical indications which are not or cease to be protected in their country of origin, or which have fallen into disuse in that country.<sup>308</sup>

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<sup>308</sup> TRIPS Agreement art 24.

This Article covers those situations where the denoting word or phrase has passed into common usage in the language base to describe a generic group of products rather than to specifically denote a product from a particular geographical region. One prime illustration of this in relation to the description afforded to cheese, such as ‘Cheddar’ as a class of cheese rather than as a product originating from Cheddar in the United Kingdom.<sup>309</sup> This Article, under Article 24(2) also provides for a period of review for the GI to ensure that no generic terms are captured by active protection of a GI once the term has passed into common language usage to denote a particular class of products that have been processed.

Examples of GIs can be located around the globe, with the majority sitting in the northern hemisphere.<sup>310</sup> Some such products bearing well known GIs are ‘Kentucky Bourbon’, ‘Idaho Potatoes’, ‘Tennessee Whiskey’, ‘Basmati Rice’, ‘Smirnoff Vodka’, ‘Kimchi’ from South Korea, ‘Parmesan Cheese’, ‘Grappa’ from Italy, ‘Florida Oranges’, ‘Tequila’ from Mexico and ‘Canadian Whiskey’.<sup>311</sup> Of these, ‘Basmati rice’ is one that is useful to examine.

### **Case Study: Basmati Rice**

In 1994 a Texas company Rice-Tec filed a patent application for an invention relating to novel rice genetic lines, plants and grains. It also filed this application for the process method of breeding the particular rice lines. The patent application was granted by the Patent Office on 2 September 1997 under number 5,663,484 and titled ‘Basmati rice lines and grains’. Along with

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<sup>309</sup> *TRIPs: Geographical Indications – Background and Information*  
<[http://www.wto.org/english/tratop\\_e/trips\\_e/gi\\_background\\_e.htm](http://www.wto.org/english/tratop_e/trips_e/gi_background_e.htm)> accessed on 26 October 2011.

<sup>310</sup> American University Washington DC, *Giant Geographic Indications and International Trade*  
<<http://www1.american.edu/ted/giant/Case%20study%20map/casestudies2.html>> accessed on 26 October 2011.

<sup>311</sup> *Ibid.*

this patent application, Rice-Tec also filed other applications for the registration of trademarks TEXMATI and TEXMATI LITE. These were also registered, but no trademark application for 'basmati' was made.<sup>312</sup>

The patent 5,663,484 covering several rice lines having similar genetic characteristics to basmati lines created significant concern for the Indian government, given the potential effect on their exports of rice and they requested a re-examination of the patent. The actual issue in the dispute was the use of the word 'basmati' rather than the patent itself.<sup>313</sup>

It is interesting to note that the genetic line for 'basmati rice' is also prevalent in Pakistan, as well as being cultivated in Australia, Thailand, Egypt and France. The plant genetic breeding lines appear in all of these nation states as a supplier of staple rice grain.

The issue of the term 'basmati' was eventually determined by the United States Department of Agriculture and the United States Federal Trade Commission in May 2001. Neither body considered the labelling of 'American-grown basmati' rice as misleading and determined that 'basmati' was a generic term.<sup>314</sup>

The issue here was not one of the effect of the patent but the lack of protection that India had concerning a GI – 'basmati'. The time lapse between the determination of the United States that

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<sup>312</sup> R K Dewan, *Basmati Rice Patent Issue* (23 October 2000) <<http://www.rkdewan.com/articlesView.jsp?ai=1>> accessed on 12 January 2012.

<sup>313</sup> World Trade Organisation, *Managing the Challenges of WTO Participation: Case Study 35 – Pakistan: The Consequences of a Change in the EU Rice Regime* <[http://www.wto.org/english/res\\_e/booksp\\_e/casestudies\\_e/case35\\_e.htm](http://www.wto.org/english/res_e/booksp_e/casestudies_e/case35_e.htm)> accessed on 12 January 2012.

<sup>314</sup> Ibid.

'basmati' is a generic term and the lack of action by India would suggest that any application to register 'basmati' as a GI would be unsuccessful.

In relation to the research question: *'Can traditional knowledge be characterised to give it the required level of certainty to recognise it as a legal construction? And are we able to then apply proprietary protection to that knowledge when it is used to develop agricultural commodities for international trade?'* the application of GI to plant genetic resources utilised to create agricultural commodities can enhance the market prospects for these goods by providing a known source for the goods. This proprietary protection can identify an agricultural commodity for the prospective market purchasers as a high quality source product. However, if the geographical indicator term has developed into a generic descriptive term this advantage is lost. Also if the GI refers to plant genetic resources available in more than one geographical location the availability of registration as a GI is negated.

#### **4.3 Concluding Comments**

The use of proprietary protection in its various forms at both an international and domestic jurisdictional level for genetic resources producing agricultural commodities has distinct economic advantages for the holder of the proprietary protection, whether they be to ensure future developments are captured or to provide a known commodity of high quality to the market or to ensure a significant market share. From a commercial perspective these proprietary protections form critical business assets that provide a basis for trade in technology as well as commodities. The commercial value of proprietary protection and the requirement of

legal certainty for international transactions concerning agricultural commodities are detailed in Section Nine when ways forward are considered.

From a developing-nations perspective there are concerns regarding continuing access to the genetic resources to provide a continuous basis for food production to ensure food security and a varied biodiversity base. These concerns regarding the provision of genetic resources for the purposes of food are significantly covered by the *ITPGRFA* and its Multilateral System (MLS) which seeks to ensure access and use of the annexed plant genetic resources by all signatory nations to provide a secure genetic base for food production. This system recognises the existing proprietary rights that attach to these plant genetic resources but does not see this as an impediment to use or further development. Those plant genetic resources covered by proprietary protection which are outside the scope of the *ITPGRFA* have to be dealt with on commercial terms and access can only be obtained by following the conditions set by the rights holder. This is argued by some to be restrictive for developing nations given their low asset base and lack of infrastructure to both develop and protect genetic resources and the number of smallholder, primarily indigenous, farmers who rely on continuous access to plant genetic resources for cultivation. The need for a responsive nation state domestic regulatory framework to provide protection for the access to and use of traditional knowledge associated with genetic resources is examined and considered in Sections 8 and 9.

## ***Section Five: Agrobiodiversity***

The focus of the research question is the development and commercialisation of agricultural commodities based on genetic resources that are offered in the course of international trade and the component of traditional knowledge that may attach to these agricultural commodities.

If these commodities do have attached traditional knowledge, the subsequent question is whether or not this traditional knowledge should be afforded proprietary protection and the owners of such knowledge afforded the rights that such protection grants.

In particular some of the rights would include:

- the right to benefits in terms of financial gain whether from royalties for the protection of the analogue derivative of the trigger resource, or on a per unit of production threshold as the financial trigger for the flow of benefits
- the rights of technology transfer for the incremental or otherwise additions that have been made throughout the development phase, which could include processing technology for the final commodity or any element of advancement throughout the development phase
- the right to use and further develop the commodity with future research, particularly in terms of varietal development for specific traits such as increased head yield for grain crops or increased protein levels for forage crops.

However, in order to assess the possible rights that may attach to the final commodity, two elements need to be assessed: the genesis of the agricultural commodity, particularly the relevance of agricultural biodiversity as a subset of biological diversity; and the elements of the construction of traditional knowledge, with an analysis of which of those elements may well

meet the requirements for proprietary protection. The first of these elements, agricultural biodiversity will be examined in this section; while the second element of traditional knowledge, is examined in Section Three.

### **5.1 Agricultural Biodiversity: What is it?**

Biodiversity or biological diversity is the variety within and among species of plants, animals and microorganisms and the variety of ecosystems for which they form the functional components.<sup>315</sup> Agrobiodiversity or agricultural biodiversity is a subset of biodiversity comprising all the genetic, species and ecosystem components for the production of food and agricultural products.<sup>316</sup> It is the variety of plants, animals and microorganisms that are utilised either directly or indirectly through agricultural practices such as cropping, livestock breeding and management, fisheries production and harvest, for the production of products for food and agriculture.<sup>317</sup> Also included are the varieties of non-harvested species that support production such as soil microorganisms and pollinators, and those species in the environment that support diverse agricultural ecosystems whether they be pastoral, forestry or aquatic.<sup>318</sup> This includes:

- (a) Harvested crop varieties, livestock breeds, fish species and non-domesticated (wild) resources within fields, forest, rangeland including tree products, wild animals hunted for food and in aquatic ecosystems (e.g. wild fish)

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<sup>315</sup> CBD art 2; P R Ehrlich and A H Ehrlich, 'The Value of Biodiversity' (1992) 21 *Ambio* 219.

<sup>316</sup> E Cromwell, D Cooper and P. Mulvany 'Defining Agricultural Biodiversity' in *Conservation and Sustainable Use of Agricultural Biodiversity A Sourcebook* (CIP-UPWARD, 2003) 5.

<sup>317</sup> H Shand, *Human Nature – Agricultural Biodiversity and Farm-Based Food Security* (RAFI, 1997).

<sup>318</sup> Food and Agriculture Organization, 'What is Agrobiodiversity?' in FAO (ed), *Building on Gender, Agrobiodiversity and Local Knowledge A Training Manual* (FAO, 2004) <<http://www.fao.org/docrep/009/y5956e/y5956e00.htm>> accessed on 9 September 2010

- (b) Non-harvested species in production ecosystems that support food provision, including soil micro-biota, pollinators and other insects such as bees, butterflies, earthworms, greenflies and
- (c) Non-harvested species in the wider environment that support food production ecosystems (agricultural, pastoral, forest and aquatic ecosystems).<sup>319</sup>

Agricultural biodiversity includes the active management of these resources by farmers and the interaction of their conduct with the environment. Agricultural diversity exists because of the range of global climates, habitats and farming practices such as the natural selection that results from the existence of pests and diseases.<sup>320</sup> This encompasses a vast variety of animals, plants and micro-biota that are essential for maintaining key elements of the agricultural ecosystem necessary for the production of food and food security.<sup>321</sup> It is the interaction of the conduct of farmers with these elements that utilises, expands and conserves agricultural biodiversity, as agricultural systems are reliant on these ecosystem products and services.<sup>322</sup> This dependence has meant that agricultural practices have become more sustainable<sup>323</sup> to ensure a continued ability to produce.

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<sup>319</sup> Ibid.

<sup>320</sup> J I Cohen and C S Potter, 'Conservation of Biodiversity in Natural Habitats and the Concept of Genetic Potential' in C S Potter, J I Cohen and J B Alcorn et al (eds), *Perspectives on Biodiversity: Case Studies of Genetic Resource Conservation and Development* (AAAS, 1993) xix.

<sup>321</sup> Food and Agriculture Organization, *Agricultural Biodiversity*, (Background Paper 1 presented at Multifunctional Character of Agriculture and Land Conference, Maastricht, 12-17 September 1999).

<sup>322</sup> S Pagiola and J Kellenberg, *Mainstreaming Biodiversity in Agricultural Development – Toward Good Practice*, (World Bank, 1997).

<sup>323</sup> Consultative Group on International Agricultural Research, *25 Years of Food and Agriculture Improvement in Developing Countries*, (CGIAR, 1996).

Agricultural biodiversity is distinct from many other components of biodiversity as it is interactively managed by farmers, with an inability for many elements of agrobiodiversity to continue to exist without this interaction. The interaction of farmers brings local knowledge concerning conditions (climate and soil) for the economically successful realisation of ‘alien’ crops or livestock species<sup>324</sup> which provide a stable food production system. This creates a high level of co-dependence of countries for the exchange and utilisation of plant and animal genetic resources for the continued success of agricultural biodiversity. This exchange and utilisation has led to an increase in diversity within species, particularly within the varieties of plant genetic resources utilised as crops, even though crop diversity would list only a few thousand species.<sup>325</sup> Agricultural biodiversity is dependent on sustainable practices to maintain the production systems and conserve the genetic resources on which it depends, with many of these genetic resources being held ex-situ in gene banks to preserve the varietal and intra-varietal availability of material.<sup>326</sup> One of the largest systems for this purpose is the network of International Agricultural Research Centres established under the auspices of the Consultative Group on International Agricultural Research (CGIAR). CGIAR was established in 1971 and reaffirmed in 1995 with a mission statement ‘to increasing and protecting agricultural productivity, safeguarding natural resources, and helping to achieve people-centred policies for

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<sup>324</sup> The term ‘alien’ is used in this context to denote plant crop varieties and livestock species introduced to a geographical region from another geographical region where these varieties or species are not indigenous or native. An example of this would be horticultural production for roses in South Korea or the farming of Friesian cows in Africa for dairy products.

<sup>325</sup> P Rossenegger, ‘Welcome to Participants’ in M S Swaminathan (ed) *Agro-biodiversity and Farmers’ Rights* (Konark, 1996) 31.

<sup>326</sup> ‘NordGen Plants is the Nordic genetic resource center for cultivated plants. We work with conservation and sustainable use of cultivated plants and their wild relatives. This includes both conserving the seeds, supplying researchers and others with seeds and their data as well as general information work about the value and importance of plant genetic resources.’ Accessed at <<http://www.nordgen.org/index.php/en/content/view/full/787>> on 28 October 2012.

environmentally sustainable development'.<sup>327</sup> The objective of CGIAR is to encourage and foster scientific research in order to raise the productivity of agriculture to meet current and future food needs in a sustainable manner.<sup>328</sup> In order to facilitate this, CGIAR provides free access to its plant genetic resources collections.<sup>329</sup>

The sustainable nature of agricultural biodiversity was originally enhanced by the 'Green Revolution' in the mid-1960s. This began with the introduction of high-yielding varieties of rice and wheat which were dependent on irrigation, chemical fertilisers and pesticides for their success.<sup>330</sup> The goal was to raise the head-yield per acre in order to reduce pressure on forest areas to be felled for further arable land.<sup>331</sup> This increased head yield for staple cropping varieties assisted many developing nations to achieve increased food security, with some such as India being able to achieve self-sufficiency in the production of food, but at an increased environmental cost to both the soil (increased salinity levels and water holding capability) and

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<sup>327</sup> CGIAR, 'Lucerne Declaration and Action Programme', reprinted in *Renewal of the CGIAR – Sustainable Agriculture for Food Security in Developing Countries* (Ministerial-level Meeting, Summary of Proceedings and Decisions, 1995).

<sup>328</sup> Ibid.

<sup>329</sup> 'Deep inside a frozen Arctic mountain about 600 miles from the North Pole lies a vault that contains within its icy interior the potential to save mankind. The [Svalbard Global Seed Vault](#), which is located on a remote island in Norway's Svalbard archipelago, contains duplicates of seed collections from around the world, including those of 11 CGIAR Centers. Dubbed the Doomsday Vault, it was built to protect its precious inventory from the crises which regularly afflict genebanks, from regional and global catastrophes, such as flooding, earthquakes, to the far more common but very destructive problem of chronic underfunding. Kept at a constant temperature of -18 degrees Celsius, the Vault, which now contains some 740,000 seed samples, can preserve the seeds of most food crops for hundreds of years.

Established by the [Global Crop Diversity Trust](#) in partnership with the Norwegian government and the [Nordic Gene Bank](#) in 2008, the minimum-maintenance Seed Vault was described by Norway's Prime Minister Jens Stoltenberg as "the Noah's Ark of today." Accessed at CGIAR Consortium, *Consortium News* October 2012 <<http://www.cgiar.org/consortium-news/seed-banks-great-and-small/>> on 28 October 2012.

<sup>330</sup> G R Conway and E B Barbier, *After the Green Revolution – Sustainable Agriculture for Development* (Earthscan, 1990).

<sup>331</sup> M S Swaminathan, 'Foreword' in D Altman and K N Watanabe (eds), *Plant Biotechnology Transfer to Developing Countries* (R G Landes, 1995) i.

the water catchments (contamination).<sup>332</sup> The Philippines farming practices using high head-yielding rice varieties demonstrated an increase of 70 per cent in yield per acre, however this was coupled with a 50 per cent reduction in the market price given the increased volume available and an increase in farming costs of 38 per cent given the requirement for high chemical levels. The cumulative total of these factors saw a drop in farm income of approximately 52 per cent.<sup>333</sup> In order to address these issues of increased production costs from the use of chemicals required to accelerate growth, the need to increase the viable soil conditions and reduce the impact of pests and diseases, biotechnology was investigated and seen as the answer.

## **5.2 What are the Main Aspects of Agricultural Biodiversity and Why is it Important?**

The research question can only be answered if the elements of agricultural biodiversity are identified as: these are also the elements of the agricultural commodities traded on the global market. Once these elements are identified, their interface with traditional and associated knowledge in the development of the agricultural commodities can then be evaluated.

The elements of agricultural biodiversity are based on the subset of genetic resources used specifically to create agricultural commodities, whether they are for the purpose of food or forage or fibre. This subset of genetic resources is primarily referred to as animal genetic resources (AnGR) or plant genetic resources (PGR). This basic separation is made to divide the base genetics into two distinct and broad groupings covering both terrestrial and marine or

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<sup>332</sup> V Shiva, *The Violence of the Green Revolution* (Zed, 1991).

<sup>333</sup> J Bell and M Pimbert, 'Introduction' in M. Baumann, J Bell, F Koechlin and M Pimbert (eds), *The Life Industry – Biodiversity, People and Profits* (Intermediate Technology, 1996) 1.

aquatic sources. This is done without negating the other specific genetic resources that would populate these two broad fields, such as microbial and soil biodiversity. Both sources and environments in which the genetic resources are found are utilised for the production of all types of agricultural commodities that are globally traded for commercial gain.

The goods that are produced from this base set of genetic resources and placed in the channels of global commerce include those used for the purposes of food production (e.g. grain, rice, maize, tuber vegetables, brassica varieties such as lettuce and cabbage, fresh meat, fish, mussels, crustaceans), forage for livestock production (e.g. green chop feed such as lucerne and clover, or others such as soy or sorghum or marine-farmed forage) and fibre for clothing production (e.g. cotton, jute, hemp). There is also the further subset of extracted elements that are used for fertilisers (e.g. blood and bone, fish emulsion, sugar cane mulch), cosmeceuticals (e.g. topical face and body creams containing bee venom that provides a natural alternative to botox, toothpaste containing silk, hair products containing plant extracts) and nutraceuticals (e.g. probiotics, shark cartilage tablets for inflammation control, tablets containing charcoal for digestive ailments, diet pills containing hoodia for appetite suppression). All of these goods have their genus in the genetic resources from the two broad distinct fields. The actual components of these distinct fields require examination to identify the elements of the final goods, whether they are discreet commodities offered for sale and immediate consumption or the active components of further products. All of these are housed in the agricultural commodities that are offered in the course of trade on a global scale and their role in the production of these commodities needs to be understood and characterised before considering the issue of traditional knowledge that may attach to these genetic resources.

### **5.3 Elements of Agricultural Biodiversity**

The major identifiable elements of agricultural biodiversity are: crop diversity, wild plant biodiversity, livestock diversity, aquatic diversity, cultivar biodiversity, microbial biodiversity and arthropod biodiversity. The role of agricultural biodiversity in the function of the ecosystem is also vital as this is functional agricultural biodiversity at its most interactive level. This will be examined in conjunction with biotechnology as many of the issues or functional operations are the same.

#### **5.3.1 Crop Diversity**

This element of agricultural biodiversity is vitally important as plant responses to the stresses, both biotic (pathogens or pests) and abiotic (drought or temperature extremes), provide the greatest flexibility in genetic diversity which translates to greater stability in the production of crops.<sup>334</sup> This genetic diversity within a particular species provides for evolution of the species and its adaptive behaviour to particular environmental conditions, both natural and human-created.<sup>335</sup>

Crop diversity amongst the 150 crops cultivated globally has generated significant interest among farmers and national governments to ensure that there is a sustainable base for their continued ability to provide global food security. The plant genetic resources used for crop cultivation contain genetic units that offer variety among plant species in terms of height, flower colour, branching pattern, fruiting time, seed size, flavour, germination conditions,

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<sup>334</sup> P Muir, *Diminished Crop Diversity* Oregon State University <<http://people.oregonstate.edu/~muirp/cropdiv.htm>> accessed on 12 December 2009.

<sup>335</sup> E Cromwell et al, above n, 316.

temperature tolerance and head yield.<sup>336</sup> This is highlighted by the 200,000 varieties of wheat available under the Global Crop Diversity Trust (the Trust) for the successful production of a basic food crop.<sup>337</sup> In order to attempt to provide the tools required for this, the Trust was established in 2004 by a public–private partnership providing complete and continuous funding for key crop collections. This arose out of the *ITPGRFA* and the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture’s common goal to ensure global food security. To this end, the Trust has as its goal to advance an efficient and sustainable global system of ex-situ conservation by promoting the rescue, understanding, use and long-term conservation of valuable plant genetic resources.<sup>338</sup>

The Trust was founded in April 2004 by the United Nations FAO and Bioversity International, acting on behalf of CGIAR. The constitution of the Trust grants it a full legal personality under international law<sup>339</sup> that has the ability to enter into contracts and conduct itself in a fashion that mirrors most corporate entities.<sup>340</sup> The Trust is the major funding mechanism for the *ITPGRFA*, with its main objective being ‘to ensure the long-term conservation and availability of plant genetic resources to food and agriculture with a view to achieving global food security and sustainable agriculture’.<sup>341</sup> To this end, the main focus of the Trust is the priority crops. These are outlined in Annex 1 of the *ITPGRFA* and include breadfruit, asparagus, oat, beet, brassicas

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<sup>336</sup> Accessed at <<http://www.croptrust.org/main/diversity.php>> on 28 June 2010.

<sup>337</sup> Ibid.

<sup>338</sup> Accessed at <<http://www.croptrust.org/main/governance.php?itemid=5>> on 28 June 2010.

<sup>339</sup> Constitution of *the Global Crop Diversity Trust* art 1(2)  
<<http://www.croptrust.org/sites/default/files/documents/files/WebPDF/Constitution-english.pdf>> accessed on 28 June 2010

<sup>340</sup> Ibid art 1(3).

<sup>341</sup> Ibid art 2(1).

(including cabbage, cauliflower and broccoli), pigeon pea, citrus, coconut, aroids (taro and others), carrot, yams, finger millet, strawberry, banana, rice, beans, sorghum, wheat, maize and eighty forage species from thirty different genera.<sup>342</sup> The main repositories for these plant genetic resources are the international gene banks under the auspices of CGIAR. These gene banks make the germplasm which is held available for the purposes of ongoing agricultural research and development as well as for crop propagation, particularly in developing nations, as part of CGIAR's commitment to improving the global status of food security.

### **5.3.2 Wild Plant Biodiversity**

Wild plants are those plants that are collected for human consumption, usually as a dietary supplement to staple grain crops, from non-cultivated areas (forests, plains, bush land areas). These genetically diverse plants are significant in the daily diet of rural dwellers in developing countries as they provide vital nutrients that are not readily available from the major crops that are cultivated.<sup>343</sup> Wild plants are also utilised as companion plants to provide biocontrol agents for the elimination or control of pests that infest crops.

Wild plants provide alternative resources for pollinators of commercially grown crops.<sup>344</sup> This maintains plant genetic diversity by providing a consistent alternative base for continued improvement and innovation through natural selection processes, as well as supplying necessary pollinators in adverse climatic conditions, given wild plants are often more adaptive

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<sup>342</sup> Accessed at <<http://www.croprst.org/main/prioritycrops.php>> on 28 June 2010.

<sup>343</sup> Food and Agriculture Organization, above n 318. This is particularly vital in Ethiopia where cereal-crop dependent families are able to supplement their nutritional needs with fruits and berries containing necessary vitamins for growing children by approximately 10 per cent.

<sup>344</sup> T H Ricketts, 'Tropical forest fragments enhance pollinator activity in nearby coffee crops' (2004) 18(5) *Conservation Biology* 1262.

to environmental change.<sup>345</sup> However, if the magnitude of wild plants is abundant, this may lead commercially grown crops to become reliant on specific pollinators produced by these wild plants. This may result in pollinator limitation and a subsequent loss of plant genetic biodiversity given the increased competition for selective pollination.<sup>346</sup> This requires the agricultural community producing commercially grown crops to carefully analyse the interaction of wild plants as alternative pollinators and the crop plant genetics to ensure that both survive to maintain the biodiversity resources, rather than limit them through active selection processes.

### **5.3.3 Livestock or Animal Genetic Diversity**

The number of animal genetic resources commercially utilised for the production of agricultural commodities is generated from approximately forty species, with five thousand identified breeds being developed by farmers and breeders.<sup>347</sup> These breeds have been specifically bred for local environmental conditions such as hot humid tropical areas, arid regions and the colder higher altitude climate of mountainous areas. These animals have also been bred to meet specific needs in relation to the production of food (meat, eggs, dairy products), clothing (leather, woven fabric from hair, wool), fertiliser (manure, blood and bone) and draught power (used primarily in developing countries).<sup>348</sup> Given this demand for commodities provided by animal genetic resources, the available diversity is becoming limited by farmers and breeders actively selecting a narrow range of animals specifically for the production of these agricultural

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<sup>345</sup> J C Vamosi, T M Knight, J A Steets, S J Mazer, M Burd and T Ashman, 'Pollination Decays' (2006) 103(4) *Biodiversity Hotspots* 956. Accessed at <<http://www.pnas.org/cgi/doi/10.1073/pnas.0507165103>> on 14 May 2010.

<sup>346</sup> *Ibid.*

<sup>347</sup> E Cromwell et al, above n 316, 9.

<sup>348</sup> *Ibid.*

commodities at the expense of traditional breeds. The current rate of loss is approximately one traditional livestock breed per month.<sup>349</sup> This has reduced the availability of alternative animal genetic resources that are available, particularly those traditional breeds that have adapted to harsh climatic conditions. This may result in a lack of genetic adaptability in the future to environmental change particularly that associated with climate change and global warming.<sup>350</sup>

In recognition of this continuing loss and in an effort to stem it, the Global Plan of Action was adopted by nation state governments at the first International Technical Conference on Animal Genetic Resources for Food and Agriculture (the International Technical Conference) in Interlaken, Switzerland in September 2007, under the auspices of the FAO. The Global Plan is an international framework designed to stem the loss of livestock diversity and to support the sustainable use, development and conservation of animal genetic resources for food and agriculture. The Global Plan outlines four strategic priorities for animal genetic resources: characterisation, inventory and monitoring of trends and risks; sustainable use and development; conservation; and policies, institutions and capacity building.<sup>351</sup>

During the International Technical Conference, the Wilderswil Declaration (Wilderswil) was formulated at a parallel meeting of non-government organisations, pastoralists, smallholder farmers and indigenous people. Wilderswil represented the civil society's view of the issue of animal genetic resources loss and their solution to addressing the animal genetic diversity

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<sup>349</sup> International Centre for Trade and Sustainable Development, 'How Best to Conserve Farm Animal Diversity' (2007) 1(1) *News and Analysis* <<http://www.ictsd.or/i/news/bioresreview/12114/>> accessed on 10 February 2010.

<sup>350</sup> Ibid.

<sup>351</sup> Ibid

reduction. At the centre of Wilderswil was a goal that ‘wanted livestock keeping that is on a human scale. We defend a way of life that is linked deeply with our cultures and spirituality and not just aimed at production’.<sup>352</sup> This goal was a reaction to the perception that the reduction in animal genetic resources available was a direct result of the commercialisation of animal genetic resources by a few corporations for the purpose of continued commodification and financial gain at the expense of the subsistence level farmer.

The issue of intellectual property rights held over animal genetic resources and the continuation of the exertion of the rights this protection conveyed was seen as the primary driver for the continued diversity loss. The civil society organisations wanted a collective rights regime to be the replacement legal schematic to ensure that ownership, knowledge and innovation remained at a collective level. These groups stated that:

Local knowledge and biodiversity can only be protected and promoted through collective rights. Collective knowledge is intimately linked to cultural diversity, particular ecosystems, and biodiversity and cannot be dissociated from any of these three aspects. Any definition and implementation of rights of livestock keepers should take this fully into account. The rights of livestock keepers are not compatible with intellectual property rights systems because these systems enable exclusive and private monopoly control. There must be no patents or other forms of intellectual property rights on biodiversity and the knowledge related to it.<sup>353</sup>

This later point was a call for a Livestock Keepers’ Rights exemption in any animal genetics schematic to parallel the Farmers’ Rights exemption for subsistence farmers and indigenous communities dependent on small scale farming of plant genetic resources that is contained in

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<sup>352</sup> Wilderswil, *Wilderswil Declaration on Livestock Diversity* (Switzerland, 6 September 2007). Accessed at <<http://www.ukabc.org/wilderswil.pdf>> on 28 October 2012.

<sup>353</sup> Wilderwil, *Report of the Forum on Livestock Diversity: Defending Food Sovereignty and Livestock Keepers’ Rights* (Switzerland, 1–4 September 2007). Accessed at <[http://www.swissaid.ch/sites/default/files/LivestockDiversityForumReport\\_IPC.pdf](http://www.swissaid.ch/sites/default/files/LivestockDiversityForumReport_IPC.pdf)> on 28 October 2012.

UPOV.<sup>354</sup> This exemption would enable the use of patented animal genetic resources without placing the livestock keeper in violation of the proprietary protection as long as the material subject to the patent was only being utilised for subsistence level farming as a source of food production, and not for commercial purposes.

Domestic animals supply some 30 per cent of total human requirements for food and agriculture by providing final and intermediate outputs. These vary from direct food products such as meat, milk, eggs and blood to such products as dung, wool, hides and draught power.<sup>355</sup> This percentage increases significantly for subsistence farmers or for those indigenous peoples living a traditional lifestyle totally dependent on agricultural commodities provided by livestock.<sup>356</sup>

#### **5.3.4 Marine biodiversity and aquatic ecosystems**

The *CBD* defines biological biodiversity as:

[T]he variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.<sup>357</sup>

Bacteria, archaea and eukarya are all present in the marine environment, with approximately 230,000 species of marine plants and animals scientifically known and described. This represents a small proportion of the predicted biodiversity present in this environment.<sup>358</sup>

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<sup>354</sup> Ibid.

<sup>355</sup> R Scarpa, 'Revealed Preference Valuation Methods for Farm Animal Genetic Material: Principles, Strengths and Weaknesses', (Paper presented at: Valuation of Animal Genetic Resources — An ILRI-FAO Planning Workshop, FAO Rome, 15-17 March 1999) 5.

<sup>356</sup> In International Livestock Research Institute, 'The Economic Valuation of Farm Animal Genetic Resources' (2001) 36 *Ecological Economics* 1, 2 it is estimated that approximately 70% of the world's rural poor rely on livestock commodities for essential daily life. Accessed at <<http://www.ilri.org/html/Valuation%20Methods20%Review.pdf>> on 30 October 2011.

<sup>357</sup> *CBD* art 2 – Use of Terms.

The diversity of marine species and fish that inhabit the oceans, rivers and streams provide a wealth of genetic material and are either farmed for their own productive value<sup>359</sup> or used as companion species in other forms of agricultural production for food value or pest control.<sup>360</sup> The modern commercial model is based on sustainable fishing effort to ensure that fish stocks are protected to a level that guarantees future extraction as a basic economic and environmental tenet, such as the Maldivian tuna industry.<sup>361</sup> In contrast, the commercial aquaculture or mariculture venture can, at times, seem overzealous for demanding the removal of obstacles to continued development of intensive farming methods.<sup>362</sup> To remain viable and innovative, both of these marine industries rely on the existing high level of marine biodiversity. The estimated economic value of marine resources for food alone for the United Kingdom in 2004 was £513 million, while the economic value for non-food consumption was £81.5 million. Both of these were taken to be underestimations of the potential economic value of the biological resources.<sup>363</sup>

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<sup>358</sup> *The Encyclopedia of Earth: Marine Biodiversity* (6 August 2007) <[http://www.eoearth.org/article/Marine\\_biodiversity](http://www.eoearth.org/article/Marine_biodiversity)> accessed on 10 August 2009.

<sup>359</sup> New Zealand farms fish extensively, from salmon to finfish in marine environments. This industry has a predicted value of \$10 million dollars by 2015. Ministry of Fisheries Cabinet paper on aquaculture reforms – Paper A: Overview of the Proposed Aquaculture Reforms accessed at <<http://www.fish.govt.nz/en-nz/Aquaculture/Aquaculture+Archive/Aquaculture+Cabinet+Papers/Paper+A+-+Overview+of+the+Proposed+Aquaculture+Reforms.htm>> on 12 March 2012.

<sup>360</sup> Tropical rice-fish inhabit rice paddies to provide up to 70% of the dietary protein of farmers and approximately 20% of overall total commercial fish production. E Cromwell et al, above n 316, 9.

<sup>361</sup> C Tisdell, *Economics and Ecology in Agriculture and Marine Production: Bioeconomics and Resource Use* (Edward Elgar Publishing, 2003).

<sup>362</sup> Ibid.

<sup>363</sup> N Beaumont, M Townsend, S Mangi, and M Austen, *Marine Biodiversity: An economic valuation* (July 2006) Report provided to the Department for Environment, Food and Rural Affairs, 24. Accessed at <[http://randd.defra.gov.uk/Document.aspx?Document=WC04029\\_4013\\_FRP.pdf](http://randd.defra.gov.uk/Document.aspx?Document=WC04029_4013_FRP.pdf)> on 1 July 2011.

### **5.3.5 Microbial Biodiversity**

Successful agricultural production is dependent upon a healthy environment and an active transference of nutrients to the plant material in cropping. Microbes provide a significant genetic pool that is a sound source of genetic material transfer to produce specific traits such as stress tolerance or pest resistance.<sup>364</sup> They also provide large-scale production of plant metabolites<sup>365</sup> — approximately 30,000 different organic substances exclusively produced by plants for protection against pests, as colouring, as scents or attractants, and as the plants' own hormones.<sup>366</sup> These substances include, but are not limited to, glucosides (flavour additives to cabbage, radish, and cress), saponins (flavour additives to spinach and legumes), tannins, carotenoids (organic pigments that are red, orange and yellow), phytosterols (in sunflower seeds, sesame, soya beans and nuts), and sulphides which inhibit bacteria growth (found in onions, leeks, asparagus and garlic).<sup>367</sup>

### **5.3.6 Below-ground Biodiversity or Soil Biodiversity**

Soil biodiversity or below-ground biodiversity are terms used to describe the collection of microorganisms and invertebrates that inhabit the soil. This includes small organisms, bacteria,

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<sup>364</sup> E Cromwell et al, above n 316, 10.

<sup>365</sup> These are naturally occurring chemical products of plants not normally involved in the primary metabolic process, such as photosynthesis and cell respiration. They are also known as secondary plant products. These organic compounds are not directly involved in the normal growth, development and reproduction of organisms. Fraenkel Gottfrieds 'The Raison d'être of Secondary Plant Substances' (1959) 129(3361) 1416. Accessed at <<http://www.sciencemag.org/cgi/pdf>> on 1 July 2010.

<sup>366</sup> Novafeel, *The Value of Secondary Plant Metabolites* <<http://www.novafeel.com/nutrition/plant-secondary-metabolites.htm>> accessed on 1 July 2010.

<sup>367</sup> Ibid.

fungi, protozoa, insects, worms and other invertebrates.<sup>368</sup> These soil inhabitants provide significant ecological services to both the soil and the plants sown in the soil, particularly regarding mineral nutrient transfer to plants for continued growth and development. They also maintain the soil's physical structure and water retention capacity, control mineral nutrient cycling, as well as maintaining plant health by providing natural predators and parasites to address plant pathogens and pests.<sup>369</sup>

The health of the below-ground biodiversity is a significant indicator for the continued survival and cultivation of plants for agricultural purposes. When land is cleared for the purposes of agricultural production, the below-ground biodiversity is reduced, which may cause a resultant reduction in agricultural productivity and plant resilience. This could leave the agricultural crops vulnerable to adverse climatic conditions, pests, diseases and other threats to their survival such as poor nutrient transfer.<sup>370</sup>

### **5.3.7 The Importance of Agricultural Biodiversity**

Agricultural biodiversity provides the building blocks for the agricultural commodities that are placed in the channels of commerce for international trade, providing goods for the purposes of food, forage, fibre, and cosmeceuticals or nutraceuticals. They are the staples for continued research and development in these areas to provide an ever-expanding variety to the consumer for consumption or the researcher for further development. Agricultural biodiversity occupies a

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<sup>368</sup> International Center for Tropical Agriculture, *Below-ground Biodiversity Research Project of the Tropical Soil Biology and Fertility Institute of the International Centre for Tropical Agriculture*  
<[http://www.webapp.ciat.cgiar.org/news/pdf/poster07a\\_scmeeeting\\_06.pdf](http://www.webapp.ciat.cgiar.org/news/pdf/poster07a_scmeeeting_06.pdf)> accessed on 1 July 2010.

<sup>369</sup> Ibid.

<sup>370</sup> Ibid.

unique position in the realm of biological diversity in that it provides for the essentials of life, whether for humans or animals. The importance of this function cannot be underestimated for the continued survival of either.

## ***Section Six: The Domestic Jurisdictions of Australia, Canada, New Zealand and the United States of America***

The domestic jurisdictions of these four nation states will be examined as two megadiverse nations (Australia and the United States of America), and two non-megadiverse nations (Canada and New Zealand) in terms of genetic resources recorded as species. The concept of megadiversity is based on the total number of species in a country and the degree of endemism at the species level and at higher taxonomic levels.<sup>371</sup> The World Conservation Monitoring Centre recognises 17 megadiverse countries which together account for 70 per cent of the taxonomy of the earth's genetic resources in terms of species.<sup>372</sup> The reasoning behind selecting two megadiverse nation states is to demonstrate the ability of each to protect, under a proprietary structure, the commodities generated from the majority of the world's genetic base. The selection of two non-megadiverse nation states is to examine how the proprietary protection mechanisms operate when the genetic base for production is limited or scarce in terms of options. This will offer a comparative base for the four jurisdictions.

This will then be examined in terms of any formal treaty arrangements or other legislative mechanisms with indigenous peoples concerning the access to and usage of their genetic resources for commercial and non-commercial purposes. This will then be further examined to isolate those arrangements, if any, concerning the access to and utilisation of genetic resources

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<sup>371</sup> Definition taken from the World Conservation Monitoring Centre as stated at <http://www.environment.gov.au/soe/2001/publications/theme-reports/biodiversity/biodiversity01-3.html> accessed on 21 January 2012.

<sup>372</sup> Ibid.

for the purposes of agricultural commodification where traditional knowledge may attach. This further isolation will be to identify those mechanisms which are in play in the selected domestic jurisdictions concerning agricultural commodities which are placed into the channels of commerce for the purposes of commercial trade. This will provide insight into the focus of the research question at a domestic jurisdictional level and may provide further insight into the proprietary protection that may well be available at an international level or provide some direction as to which mechanisms, if any are appropriate given the research question.

### **6.1 Intellectual Property – How does the Law Protect the Products of Human Intellect?**

The products of the mind can be protected by the law by four different means:

1. the granting of an absolute monopoly to the intellectual property owner that prevents all other persons from dealing with the intellectual property, e.g. patents
2. the granting of a qualified monopoly to the intellectual property owner that prevents others from copying or exploiting the work produced, e.g. copyright
3. the granting of a compulsory licence which provides the right to use the intellectual property provided a licencing fee is paid to the owner of the intellectual property, e.g. compulsory licencing schemes in patent and copyright statutes and
4. the collection of creators' rights known as unfair competition which is based on the principle that the creator of the intellectual property has the right to prevent others from using that property in an unfair manner, e.g. passing-off or breach of confidence.<sup>373</sup>

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<sup>373</sup> J Phillips, *Introduction to Intellectual Property Law* (Butterworths, 1986).

This four-category classification of the types of intellectual property that are able to be protected at law provides the moral basis for the legislature, that the products of the mind should be held by the creator and any reward for their exploitation be granted back to that creator. The other impetus for the legislature is the economic basis which seeks to actively encourage creation and innovation for the benefit of society. The essential task for the legislature is to balance these two principles to provide a system of protection at law that does not unnecessarily restrict the creative endeavours of the intellect and provides for the advancement of the benefits of this creative endeavour to society.

This is the lens of intellectual property rights protection that will be used to examine the four domestic jurisdictions to determine their view on achieving this balance and the ability of the designed legal schematic to provide protection to agricultural commodities generated from genetic resources. Each jurisdiction will also be examined in order to identify the level of proprietary protection that can be afforded to the traditional knowledge that may attach to the genetic resources that are utilised to produce the agricultural commodities.

## ***6.2 The Domestic Jurisdiction of Australia***

Intellectual property rights protection under a domestic legislative structure in Australia reflects the obligations of the nation state under international agreements<sup>374</sup> and seeks to also enable some harmonisation with those agreements for rights holders and potential applicants seeking intellectual property rights protection.

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<sup>374</sup> Examples of such international agreements include the *Berne Convention*, the *Paris Convention* and the *Budapest Treaty*.

Upon the federation of Australia, the *Patents Act 1903*, the *Trademarks Act 1905* and the *Designs Act 1906* were all modelled on the United Kingdom *Patents, Designs & Trademarks Act 1883*. The only other piece of intellectual property rights legislation was the *Copyright Act 1905* that was a '[s]uccinct and elegant codification of copyright law that was markedly superior to the inconsistent and complex body of copyright acts then in force in the United Kingdom.'<sup>375</sup>

This domestic jurisdictional legal schematic began at federation in 1901 with the adoption of the United Kingdom statutory models of intellectual property rights protection until 1930. During the period 1935 to 1955 these statutes were modified to adapt them to the local Australian conditions. This adoption of the United Kingdom statutes became less automatic from 1935 as each statute drafted for Australia was assessed by committees considered to be technically expert such as the Knowles Committee (1935–1939) and the Dean Committee (1951–1954). The evaluation of the proposed statutes resulted in the *Patents Act 1952* and the *Trademarks Act 1955*.<sup>376</sup> The later Act ensured that Australia's obligations under the WTO *TRIPS Agreement* were reflected, including the protection for the symbols, words, pictures, smells and sounds, either in isolation or in combination that were used to distinguish goods and services within the various classes of protection, depending on the use of the mark.

In 1959 a committee was established to review the proposed copyright legislation, headed by former Commonwealth Attorney-General Sir John Spicer. The recommendations of this

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<sup>375</sup> S Ricketson, *Intellectual Property Administration and Policy in Australia – An Examination of the Australian Situation, Past and Present, and Recommendations for Future Change*, (Paper presented at the National Innovation Summit, Melbourne, 9–11 February 2000).

<sup>376</sup> B Arnold, *Caslon Analytics Intellectual Property – Intellectual Property Guide: Australia* July 2008 <<http://www.caslon.com.au/ipguide3.htm>> accessed on 15 February 2011.

committee resulted in the *Copyright Act 1968*. This provided the framework for copyright that reflected the obligations under the 1948 *Berne Convention* revision, the 1956 United Kingdom *Copyright Act* and provisions concerning Australia's individual nation state circumstances. This removal of the transplantation of the United Kingdom intellectual property statutes to Australia continued with the *Patents Amendment Act 1979* and, under the 1973 Franki Committee on industrial property and the Industrial Property Advisory Committee (1980–1984), the *Patents Act 1990*.<sup>377</sup> This Act gave the rights holder, the patent owner, an exclusive right to exploit the invention that was the subject of the protection for commercial purposes for the tenure of the patent protection.

There were further modifications to the policy and legislative structure during 1965 to 1984, with further amendments until 1996. The last series of amendments were begun in 1997 to capture the prevalence of the digital medium. This was achieved when the *Copyright Amendment (Digital Agenda) Act 2000* was enacted updating the *Copyright Act 1968*. Various other amendments to the copyright provisions in Australia were contemplated with the *Copyright Amendment (Moral Rights) Act 2000* being the last.

Other forms of intellectual protection were also enacted into the Australian statutes including PBR with the *Plant Variety Rights Act 1987* and the *Plant Breeder's Rights Act 1994*. With the protection provided under these Acts, breeders of a new variety of reproductive plant genetic material held an exclusive right to commercially exploit this material through a system of registration. With the protection provided under the *Circuit Layouts Act 1989*, the inventors of

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<sup>377</sup> Ibid.

electronic circuits in integrated circuit products or layout designs were given accreditation and commercial protection for these designs in a three-dimensional configuration.

Given the legislative schematic of the Australian domestic jurisdiction, the relevant enactments for the research question are those concerning patent protection and plant varietal or plant breeders' protection. To a lesser extent, the enactments concerning trademarks are relevant, but only in the sense of a recognisable commercially based distinguishing mark for the actual agricultural commodity that has been generated from genetic resources. As such, trademarks will be excluded from the discussion as a discreet form of proprietary protection as they are recognised as a tool for the marketing of the commodities that are at the heart of the research question. This is not to deny their inherent commercial value but rather to recognise them as an additional method of proprietary protection for an agricultural commodity that is already the subject of other forms of proprietary protection. This interface between an existing form of proprietary protection such as a patent or PBR and trademarks as an additional form of proprietary protection will be examined.

### ***6.2.1 The Relevant Proprietary Protections in Australia for Agricultural Commodities Generated from Genetic Resources***

The collections of legislative instruments that offer the greatest and most relevant level of proprietary protection for agricultural commodities generated from genetic resources are those covering patents and varietal or breeder protection. The secondary level of proprietary protection that can be obtained to both enhance the existing proprietary protection and also enable the plant breeder to create a market niche through an identity is the availability of

trademark registration. The ability of each of these proprietary protection tools to also offer some level of proprietary protection to the traditional knowledge attached to the genetic resources will be examined in terms of disclosure requirements and other available mechanisms, such as contractual agreements and trade secrets. These latter devices will be examined in a holistic manner across all four jurisdictions.

### **6.2.2 The Patents Act 1990**

In the Australian jurisdiction under the *Patents Act 1990* inventors can obtain protection under either a standard (for the protection of a major new invention) or innovation (for the protection of an incremental advancement of existing technology) patent. A standard patent must be novel, useful and involve an inventive step, while an innovative patent must be novel, useful and involve an innovative step. The difference between the two is noted at Chapter 1 Section 7 of the Act where an ‘inventive step’ is defined as:

- (2) ... an invention is to be taken to involve an inventive step when compared to the prior art base unless the invention would have been obvious to a person skilled in the relevant art in the light of common general knowledge as it existed in the patent area before the priority date of the relevant claim, whether that knowledge is considered separately or together with the information mentioned in subsection (3).
- (3) The information for the purposes of subsection (2) is:
  - (a) any single piece of prior art information; or
  - (b) a combination of any two or more pieces of prior art information; being information that the skilled person mentioned in subsection (2) could, before the priority date of the relevant claim, be reasonably expected to have ascertained, understood, regarded as relevant and, in the case of information mentioned in paragraph (b), combined as mentioned in that paragraph.<sup>378</sup>

An ‘innovative step’ is defined as:

- (4) ...an invention is to be taken to involve an innovative step when compared to the prior art base unless the invention would, to a person skilled in the relevant art, in the light of the common general knowledge as it existed in the patent area before the priority date of the relevant

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<sup>378</sup> *Patents Act 1990*, ch 1 s 7 (2)–(3).

claim, only vary from the kinds of information set out in subsection (5) in ways that make no substantial contribution to the working of the invention.

- (5) For the purposes of subsection (4), the information is of the following kinds:
- (a) prior art information made publicly available in a single document or through a single act;
  - (b) prior art information made publicly available in 2 or more related documents, or through doing 2 or more related acts, if the relationship between the documents or acts is such that a person skilled in the relevant art would treat them as a single source of that information.<sup>379</sup>

These offer the inventor an exclusive use level of protection with the standard patent covering a 20-year period (or 25-year period for pharmaceutical substances) and the innovation patent applying for a maximum period of eight years.<sup>380</sup> There are three major differences between the two patents; firstly, the innovation patent does not require the same high inventive threshold as the standard patent; secondly, the term of protection provided is longer under the standard patent; thirdly, there is no mandatory examination for an innovative patent, as examinations are only conducted if a dispute arises concerning the subject of the patent.<sup>381</sup>

### **6.2.3 Patents and Plants – The Available Proprietary Protection**

In the Australian domestic jurisdiction a standard patent is able to be applied for plants in general and for specific cultivars. The plant genetic material that is able to be made the subject matter of a standard patent application is:

1. all new plant varieties
2. plant components such as genes or chromosomes
3. all reproductive material such as seeds, whole plants, cuttings, cells or protoplasts
4. all products from plants including fruit, flowers, oils, starches, chemicals or pharmaceuticals

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<sup>379</sup> Ibid ch 1 s 7 (4)–(5).

<sup>380</sup> Ibid ch 6 pt 2 ss 67–68. Extension for a further five years for pharmaceutical substances obtainable under ch 6 pt 3 s 77.

<sup>381</sup> Ibid.

5. all plant material used in industrial processes such as cell lines to produce processes relating to plants, including genetic engineering techniques, plant tissue culture, cell and protoplast culture, mutagenesis and breeding and cultivation methods.<sup>382</sup>

The standard patent is normally granted to the inventor if the invention is a new idea that provides a practical solution to a technological problem. To ensure that the subject matter of the standard patent meets this requirement, the following tests are applied:

1. The matter arose because of a technical intervention of a person to produce something which is not the same as the natural source material.
2. The matter is new in the sense of not previously being publicly available.
3. The matter is inventive when compared to what is known.
4. The matter has been fully described so that enough information is provided to allow other people working in the same area of technology to make the product or perform the process without having to resort to invention. The best method of performing the invention known to the inventor also needs to be described.
5. The matter has a demonstrated use, meaning an actual use rather than a future or speculative use.<sup>383</sup>

Depending on the subject matter of the plant being patented, the requirements for the description differ. If the subject matter is an isolated gene within the plant's genetic structure (a gene that might trigger colour, head-yield size or germination time) or a specific method (plant

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<sup>382</sup> IP Australia, *Patents and Plants* <<http://www.ipaustralia.gov.au/get-the-right-ip/plant-breeders-rights/pbr-and-other-ip-rights/patents-and-plants/>> accessed on 13 September 2011 .

<sup>383</sup> *Ibid* accessed on 21 January 2012.

crossing, tissue culture collection or intervention), the description must contain the specific details of the description of either the gene or the process that is being undertaken so that this can be both identified and replicated by someone technically competent in the plant breeding field.

If the subject matter is a plant variety, the plant breeder must supply a complete description of how the variety came into existence, usually detailing the parent plants of the variety (which must be accessible to the general public) and the breeding steps undertaken to produce the new variety. A photograph must also be submitted to ensure that an exact description and image is known.

If the subject matter is for the entire plant a full and comprehensive description of the plant including all characteristics must be provided. This is to evaluate that the new plant is sufficiently different from plants already subject to patent protection and enables the new plant to be distinguished from known close genetic relatives. In order to meet this requirement it is usual to include a full taxonomic description of the plant, including all biochemical data.

If the subject matter is for transgenic plants and their seeds, the characteristics of the introduced gene must be described. This is usually done with an analogue derivative of the introduced gene which details its genetic structure using plant DNA markers. In conjunction with this, the plant breeder must also detail the best method of transformation, regeneration and the selection of the transformed plant or plant parts (e.g. protoplast). Given that the subject matter is a transgenic, the host plant genetic material must also be fully disclosed and described. As with the requirements for plant variety patents, the parent genetic material used in transgenic plants must also be available to the public. This availability is usually through

commercial sale at establishments such as nursery or garden centres or through deposits entered into gene banks.

If the subject matter is a mutant plant the parent plant strains must be fully disclosed and described. These parent plant strains must also be available to the public in the same manner as those for plant variety patents and transgenic patents. The method of mutagenesis whether chemical or through ultraviolet radiation for the plant must also be fully disclosed.

If the subject matter is a hybrid seed there are two requirements for the plant breeder. The first is that the parent plant must be fully disclosed and described and be available to the public in the same manner as plant variety patent subjects or transgenic patent subjects. Secondly, all of the different genetic crosses that were conducted to achieve the hybrid seed must also be fully disclosed and described.

As with all patent applications a monopoly will only be granted if the written description provided by the plant breeder results in an ability to replicate the process or construct the product once the period of patent protection ceases. The threshold test to complete this replication is that the person is competent within the technological field of plant breeding.

At present there is no disclosure requirement in the application process for patent protection to disclose the use of or contribution of traditional knowledge that may attach to the genetic resources that are the subject matter of the patent application. Any disclosure that is made is undertaken on a voluntary basis.

#### **6.2.4 Plant Breeder's Rights Act 1994 – Australia**

In the Australian domestic jurisdiction plant breeders have been able to protect their rights under statute since the introduction in 1987 of the *Plant Variety Rights Act*. This was then amended in 1994 to comply with Australia's obligations under the revised 1991 UPOV Convention with a new legislative instrument being the *Plant Breeder's Rights Act*. This revised legislative instrument brought nine principle changes into enactment when compared to the original legislation passed in 1987.

Under the 1994 legislative instrument these changes primarily referred to essentially derived varieties, farm-saved seed, alternative dispute resolution mechanisms and material or products made from harvested material. The principal changes in the legislation were:

1. in relation to tree and vine varieties the PBR protection continues for a period of twenty-five years from the date that protection is granted, with all other varieties protected for a period of 20 years from the date that protection was granted
2. regarding the sale in Australia of material that is the subject of protection, this may be undertaken with the plant breeder's consent for up to one year prior to the application for PBR protection being made
3. regarding the sale overseas of material that is the subject of protection, this may be undertaken with the plant breeder's consent concerning tree and grape varieties for up to six years prior to the application for PBR protection being made, and for up to four years with the plant breeder's consent for all other varieties prior to the application for PBR being made

4. regarding the use of farm-saved seed, this is permissible unless the crop is one declared by regulation to be one to which farm-saved seed does not apply
5. the penalty for an international infringement of a PBR was set at \$55,000 for individuals and for corporations the maximum penalty is potentially \$275,000
6. introduction of the concept of the essentially derived variety which permits a breeder who holds the belief that this is so to be able to apply to have the second generation declared as essentially derived
7. the introduction of the protection of transgenic plants, algae and fungi
8. all plant variety rights granted under the *Plant Variety Rights Act 1987* are treated as if they have been granted as PBR under the *Plant Breeder's Rights Act 1994* and
9. all applications for plant variety protection lodged under the *Plant Variety Rights Act 1987* that have not yet been finalised will be dealt with under this legislative instrument as if it was still in force.<sup>384</sup>

Under the Australian legislative schematic for proprietary protection, plant breeders can also apply for patent protection for plant varieties and genetic components as detailed above. Plant breeders can also apply for trademark protection for plant varieties in certain circumstances in conjunction with protection under the *Plant Breeder's Rights Act*.

As with the application process for plant patents or general patents relating to the use of genetic resources, there is no obligation to disclose the use of or contribution of traditional

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<sup>384</sup> IP Australia, *History of PBR in Australia* <<http://www.ipaustralia.gov.au/get-the-right-ip/plant-breeders-rights/about-pbr/history-of-pbr-in-australia/>> accessed on 13 February 2012.

knowledge. Again, any such disclosure is undertaken on a voluntary basis by the applicant for PBR or trademark protection.

#### **6.2.5 *Plant Breeder's Rights Act 1994 and the Trade Marks Act 1995 – Australian jurisdiction***

In the Australian domestic jurisdiction plant breeders can apply for trademark registration for plants under Class 31 of the *Trade Marks Act 1995*. This class offers mark protection for:

[G]rains and agricultural, horticultural and forestry products and grains not included in other classes; live animals; fresh fruits and vegetables; seeds; natural plants and flowers; foodstuffs for animals, malt.<sup>385</sup>

The trademark when used in this class has the purpose of distinguishing the registered good from others within the same class. Generally scientific plant names and naming conventions are not permitted to be used as the registered trademark. The mark must do more than simply describe the good.

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<sup>385</sup> Class 31 *Trade Marks Act 1995*.

### Case study one– Pink Lady Apples<sup>386</sup>

John Cripps, the plant breeder responsible for the development of this new variety of apple, has both protection for the variety under the *Plant*



*Breeder's Rights Act 1994* and the *Trade Marks Act 1995*. The protection is for the Cripps Pink variety of apple which is marketed globally as 'Pink Lady' the registered trademark for the variety. The use of the registered mark is limited by licence and used as a market tool to denote apples of premium quality.

The use of trademarks and PBR protection is not the only mechanism for the proprietary protection of goods that are derived from plant genetic resources. In the cosmeceuticals or natural therapies industry, the use of plant-based products marketed as 'natural healing' goods has become common. When this is combined with traditional knowledge as to how those elements of the product can be administered and for what ailment or result, the picture becomes a complex legal one. In order to utilise the traditional knowledge it either needs to be within the public domain or be obtained and used with the consent of the holders of the traditional knowledge. This can be done through various agreements to ensure that informed consent has been given and that the cultural respect due to the holders of such knowledge has been maintained.

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<sup>386</sup> Picture of Pink Lady apples was obtained with permission from <http://www.ipaustralia.gov.au/get-the-right-ip/trade-marks/trade-mark-casestudies/?page=4&sessionId=1133711> accessed on 27 February 2012.

**Case study two – Li'TYA** <sup>387</sup>

The skincare range developed by Gayle Heron relies on two important elements: the use of the natural healing properties of



Australian native plants such as Guangdong, lillypilly and wild rosella flowers; and the traditional knowledge of Aboriginal healing methods.

The trademark symbol and name used by Gayle mean 'of the earth' in Aboriginal dialects.

The uses of this symbol and word have the agreement of the Aboriginal people as the holders of this traditional knowledge.

Gayle also uses confidentiality agreements and trade secrets to further protect her products in the natural therapies industry.

As can be seen from the above case study for Li'TYA, the creator of the product line and the registered owner of the trademark has elected to incorporate the traditional knowledge owners in this process through contractual agreements rather than formal disclosure on application for proprietary protection. These contractual obligations permit the use of the traditional knowledge and symbols with the specified express permission of the traditional owners of the knowledge. It would be interesting to see if the obligations on the user of this knowledge and traditional symbols includes a financial payment as due consideration for such use. This financial

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<sup>387</sup> Ibid.

payment could take the form of an upfront once-off payment or a continual financial benefit flow dependent upon the number of units of each product sold, similar to a licencing agreement that a holder of the proprietary protection may invoke with a third party.

### **6.3 The Domestic Jurisdiction of the United States of America**

In the words of Mark Twain ‘a country without a patent office and good patent laws was just a crab and couldn’t travel any way but sideways or backwards’.<sup>388</sup> He was expressing his concern that inventors and creators of inventions were left with no incentives to continue to develop new inventions and creations for the benefit of society if there was not a robust legal regime in the form of intellectual property rights protection which would afford them the required level of protection for their inventions and creations.

The ability of the United States of America to provide legislative protection for intellectual property in the form of copyright and patent law can be found in Article 1, Section 8, Clause 8 of the Constitution of the United States which states:

Congress shall have power ... to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.<sup>389</sup>

The intellectual property rights regime in the United States of America is very similar to the intellectual property rights regime in Australia, with protection available for trademarks, copyright, patents, designs and plant varieties. This regime is designed to protect the

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<sup>388</sup> Mark Twain, *A Connecticut Yankee at King Arthur's Court* Chapter IX, 64 <<http://www.digireads.com>> accessed on 1 January 2007.

<sup>389</sup> *United States Constitution* art 1 § 8 cl 8.

advantages to society as a whole of developing new inventions or creations by providing an incentive and protective mechanism for the inventor or creator.

### **6.3.1 *The Relevant Proprietary Protections in the United States of America for Agricultural Commodities Generated from Genetic Resources***

The collection of legislative instruments that offer the greatest and most relevant level of proprietary protection for agricultural commodities generated from genetic resources are those covering patents and plant varietal protection. The ability to undertake registration of a trademark to further enhance market recognition and to generate brand integrity and confidence will also be examined.

### **6.3.2 *United States Patent Law – An Historic Overview***

The history of patent law in the United States of America dates back to 1790 with the first *Patent Act* which was also titled ‘An Act to promote the progress of useful arts’.<sup>390</sup> In 1793 this Act was repealed and replaced by the *Patent Act 1793* which defined a patentable subject matter in the United States as:

[A]ny new and useful art, machine, manufacture or composition of matter and any new and useful improvement on any art, machine, manufacture or composition of matter.<sup>391</sup>

Patents and the rights that attached to them were confined to citizens of the United States of America under the 1793 Act and were extended to foreigners who had been resident for two

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<sup>390</sup> This Act was administered by the Secretary of State Thomas Jefferson.

<sup>391</sup> Patent Act 1793 § 1; the term ‘art’ was replaced by ‘process’ in 1952 but this term is itself defined as a ‘process, art or method’ 35 USC § 101.

years in the United States of America when the Act was amended in 1800.<sup>392</sup> This limitation on patent holders was not removed until 1836 when all limitations based on nationality or residence were removed to allow all inventors to apply for patent protection.<sup>393</sup>

The element of novelty was also added in the 1836 Act to require the applicant to 'particularly specify and point out the part, improvement or combination, which he claims as his own invention or discovery.'<sup>394</sup>

The next major amendment to the patent legislation after the novelty requirement was that the invention had to be non-obvious. This amendment was based on the decision of the Supreme Court in *Hotchkiss v Greenwood*<sup>395</sup> which stated that 'unless more ingenuity and skill ... (has been applied in the invention that is the subject of the patent) ... than were possessed by an ordinary mechanic acquainted with the business, there was an absence of that degree of ingenuity and skill which constitute essential elements of every invention.'<sup>396</sup>

A number of administrative amendments were made in 1861 relating to the terms of protection available under the Act and the availability of the printing of copies of the patents, including their descriptions. Further amendments were made over the next few decades to incorporate various international agreements and the obligations that these created on the United States of

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<sup>392</sup> The resident foreigner also had to make an oath stating that the invention that was the subject of the patent had not to their knowledge been used previously or known in the United States of America or any other foreign country.

<sup>393</sup> Patent Act 1836 § 9 which still distinguished applicants based on nationality but through the application fees that were to be charged with a fee of \$30.00 being payable by a United States citizen or applicants intending to become citizens, a fee of \$500.00 for British subjects and a fee of \$300.00 for all other foreign citizens.

<sup>394</sup> Patent Act 1836 § 6.

<sup>395</sup> *Hotchkiss v Greenwood* 52 US § 248 (1850).

<sup>396</sup> *Ibid* 11.

America including those under the Paris Convention for the Protection of Industrial Property which the United States of America joined in 1887. Specific provisions were enacted to include these obligations in 1903.

The issue of the subject matter of the patent being novel rather than obvious was addressed during the 1930s and 1940s, with a cornerstone case being decided in 1941 by the Supreme Court in *Cuno Engineering v Automatic Devices Corp* which decided that in order to satisfy the threshold of patentability, an invention must ‘reveal the flash of creative genius not merely the skill of the calling.’<sup>397</sup> This decision required a higher bar to be applied to the invention in terms of the ability of someone skilled in the art to also reach the same conclusion as the inventor. If someone skilled in the art would have reached the same conclusion as the inventor then the patent would fail as the ‘spark of genius’ required for the creation of the invention had not been reached. The inventor must have exceeded this ability. This was further strengthened in the 1966 Supreme Court decision in *Graham v John Deere*<sup>398</sup> which established the proper test for determining whether a claimed invention is obvious or novel.

In 1946 the Supreme Court’s decision in *Electric Storage Battery v Shimadzu*<sup>399</sup> of the ‘first to invent principle’ being applied on a global basis was overruled by amendment to the Act to restrict the ‘first to invent principle’ to instances where there was evidence that the invention could be found in the United States of America.

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<sup>397</sup> *Cuno Engineering v Automatic Devices Corp* 314 US 84, 51 USPQ 272.

<sup>398</sup> *Graham v John Deere* 383 US 1, 148 USPQ 459.

<sup>399</sup> *Electric Storage Battery v Shimadzu* 307 US 5.

The Act itself was revisited in 1952 as part of the rolling reviews of all United States of America legislation after the adoption of the United States Code System in 1926. When the code system was established all prior laws were compiled into the code but were never re-enacted which was not desirable in terms of having each title of the code as positive law. The rolling review systematically went through the legislation affected by the code and sought to re-enact each title of the code as positive law. In 1952 it was the turn of the *Patent Act*.

There were two significant amendments to the Act as part of this rolling review—the inclusion of novelty in the statute which codified the existing case law and a definition of infringement. The only other minor change in the Act of significance concerned the replacement of the word ‘art’ with ‘process’ to cover the situations when an invention involved a number of factors that could be better expressed in terms of function. This change was a partial overruling of the Supreme Court’s decision in *Halliburton Oil Well Cementing Co v Walker* which held that any definition of a component of a claim by the function that it was to perform lacked clarity and constituted an ‘overhanging threat’ which could serve to ‘frighten from the course of experimentation ... inventive genius which may evolve more devices to accomplish the same purpose.’<sup>400</sup>

The only other substantial reform that has been undertaken in the United States of America came in 1999 with the passage of the *Intellectual Property and Communications Omnibus Reform Act*, which was designed to deal with the advancements in technology related to the digital age.

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<sup>400</sup> *Halliburton Oil Well Cementing Co v Walker* 71 USPQ 175 (1946).

Regarding patent law in the United States, on 8 September 2011 the Leahy-Smith America Invents Act<sup>401</sup> was passed by the Senate to significantly amend the patent law over an eighteen-month period. These proposed changes will be discussed in conjunction with the *Patent Act*.

### **6.3.3 The Patent Act and the Leahy-Smith America Invents Act in the United States of America**

#### **6.3.3(a) Patent Act**

The granting of a patent under the legislation in the United States grants an exclusive monopoly to the rights holder to make, use and sell the patented invention for a specific period of time.

The *Patent Act* sets out the five requirements for patentability in the United States of America as:

1. patentable subject matter
2. utility
3. novelty
4. non-obviousness and
5. enablement.

#### **6.3.3(b) Patentable subject matter**

Under Section 101 the requirements for the subject matter are stated as:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.<sup>402</sup>

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<sup>401</sup> HR 1249.

<sup>402</sup> *Patent Act*1952, 35 USC § 101 <[http://www.uspto.gov/web/offices/pac/mpep/documents/appxl\\_35\\_U\\_S\\_C\\_101.htm](http://www.uspto.gov/web/offices/pac/mpep/documents/appxl_35_U_S_C_101.htm)> accessed on 3 March 2012.

The subject matter of a patent in the United States of America was determined in 1980 in *Diamond v Chakrabarty*<sup>403</sup> where any living organism that is the product of human intervention, including a breeding process or laboratory derived alteration, qualifies as a composition of matter which is patentable. This includes plant genetic material. The Court stated that the subject matter of a patent could 'include anything under the sun that is made by man.'<sup>404</sup>

### **6.3.3(c) Utility**

This requirement deems that the invention must be useful as stated in Section 101. This has been further explained in the Utility Guidelines<sup>405</sup> produced by the United States of America Patent and Trademark Office. These guidelines and accompanying training materials state that credible utility requires that facts and logic support the claim of utility or that a person skilled in the art would accept the claims of use asserted that are specific to the invention not to a broad class.

### **6.3.3(d) Novelty**

Under Section 102 the requirements for novelty are stated as:

A person shall be entitled to a patent unless—

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

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<sup>403</sup> *Diamond v Chakrabarty* 447 US 303 (1980).

<sup>404</sup> Ibid.

<sup>405</sup> United States Patent and Trademark Office, *2107 Guidelines for Examination of Applications for Compliance with the Utility Requirement* <<http://www.uspto.gov/web/offices/pac/mpep/s2107.html>> accessed on 4 February 2013.

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States.<sup>406</sup>

### 6.3.3(e) Non-obviousness

This requirement was placed in the *Patent Act 1952* as an amendment of Congress, with the test for non-obviousness being stated in Section 103 as:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
- (b)
  - (1) Notwithstanding subsection (a), and upon timely election by the applicant for patent to proceed under this subsection, a biotechnological process using or resulting in a composition of matter that is novel under section 102 and nonobvious under subsection (a) of this section shall be considered nonobvious if-
    - (A) claims to the process and the composition of matter are contained in either the same application for patent or in separate applications having the same effective filing date; and
    - (B) the composition of matter, and the process at the time it was invented, were owned by the same person or subject to an obligation of assignment to the same person.
  - (2) A patent issued on a process under paragraph (1)-
    - (A) shall also contain the claims to the composition of matter used in or made by that process, or
    - (B) shall, if such composition of matter is claimed in another patent, be set to expire on the same date as such other patent, notwithstanding section 154.
  - (3) For purposes of paragraph (1), the term 'biotechnological process' means-
    - (A) a process of genetically altering or otherwise inducing a single- or multi-celled organism to-
      - (i) express an exogenous nucleotide sequence,
      - (ii) inhibit, eliminate, augment, or alter expression of an endogenous nucleotide sequence, or
      - (iii) express a specific physiological characteristic not naturally associated with said organism
    - (B) cell fusion procedures yielding a cell line that expresses a specific protein, such as a monoclonal antibody and
    - (C) a method of using a product produced by a process defined by subparagraph (A) or (B), or a combination of subparagraphs (A) and (B).
- (c)
  - (1) Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the claimed invention was made, owned by the same person or subject to an obligation of assignment to the same person.

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<sup>406</sup> 35 USC § 102 <[http://www.uspto.gov/web/offices/pac/mpep/documents/appxl\\_35\\_U\\_S\\_C\\_102.htm](http://www.uspto.gov/web/offices/pac/mpep/documents/appxl_35_U_S_C_102.htm)> accessed on 3 March 2012.

- (2) For purposes of this subsection, subject matter developed by another person and a claimed invention shall be deemed to have been owned by the same person or subject to an obligation of assignment to the same person if -
  - (A) the claimed invention was made by or on behalf of parties to a joint research agreement that was in effect on or before the date the claimed invention was made;
  - (B) the claimed invention was made as a result of activities undertaken within the scope of the joint research agreement; and
  - (C) the application for patent for the claimed invention discloses or is amended to disclose the names of the parties to the joint research agreement.
- (3) For purposes of paragraph (2), the term 'joint research agreement' means a written contract, grant, or cooperative agreement entered into by two or more persons or entities for the performance of experimental, developmental, or research work in the field of the claimed invention.<sup>407</sup>

This test for non-obviousness is basically whether the subject matter of the patent and the prior art as a whole would have been obvious to a person skilled in the art at the time the invention was created.

This test for non-obviousness has been the subject of two significant decisions of the Supreme Court, firstly in *Graham v John Deere Co.*<sup>408</sup> and secondly in *KSR International Co v Teleflex Inc*<sup>409</sup>. In *Graham v John Deere Co.* the Court held that non-obviousness could be determined through basic factual inquiries concerning both the scope and content of the prior art, the differences between the claims and the prior art, and the level of skill that a person skilled in the art possessed. In *KSR International Co v Teleflex Inc* the Court endorsed a broader approach to the test by stating 'a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.'<sup>410</sup>

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<sup>407</sup> 35 USC § 103 <[http://www.uspto.gov/web/offices/pac/mpep/documents/appxl\\_35\\_U\\_S\\_C\\_103.htm](http://www.uspto.gov/web/offices/pac/mpep/documents/appxl_35_U_S_C_103.htm)> accessed on 3 March 2012.

<sup>408</sup> *Graham v John Deere Co* 383 US 1 (1966).

<sup>409</sup> *KSR International Co. v Teleflex Inc* 550 US 398 (2007).

<sup>410</sup> *Ibid.*

### 6.3.3(f) Enablement

This requirement is directly related to the disclosure in which every specification relating to the invention must be clearly stated in full. This requirement has three elements:

1. enablement
2. written description and
3. best mode requirement

in order to be in accordance with Section 112. This Section states:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.

Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

A claim in multiple dependent form shall contain a reference, in the alternative only, to more than one claim previously set forth and then specify a further limitation of the subject matter claimed. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of the particular claim in relation to which it is being considered.

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.<sup>411</sup>

In order to satisfy the enablement provision, the Federal Court in *In re Wands*<sup>412</sup> stated that the specification must describe the invention clearly and in detail so that a person skilled in the art

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<sup>411</sup> 35 USC § 112 <[http://www.uspto.gov/web/offices/pac/mpep/documents/appxl\\_35\\_U\\_S\\_C\\_112.htm](http://www.uspto.gov/web/offices/pac/mpep/documents/appxl_35_U_S_C_112.htm)> accessed on 3 March 2012.

<sup>412</sup> *In re Wands*, 858 F 2d 731 (1988).

would be able to make and use the invention without 'undue experimentation.'<sup>413</sup> To make this clear, the Federal Court cited eight factors that needed to be considered in order to make a determination which has been incorporated into the United States of America Patent and Trademark Office Manual of Patent Examining Procedure at 2164.01(a) which details the factors as:

There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is 'undue'. These factors include, but are not limited to:

- (A) the breadth of the claims;
- (B) the nature of the invention;
- (C) the state of the prior art;
- (D) the level of one of ordinary skill;
- (E) the level of predictability in the art;
- (F) the amount of direction provided by the inventor;
- (G) the existence of working examples; and
- (H) the quantity of experimentation needed to make or use the invention based on the content of the disclosure.'<sup>414</sup>

In addition to this disclosure, the applicant for patent protection must also disclose the best mode of practising the invention. This requirement is not met when the applicant fails to disclose the preferred method or any preference of procedure that would materially affect the making or use of the invention. This was substantiated by the Federal Court in *Bayer AG v Schein Pharmaceuticals Inc.*<sup>415</sup> where it stated that to determine that the applicant would fail to meet the requirements of best mode it must:

1. be established that there was a best mode of practising the invention when the application was filed, and

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<sup>413</sup> Ibid 737.

<sup>414</sup> MPEP 2164.01(a) <[http://www.uspto.gov/web/offices/pac/mpep/documents/2100\\_2164\\_01\\_a.htm](http://www.uspto.gov/web/offices/pac/mpep/documents/2100_2164_01_a.htm)> accessed on 3 March 2012.

<sup>415</sup> *Bayer AG v Schein Pharmaceuticals Inc* 301 F 3d 1306 (Fed Cir, 2002).

2. whether there is sufficient information in the disclosure for a person skilled in the art to practice the best mode of the invention.<sup>416</sup>

The requirements for disclosure in the application process do not require the disclosure of the use of any traditional knowledge that may be associated with the subject matter of the application for proprietary protection. As with the Australian jurisdiction, any such disclosure is voluntary by the applicant.

#### **6.3.4 Leahy-Smith America Invents Act**

The legislative amendments to the existing *Patent Act* through the *Leahy-Smith America Invents Act* were primarily administrative, with the exception of the change from a first to invent to a first to file system for the determination of patent proprietary protection. This change effectively reduces the ability of inventors to wait for a longer period of time before they file the application for proprietary protection. Unless they seek to file the application in a timely fashion, inventors may well discover that although they may have created first, the inventor who discovers later but files first will hold the proprietary rights attached to the patent.

This change in the triggering action of patent protection also alters the grace period that the inventor used to enjoy under the *Patent Act* in that it requires the applicant to make a disclosure one year or less before the effective filing date of the claimed invention. This disclosure must be made by the inventor or by a person who obtained the subject matter disclosed directly or indirectly from the inventor.

The other amendments to the patent law of the United States of America from the *Leahy-Smith America Invents Act* were primarily administrative regarding the persons who could file an

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<sup>416</sup> Ibid.

application for patent protection, particularly where an assignment had been granted and in relation to the functions of the review period for applications. The amendments would be phased in over an eighteen-month period until March 2013.<sup>417</sup>

There have been no reforms to address the issue of the disclosure of traditional knowledge being used by the applicant in the *Leahy-Smith America Invents Act*, which still leaves the decision to disclose at the feet of the applicant.

### **6.3.5 Plant Patent Act – An Historical Overview**

The *Plant Patent Act 1930*<sup>418</sup> provided for the patent protection of asexually reproduced plants<sup>419</sup> except tuber-propagated plants and plants found in an uncultivated state. This Act was introduced primarily as an incentive to the horticulture industry to encourage plant breeding and to thus increase plant genetic diversity. This Act provided the patent holder with the ability to exclude all others from asexually reproducing, using, selling, offering for sale or importing into the United States the reproduced plant for a period of twenty years.

This level of protection is limited to the protection of a single plant or genome as the patent does not confer any protection on plant characteristics, mutants of the plant or technologies associated with the propagation.

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<sup>417</sup> D M Scolnick, *Patent Update – A Publication of Pepper Hamilton LLP*  
<[http://www.pepperlaw.com/publications\\_update.aspx?ArticleKey=2190](http://www.pepperlaw.com/publications_update.aspx?ArticleKey=2190)> accessed on 5 March 2012.

<sup>418</sup> *Plant Patent Act 1930* 35 USC § 161.

<sup>419</sup> This is generally defined as any reproductive process that does not involve the union of individuals or germ cells. This method of propagation is the replication or multiplication of the plant without the use of genetic seeds. Some examples of this process include grafting, bulbs, apomictic seeds, rhizomes and tissue cultures.

This patentability for plants was further extended in 1985 to include plants produced by either sexual or asexual reproduction and to include plant parts such as seeds and tissue cultures in *Ex parte Hibberd*.<sup>420</sup>

The requirements for plant patents in the United States are that the applicant must be able to show novelty, a non-obvious or inventive step, usefulness, enablement, claim clarity, provide a written description and best mode.<sup>421</sup> However, the application of these requirements for plant patentability is applied less stringently with an applicant being required to describe the new variety as completely as reasonably possible, a non-requirement to deposit the claimed plant in an official depository and the non-application of the non-obvious test given it is highly challenging to develop a stable new plant variety that can be preserved by asexual reproduction.<sup>422</sup>

In terms of lodging the application for a plant patent there is a twelve-month grace period for the applicant in the United States of America which allows for the disclosure of a new plant variety or granted patent of a new variety in a foreign jurisdiction. This does not mean that the ability to patent the plant in the United States of America is prohibited. Provided that the disclosure of the foreign patent occurred less than twelve months prior to the plant patent application being lodged in the United States of America, the applicant is free to proceed. If the disclosure of the patent in a foreign jurisdiction occurred prior to the twelve-month grace

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<sup>420</sup> *Ex parte Hibberd* 227 USPQ 433.

<sup>421</sup> *Plant Patents Act 1930* 35 USC § 161 Elements of a utility patent.

<sup>422</sup> *Ibid.*

period the patent application in the United States of America will be refused in accordance with the ruling in *Ex parte Thomson*.<sup>423</sup>

### **6.3.6 The Plant Variety Protection Act – United States of America**

In the words of Luther Burbank, breeder of the Russet Burbank potato ‘a man can patent a mousetrap or copyright a nasty song but if he gives to the world a new fruit that will add millions to the value of the Earth’s annual harvest he will be fortunate if he is rewarded by so much as having his name connected with the result.’<sup>424</sup>

As the United States of America is a nation state signatory to the *TRIPS Agreement* and a member of UPOV it is required to offer protection for plant varieties in a *sui generis* system. The ability to patent a plant variety or plant genetic component grants the United States of America a technical exemption from the provision of a *sui generis* system, but in 1970 the United States of America implemented its UPOV obligations by enacting the *Plant Variety Protection Act* to protect new varieties of plants. This statutory protection for plant varieties was extended in 1994 to include F1 hybrids (first generation hybrids) and tuber-propagated plants (such as potatoes) to ensure that the United States of America complied with the 1991 *UPOV Convention*.

The administration of the *Plant Variety Protection Act* is the responsibility of the United States Department of Agriculture and it is this department that issues Plant Variety Protection

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<sup>423</sup> *Ex parte Thomson* 25 USPQ 2d 1618 (BPAI 1992).

<sup>424</sup> R B Wynn-Williams, ‘Plant Breeder’s Rights Legislation with Special Reference to Native Plants’ (1987) 29(1–2) *Tuatara: Journal of the Biological Society* 8 <<http://www.nzetc.org/tm/scholarly/tei-Bio29Tuat01-02-tl-body-d3.html>> accessed on 2 March 2012.

Certificates to those breeders of qualifying plant varieties. One requirement for protection under the *Plant Variety Protection Act* is that a deposit of seeds of the new variety must be made to an authorised depository, with an additional requirement for F1 hybrids that the seeds of the parent plants must also be deposited.

Under the statute structure in the United States of America there is a limited exemption for farmers concerning the use of protected seed. Such varieties of seed that are protected may be 'saved' for replanting in the next season on the farmer's individual landholding provided that the 'saved seed' is not on sold to any third party to use for reproductive purposes.

In the United States of America it is possible to have utility patent protection, plant patent protection and plant variety protection for the same plant as determined in *JEM AG Supply v Pioneer Hi-Bred International Inc.*<sup>425</sup> This particular case concerned the ability of the seed company Pioneer Hi-Bred International to protect under a utility patent a new strain of corn that was unable to be protected under a plant patent as it was not an asexually reproduced plant. This new variety was able to be protected under the *Plant Variety Protection Act* but it did not offer the level of enforcement options that were available under patent legislation.

This case is a watershed decision as it provides three distinct proprietary protection mechanisms at law for plants: the ability to patent a plant under the *Plant Patents Act* if it is asexually reproduced; the ability to patent the plant under the *Patent Act* as a utility patent if it

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<sup>425</sup> *JEM AG Supply v Pioneer Hi-Bred International Inc* (99-1996) 534 US 124 (2001) 200 F 3d 1374, affirmed.

is new, useful and non-obvious; and the ability to protect the plant variety under the *Plant Variety Protection Act* if it is a new distinct, stable and uniform plant.<sup>426</sup>

As with the Australian jurisdiction, the voluntary requirements concerning the disclosure of the use of traditional knowledge in the development of the subject matter of the applications for proprietary protection, whether patent, plant varietal protection or trademark, rest with the applicant. There is no legal obligation to undertake any such disclosure.

### **6.3.7 Trademark Act – United States of America**

In the United States of America trademarks are governed by state and federal statutes, with the main federal statute being the *Lanham (Trademark) Act*<sup>427</sup> originally enacted in 1946, amended in 1996 and codified 15 USC § 1051 et seq. Under the federal statute a trademark is defined as a word, symbol or phrase used to identify a particular manufacturers products and distinguish them from the products of another.<sup>428</sup> Under some circumstances this protection can be extended to include other aspects of the product such as colour or packaging as long as these features confer no functional or competitive advantage as determined in *Qualitex Co v Jacobson Products Co Inc*<sup>429</sup> where the manufacturer sought to protect a particular unique shape of bottle that made the product easier to grip and stack.

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<sup>426</sup> E J Sease, 'History and Trends in Agricultural Biotechnology Patent Law from a Litigator's Perspective' (Paper presented at the "Seeds of Change" Symposium Banquet, University of Illinois, 9 April 2004). Accessed at <[http://www.agmrc.org/business\\_development/operating\\_a\\_business/legal/artyciles/history\\_and\\_trends\\_in\\_agricultural\\_biotechnology\\_patent\\_law\\_from\\_a\\_litigators\\_perspective.cmf](http://www.agmrc.org/business_development/operating_a_business/legal/artyciles/history_and_trends_in_agricultural_biotechnology_patent_law_from_a_litigators_perspective.cmf)> on 10 March 2012.

<sup>427</sup> *Lanham (Trademark) Act 1946* 15 USC § 1051.

<sup>428</sup> *Lanham (Trademark) Act 1946* 15 USC§ 1127.

<sup>429</sup> *Qualitex Co v Jacobson Products Co Inc* 514 US 159 (1995).

The classes for trademarks are similar in the United States to other jurisdictions, but the trademark does not require registration to be protected. However, if registered, the trademark through registration acquires a number of benefits to the holder of the registration.<sup>430</sup> These include the right to:

1. [U]se the mark nationwide, subject to the limitations noted in the statute<sup>431</sup>
2. [N]ationwide constructive notice to other parties that the trademark is owned by the holder of the registration and this enables the registered holder of the trademark to bring infringement suits in federal court, including the recovery of damages at treble the rate<sup>432</sup> and
3. [R]ight after five years to an incontestable trademark which grants the exclusive conclusive use of the trademark.<sup>433</sup>

These rights conferred by registration can be lost if the trademark is abandoned,<sup>434</sup> there is improper licencing or assignment arrangements<sup>435</sup> or through the trademark becoming generic.<sup>436</sup>

Trademarks can be used in conjunction with other forms of proprietary protection available in the United States of America as long as they conform to the definitions in the *Lanham (Trademarks) Act*.

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<sup>430</sup> 15 USC § 1051.

<sup>431</sup> 15 USC § 10172.

<sup>432</sup> 15 USC § 1121.

<sup>433</sup> 15 USC § 1065.

<sup>434</sup> *Major League Baseball Properties Inc v Sed Non Olet Denarius Ltd* 817 F Supp. 1103 (SDNY 1993).

<sup>435</sup> *Dawn Donut Co Inc v Hart's Food Stores Inc* 267 F 2d 358 (2<sup>nd</sup> Cir, 1959).

<sup>436</sup> *Bayer Co v United Drug Co* 272 F 505 (SDNY 1921).



### **Case Study – Monsanto**

The registered trademark of Monsanto Company was designed to demonstrate that Monsanto is 'an innovative, agricultural company that creates relevant solutions for farmers, consumers and the environment.'<sup>437</sup>

Monsanto is a Fortune 500 company with 404 facilities in 66 countries. It produces:

1. agricultural and vegetable seeds
2. plant biotechnology traits and
3. crop protection chemicals.<sup>438</sup>

## **6.4 The Domestic Jurisdiction of Canada**

The Canadian intellectual property rights regime covers trademarks, patents, designs, PBR and integrated circuit topographies. Of these proprietary rights protections, patents and PBR are the main ones of interest, with trademarks becoming a secondary concern for marketing purposes depending on the classification area of use for the registered mark.

In Canada four sources of intellectual property law require consideration:

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<sup>437</sup> Text taken from 'Monsanto Logo Kit', accessed at <http://monsanto.mediaroom.com/index.php?s=23&item=54> on 18 March 2012.

<sup>438</sup> Information obtained from the company profile of Monsanto <http://www.monsanto.com/whoweare/Pages/default.aspx> accessed on 18 March 2012.

1. the statute law received from England or France;
2. judicial developments that have occurred in the common law or civil law since the date of reception of English and French law;
3. statutes that have been enacted by the federal Parliament; and
4. statutes that have been enacted by the provincial Legislatures.<sup>439</sup>

The first of these sources, the rules of reception of law in British North America, can be categorised in terms of settlement, conquest, adoption and imposition by imperial statute.<sup>440</sup>

This can be summarised as follows:

1. Colony – all first settlers who were British subjects were deemed to have imported English law with them, with the actual date for reception being difficult to define given the continuous settlement by the British. The deemed date of reception as imposed by the judiciary is the date of the first establishment of the local legislature.<sup>441</sup>
2. Conquest – the original law of the colony remained and was only conquered by British law at the instigation of British colonial rule. Any future colony that was acquired by cession was treated as being a conquered colony.<sup>442</sup>
3. Adoption – the newly formed Dominion of Canada under the *British North America Act 1867*<sup>443</sup> established the provinces of Ontario, Quebec, Nova Scotia and New Brunswick, with

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<sup>439</sup> S C McCormack, 'Patents' in S C McCormack (ed), *Intellectual Property Law in Canada* (Juris Publishing Inc, 2<sup>nd</sup> ed, 2010) 8.

<sup>440</sup> P W Hogg, *Constitutional Law of Canada* (Carswell, 2<sup>nd</sup> ed, 1985) c 2 Reception 4.21, 22–23.

<sup>441</sup> *Ibid.*

<sup>442</sup> *Ibid.*

<sup>443</sup> *British North America Act, 1867* RSC 1985, app II no 4.

other provinces being incorporated at various later times.<sup>444</sup> This permitted the adoption of various statutes from the United Kingdom. These received statutes could be amended by the colonial legislature.

4. Imperial statute – the newly formed Dominion of Canada was encumbered with the statutes of the United Kingdom Parliament acting as the imperial Parliament of the colony. These statutes were specific to the Dominion of Canada and could not be amended by the colonial legislature.<sup>445</sup>

The eventual transplantation of law and the subsequent granting of the ability to operate more independently to the parliament and legislature of the Dominion of Canada eventually led to the enactment of the *Canada Act of 1982 of the British North-America Act, 1867*<sup>446</sup> which became the *Constitution Act 1867*.

Under this structure, the Canadian federal legislature has enacted five primary sources of law to protect intellectual property with these being the:

1. Patent Act 1985
2. Copyright Act 1985
3. Trade-marks Act 1985
4. Industrial Design Act 1985
5. Plant Breeders' Rights Act 1990.

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<sup>444</sup> P W Hogg, above n 440, 31–35.

<sup>445</sup> The legislation that permitted the amendment of received statutes and prohibited the amendment of imperial statutes was *The Colonial Laws Validity Act 1865*, 28 & 29 Vict, c 63 (UK). This was later repealed by the *Statute of Westminster* which granted the power to amend or repeal all statutes to the federal parliament or any one of the provincial Legislatures.

<sup>446</sup> The *Canada Act 1982* (UK) Stats, 1982 c11, renames the *British North-America Act, 1867* as the *Constitution Act 1867*.

Of interest is the ability of the Quebec Court to utilise the French case law as a persuasive authority only where the Canadian statute is based on a statute from the United Kingdom. Given this it is obligated to use the United Kingdom case law as precedent when interpreting such statutes rather than its own precedents generated from Quebec case law.<sup>447</sup> However, in terms of the use of French case law in private law matters, no such restriction applies.

#### ***6.4.1 The Relevant Proprietary Protections in Canada for Agricultural Commodities Generated from Genetic Resources***

The collections of legislative instruments that offer the greatest and most relevant level of proprietary protection for agricultural commodities generated from genetic resources are those covering patents and varietal or breeder protection. The ability to undertake registration of a trademark to further enhance market recognition and to generate brand integrity and confidence will also be examined.

#### ***6.4.2 The Patent Act – Canada***

As previously noted the original legislation relied extensively on the statutes of the United Kingdom until 1 October 1989 when substantial amendments were made to the *Patent Act* and the Patent Rules<sup>448</sup> as a resultant response to the accession by Canada to the Patent Cooperation Treaty. These amendments had the result of creating three different species of patents under the one legislative instrument. These three different species were the ‘Old Act’ patents (issued prior to 1 October 1989), ‘Transitional’ patents and applications (applications

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<sup>447</sup> *Beauchemin v Cadieux* (1900) 10 CBR 255, 277.

<sup>448</sup> (SOR/96-423).

that were filed prior to 1 October 1989 and issued to patent after that date) and ‘New Act’ patent applications (applications filed after 1 October 1989).<sup>449</sup> Further amendments to both were also implemented with the obligations that ensued to Canada with the *North American Free Trade Agreement Implementation Act*<sup>450</sup> and the *Intellectual Property Law Improvement Act*.<sup>451</sup>

The creation of three species of patents also created different terms of protection for the granted patent. ‘Old Act’ patents have a term of 17 years from the date of issuance or 20 years from the date of filing in Canada, with an automatic extension to the longer 20-year term for all non-expired ‘Old Act’ patents as of 12 July 2001. ‘Transitional’ patents, which are subject to the payment of annual maintenance fees, have the same term as ‘Old Act’ patents. ‘New Act’ patents subject to the payment of annual maintenance fees have a term of 20 years from the filing date in Canada.<sup>452</sup>

The aggregated effect of these amendments to the original legislation has seen the Canadian law move towards becoming harmonised with the international patent treaties obligations and practices, particularly those relating to patents to which Canada is a signatory.<sup>453</sup> The important

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<sup>449</sup> S C McCormack, above n 439, 310.

<sup>450</sup> *North American Free Trade Agreement Implementation Act* 1993 c 44.

<sup>451</sup> *Intellectual Property Law Improvement Act*, 27 SC 1993, c 15.

<sup>452</sup> S C McCormack, above n 439, 312.

<sup>453</sup> Canada, in addition to those already noted, is a signatory to the *Budapest Treaty* (party on 21 September 1996), *Paris Convention* (party 12 June 1925, *Patent Law Treaty* (signatory 21 May 2001), *Strasburg Agreement Concerning the International Patent Classification*, signed 24 March 1971, I-18337 (entered into force 7 October 1975) (party on 11 January 1996), *TRIPS Agreement*, WTO and WIPO.

changes to the legislation since October 1989 can be summarised according to Eugene F Derenyi as:<sup>454</sup>

1. The introduction of inventiveness, or non-obviousness as a statutory requirement for patentability
2. The ability to defer the examination of patent applications for a period of up to seven years for applications filed between 1 October 1989 and 1 October 1996, and for a period of up to five years for applications filed after 1 October 1996
3. An elimination of the provisions related to the loss of patent rights for the failure to work the patented invention on an industrial scale in Canada
4. An elimination of the forfeiture and restoration procedures and
5. The formalisation of provisions regarding biotechnology issues, particularly in respect of the sufficiency of disclosure, standard formats for sequence listings, and deposit of microorganisms.

As previously stated, the requirements for patentability in Canada under the new legislation have been amended to bring the legislative schematic more in line with the international patent treaties and their various practices. These requirements are:

1. Inventiveness under Section 2 which defines an invention as any ‘new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement in any art, process, machine, manufacture or composition of matter’.

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<sup>454</sup> S C McCormack, above n 439, 310–311.

2. The invention under Section 28.1 must not have been ‘obvious on the claim date to a person skilled in the art or science to which it pertains.’ This has been given a four-step test by the Supreme Court of Canada in *Apotex Inc. v Sanofi-Synthelabo Canada Inc*<sup>455</sup> which is to:
- (a) identify the notional person skilled in the art and the relevant common general knowledge of that person
  - (b) identify the inventive concept of the claim in question or, if that cannot be done readily, to construe it
  - (c) identify what, if any, differences exist between the matter cited as forming part of the ‘state of the art’ and the inventive concept of the claim or the claim as construed; and
  - (d) ask whether, viewed without any knowledge of the alleged invention as claimed, those differences constitute steps which would have been obvious to the person skilled in the art or whether they require any degree of invention.<sup>456</sup>
3. Novelty under Section 28.2 which is endorsed by the decision in *Beloit Canada Ltd v Valmet Oy*<sup>457</sup> where the Court determined that although there may well be inventiveness there is a lack of novelty as ‘your invention, though clever, was already known.’<sup>458</sup>
4. Usefulness under Sections 2 and 34, with Section 2 requiring that the invention as claimed must provide to the public a benefit of industrial value and Section 34 requiring the specification to disclose the use to which the invention could be put as contemplated by the inventor. Under the latter Section there is a test as to whether a person skilled in the art

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<sup>455</sup> *Apotex Inc v Sanofi-Synthelabo Canada Inc* (2008) SCC 61, 69 CPR (4<sup>th</sup>) 251.

<sup>456</sup> *Ibid* para 67.

<sup>457</sup> *Beloit Canada Ltd v Valmet Oy* (1996) 8 CPR (3<sup>rd</sup>) 289.

<sup>458</sup> *Ibid* 294.

could, by following the directions, produce the result claimed by the applicant.<sup>459</sup> However, if the invention cannot be tested, then the doctrine of sound prediction can be used to infer utility as outlined in *Apotex Inc v Wellcome Foundation Ltd et al*<sup>460</sup> where:

- (a) there must be a factual basis for the prediction
- (b) the inventor must be able to communicate a sound line of reasoning from which the desired result can be inferred on the date the application is lodged and
- (c) proper disclosure is required.<sup>461</sup>

- 5. Validity presumption under Section 43.
- 6. Subject matter must be patentable and not merely a discovery or subject to an exemption by statute.

Of note is the treatment of biotechnology under the *Patent Act*. It is possible to patent gene sequences and other non-living biological matter under the same conditions utilised for chemical substances using the language familiar to persons skilled in the chemical field, providing that the substances produced by these microbiological processes are not intended for use in food or medicine.<sup>462</sup>

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<sup>459</sup> *Consolboard Inc v MacMillan Bloedel (Sask) Ltd* [1981] 11 SCR 504, 517–527.

<sup>460</sup> *Apotex Inc v Wellcome Foundation Ltd et al* [2002] 4 SCR 153, 21 CPR (4<sup>th</sup>).

<sup>461</sup> *Ibid.* Of note is the clarification of proper disclosure by the Federal Court of Appeal in *Eli Lilly Canada Inc v Apotex Inc*, (2009) FCA 97, aff'g 2008 FC 142, 63 CPR (4<sup>th</sup>) 241 which stated that when a patent is based on sound prediction, the disclosure must include the prediction.

<sup>462</sup> *Patent Act 1985*, 1985, ss 39(1) and 39(1.1).

Under the *Intellectual Property Law Improvement Act 1993* regulations were established detailing the format of the gene sequence listings that were to be included in the patent applications that disclosed DNA, RNA and amino acid sequences.<sup>463</sup>

It is important to note that the mere discovery of a gene sequence does not provide the subject matter that will satisfy patentability. The use of the discovered sequence must be shown, as was seen in the unsuccessful applications of the National Institute of Health where only the known gene fragments were detailed.<sup>464</sup>

The disclosure requirements under the *Patent Act* do not place any obligation on the applicant to disclose the use of traditional knowledge. As with Australia and United States, the jurisdiction of Canada operates on a voluntary mechanism only.

#### **6.4.3 Microorganisms, Plants and Patents – The Canadian Jurisdiction**

In the decision of the Patent Appeal Board in *Application of Abitibi Co*<sup>465</sup> it was stated that a broad class of living matter should receive the same treatment regarding patentability and it provided clear guidance regarding the criteria for the patentability of living matter. With respect to microorganisms, a lower life form, being patentable and the treatment they should receive, the Patent Appeal Board stated:

It is of some importance, we think, to recognize how far our recommendation, if accepted, will carry us, and we believe clear guidelines should be set down for the benefit both of applicants and examiners. Certainly this decision will extend to all microorganisms, yeasts, moulds, fungi, bacteria, actinomycetes, unicellular algae, cell lines, viruses and protozoa: in fact all new life forms which are

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<sup>463</sup> *Intellectual Property Law Improvement Act 1993*, 1993, reg 111–131.

<sup>464</sup> R S Eisenberg, 'Genes, Patents and Product Development' (1992) 257 *Science* 903.

<sup>465</sup> *Re Application of Abitibi Co* (1982) 62 CPR (2d) 81; *Re Application for Patent of Connaught Laboratories (Now Patent No 1, 139,681)*(1982), 82 CPR (2d) 32.

produced en masse as chemical compounds are prepared, and are formed in such large numbers that any measurable quantity will possess uniform properties and characteristics.<sup>466</sup>

The Patent Appeal Board then stated what the criteria should be for such applications:

The organism, to be claimed, should not of course have existed previously in nature, for in that event the 'inventor' did not create it, and his 'invention' is old. It must also be useful, in the sense that it carries out some useful known objective, such as separating oil from sand, producing antibiotics or the like. It cannot be a mere laboratory curiosity whose only possible claim to utility is as a starting material for further research. And it must be sufficiently different from known species that it can be said that its creation involved the necessary element of inventive ingenuity.<sup>467</sup>

This decision to permit the patentability of lower life forms such as microorganisms, human genes, proteins, cells and DNA sequences has been affirmed by the Supreme Court of Canada in *Harvard College v Canada (Commissioner of Patents)*.<sup>468</sup>

Regarding the ability to patent plants, the Supreme Court of Canada have shown no willingness to extent patent protection to new varieties of plants that have been created by cross-breeding. In *Pioneer Hi-Bred Ltd v Commissioner of Patents*<sup>469</sup> while the Federal Court of Appeal in the majority held that a new plant breed cannot, except in the most metaphorical sense, be said to have been produced from raw materials or to be a combination of two or more substances united by chemical or mechanical means, it was dismissed by Pratte J on the grounds that the specification would not lead with certainty to the result. The Supreme Court recognised that the central issue of the appeal was the patentability of a life form but declined to issue a decisive ruling on this question by not considering the issue. Instead the Supreme Court dismissed the appeal on technical terms concerning the failure to provide a full disclosure of the process. The

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<sup>466</sup> Ibid 89.

<sup>467</sup> Ibid 91.

<sup>468</sup> *Harvard College v Canada (Commissioner of Patents)* (2002) 21 CPR (4<sup>th</sup>) 417.

<sup>469</sup> *Pioneer Hi-Bred Ltd v Commissioner of Patents* (1989), 25 CPR (3d) 257.

Supreme Court reaffirmed Pratte J's decision in the Federal Court by determining that there remained an element of chance in the production of the variety of plant at issue, as a third party would not with certainty be able to reproduce the plant on the basis of the specifications of the process provided in the application.

The Supreme Court of Canada in *Monsanto v Schmeiser*,<sup>470</sup> concerning the use of the patented Roundup Ready canola, had to consider the validity of a patent for genes and modified cells that constitute a plant. The case involved a farmer, Schmeiser, who had not paid a licence fee for the use of the patented canola seed, using farm-saved seed to replant and reproduce a crop. Schmeiser had argued that the farm-saved seed had unknowingly contained the patented variety which had blown in from neighbouring farms. This innocent infringement defence to the use of the patented seed was not accepted as the Court ruled that Schmeiser had infringed the patent because he either knew or should have known that the sown farm-saved seed was glyphosate-resistant given the reactive gene present in the seed. The Supreme Court upheld this appeal that the patent was valid and extended the patent protection to plants that had been regenerated from the patented cells. This reaffirmed the premise that while a new plant variety could not be the subject of patent protection, the genetic component material (genes and cells) could.

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<sup>470</sup> *Schmeiser et al v Monsanto Canada Inc et al* (2004) SCC 34, 31 CPR (4<sup>th</sup>) 161.

#### **6.4.4 The Plant Breeders' Rights Act – Canada**

Under the *Plant Breeders' Rights Act 1990*, a breeder<sup>471</sup> of a new variety of plant may apply for the grant of PBR provided that the breeder has not sold or concurred in the sale of the subject variety in Canada within a set time prior to the date of the application for protection.<sup>472</sup> The granting of PBR will only occur in respect of varieties of plants that are new, distinct, uniform and stable (able to be replicated with certainty).<sup>473</sup>

The grant of PBR for a new variety of plant under the legislation grants to the holder the exclusive right to sell and to produce in Canada for the purpose of sale the propagating material of the plant variety for a period of up to 18 years.<sup>474</sup> The rights holder will also be granted the exclusive right to make repeated use of the propagating material of the protected plant variety in order to reproduce commercially another plant variety if the repetition is required for such a purpose.<sup>475</sup> A similar right is also conferred in the grant for the commercial use of propagating material in the production of ornamental plants and cut flowers.<sup>476</sup>

#### **6.4.5 Trademarks and plants in Canada**

Under the Canadian jurisdiction, the protection of plants can occur through the *Plant Breeders' Rights Act* which protects the cultivars and the propagation of plant varieties. Derivatives of the

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<sup>471</sup> Under the legislation only a citizen or resident of Canada who has a registered office in Canada or a country of the Union may apply: *Plant Breeder's Rights Act 1990*, 1990, s 8. 'A country of the Union' is defined in section 4 as any country that has ratified the *UPOV Convention* and any revisions to it that are as published in the *Canada Gazette*.

<sup>472</sup> *Plant Breeders Rights Act 1900*, 1900, s 7.

<sup>473</sup> *Ibid* s 4.

<sup>474</sup> *Ibid* para 5(1)(a) and ss 6(1). This protection only applies to the exclusive sale of propagating material within the jurisdiction of Canada.

<sup>475</sup> *Ibid* para 5(1)(b).

<sup>476</sup> *Ibid* para 5(1)(c).

plant species can also be protected through the use of trademarks under the *Trade-Marks Act 1985*.<sup>477</sup> This Act permits the registration of marks to denote goods and services according to class. This legislative instrument operates in a similar manner to the legislative schematics of Australia, New Zealand and the United States of America regarding the protection of the integrity of the goods and services the mark is designated to be used on.

The use of certification marks to denote effective and recognisable processing methods for goods derived from genetic resources is available to products produced in Canada. This enables the certification mark to be utilised as a market enhancement tool designed to attract a particular consumer. The use of a certification mark, particularly one that denotes organic production or processing or both, has been used in the case study example. The certification mark has been issued by the Organic Crop Improvement Association International (OCIA) which is a non-profit member-owned agricultural organisation that is 'dedicated to providing the highest quality organic certification services and accesses to global organic markets.'<sup>478</sup> OCIA has as its mission statement '[a]s providers and consumers of certified organic production, we are committed to environmentally sound stewardship.'<sup>479</sup> The OCIA certification mark is recognisable globally in the marketplace and used in the Canadian jurisdiction by the manufacturers of Canadian maple syrup in an attempt to provide consumer assurance concerning the production methods utilised in the processing and production of the syrup.

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<sup>477</sup> *Trade-Marks Act 1985* RSC 1985 c T-13.

<sup>478</sup> Organic Crop Improvement Association International, information accessed at <<http://www.ocia.org>> on 12 March 2012.

<sup>479</sup> *Ibid.*



### Case Study – Steeves Maples<sup>480</sup>

The producers of Steeves Maples Canadian Maple Syrup, a product that was first produced in 1869, have registered a certification mark to denote that the product and its processing has met a particular organic standard. The certification mark is registered with an identification number 40601 to certify that the product is 100 per cent organic. They have also registered a trademark for the name of the Canadian syrup and include both on the product packaging. The product is the subject of a United States of America patent and also a Canadian patent.

As with the disclosure requirements for patent application, the applicant seeking the proprietary protection of PBR, a plant patent or a trademark is not required by statute to disclose the use of traditional knowledge. The voluntary nature of disclosure is consistent with the other jurisdictions.

### **6.5 The Domestic Jurisdiction of New Zealand**

Intellectual property protection began in 1860 with the enactment of the first *Patents Act* which enabled the Governor to issue patents that were administered by the Colonial Secretary. The

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<sup>480</sup> Accessed at <<http://www.canadianmaplesyrup.ca/page.help>> on 12 March 2012.

first patent to be issued was for 'An Invention for the preparation of the Fibre of the Phormium tenax (flax) and other Plants for Manufacturing Purposes, invented by A G Purchas and J Ninnis in 1861'.<sup>481</sup> The term of the grant of the patent under this legislation was for a period of fourteen years.

The original legislation was revised to produce the *Patents Act 1870* which created the first Patent Office in New Zealand with the establishment of the ability to appoint a Patent Officer attached to the Colonial Secretary. By 1882 the ability for 'same day filing' of applications on a national basis was in operation for all patent applications through filing at the court offices. This was the extent of the examination process for patent applications at this time with any differences or disputes being determined by the courts. This situation altered in 1883 when the specifications of the patent application began to be examined prior to registration. This more comprehensive process was incorporated into the *Patents Act 1889*.<sup>482</sup>

In 1866 New Zealand enacted the *Trademarks Act* to enable the protection of identifiable marks for goods to be registered for commercial purposes. This legislative instrument was, like Australia's early intellectual property instruments, largely based on the law of the United Kingdom, specifically the *Merchandise Marks Act 1862*.<sup>483</sup>

The examination process for patent applications was extended to include consideration of prior United Kingdom publications as well as those published in New Zealand in 1902. This was a

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<sup>481</sup> New Zealand Intellectual Property Office, *History of Intellectual Property in New Zealand* <<http://www.iponz.govt.nz/cms/what-is-ip/history-of-intellectual-property-in-new-zealand>> accessed on 6 February 2012.

<sup>482</sup> Ibid.

<sup>483</sup> Ibid.

widening of the prior art base in an attempt to recognise both the antecedents to the legislative schematic in New Zealand and an acknowledgement that trade was becoming more international. The scope of the examination process was further expanded in 1911 to enable the consideration of the elements of novelty and subject matter description. The term of the granted patent protection was extended in 1921 from the original 14 years to 16 years.<sup>484</sup> During that year and early 1922 the decision was made to combine all of the intellectual property legislation into one instrument with the enactment of *The Patent, Designs and Trademarks Act*.

In 1948 the Solicitor General headed a Commission of Inquiry into patent administration. As a result of this inquiry the omnibus legislative schematic was dissolved and three separate acts were enacted; the *Patents Act 1953* which was based largely on the British legislation of 1949, the *Trademarks Act 1953* and the *Design Act 1953*. The *Trademarks Act* was amended in 1987 to include the ability to register marks for the protection of services.<sup>485</sup>

These legislative instruments have remained relatively unamended until the early 1990s when New Zealand sought to incorporate the obligations the nation state held under the *PCT* and the WTO, when the term of patent protection was increased from 16 to 20 years and the ability to include additional features such as sound, smell and shape in the definition of a trademark were incorporated into the respective legislative instruments.<sup>486</sup> There were further amendments to

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<sup>484</sup> Ibid.

<sup>485</sup> Ibid.

<sup>486</sup> Both amendments were enacted in 1994 to incorporate the ability to file applications internationally under the *PCT* and to meet the obligations of the WTO's *TRIPS Agreement* concerning the term of patent protection. Information accessed at <<http://www.iponz.govt.nz/cms/what-is-ip/history-of-intellectual-property-in-new-zealand>> on 8 February 2012.

the *Patents Act* in 2010 to bring the legislation into line with other nations concerning the standards used to assess applications, particularly with the inclusion of an inventive step and that the claimed invention must be a ‘manner of manufacture’ within the meaning of Section 6 of the *Statute of Monopolies*. This was further extended to require the claimed invention to be ‘useful’ in that it must have ‘specific, credible and substantial utility’.

The only other amendments to the legislative schematic concerned the introduction of protection for PBR through the *Plant Varieties Act 1973* and the *Trademarks Act*, with the inclusion of collective marks in 1999 and a comprehensive overhaul of all provisions in 2002. The 2002 amendments included some measures to address the inappropriate registration of Māori text and imagery as identifiable marks. This was the first legislative recognition of the value of these texts and imagery as cultural property held by the indigenous people of New Zealand.<sup>487</sup>

### **6.5.1 *The Relevant Proprietary Protections in New Zealand for Agricultural Commodities Generated from Genetic Resources***

The collections of legislative instruments that offer the greatest and most relevant level of proprietary protection for agricultural commodities generated from genetic resources are those covering patents and varietal or breeder protection. The ability to undertake registration of a trademark to further enhance market recognition and to generate brand integrity and confidence will also be examined. The Treaty of Waitangi provides significant legal rights for the indigenous people of New Zealand, the Māori, and this must be taken into account in any

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<sup>487</sup> Ibid.

legislative instrument. The impact of these treaty-granted rights will also be examined in the context of the intellectual property law schematic.

### **6.5.2 The Patents Act – New Zealand**

The legislative schematic for patents in New Zealand is similar to that of the other jurisdictions in the requirements for patents both domestically and those seeking the application of the *PCT*,<sup>488</sup> the specifications required,<sup>489</sup> the ability to lodge an application for a patent of addition<sup>490</sup> and the term of the patent protection being extended to 20 years.<sup>491</sup>

The application for a patent in New Zealand will be refused if its commercial exploitation is contrary to public policy or morality, and inventions derived from Māori traditional knowledge or whose exploitation would be considered contrary to Māori values are denied protection. This latter point is salient as it grants protection to Māori traditional knowledge by excluding it from the proprietary protection schematic and recognises it as being held by Māori for use exclusively by Māori.

The question that this raises is whether there are other mechanisms to commercially protect inventions derived from Māori traditional knowledge with the consent of Māori to use that traditional knowledge and the ability of Māori to derive and develop their traditional knowledge for commercial advantage with some proprietary protection. This is as yet unresolved.

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<sup>488</sup> *Patents Act 1953 No 64 (NZ) s 26G.*

<sup>489</sup> *Ibid* s 10.

<sup>490</sup> *Ibid* s 34.

<sup>491</sup> *Ibid* s 30(3).

### 6.5.3 Plant Varieties Act – New Zealand

The first *Plant Varieties Act*<sup>492</sup> was enacted in 1973, with the accompanying regulations enacted in 1975 which phased in the plant species to be covered by the legislative structure. This initially included roses, barley and perennial ryegrass and was then extended to include annual ryegrass, potatoes and lotus. The first grant made was for a rose in 1976.<sup>493</sup>

In 1980 the legislation was further amended to extend the protection to brassicas<sup>494</sup> of agricultural importance, linseed, oats, *Phacelia*<sup>495</sup>, wheat, all fruit species, all nut species, the herbage species fescue, canary grass, Yorkshire fog<sup>496</sup> and all ornamental species.

In 1981 the legislation was further amended to cover all plant species excluding fungi, algae and bacteria. This amendment coincided with New Zealand becoming a member of UPOV and reflected the obligations that the nation state had under the *UPOV Convention*. The final amendments to the legislation were made in 1987 (the Act) and 1988 (the Regulations).

Under the legislation, a grant of Plant Variety Rights for a new plant variety grants the breeder the exclusive right to produce for sale and sell propagating material of the protected variety. If the protected variety is vegetatively-propagated fruit, ornamental and vegetable varieties, the protection granted gives the breeder the additional exclusive commercial right to propagate the

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<sup>492</sup> In terms of the legislation, the term 'variety' is used to denote 'cultivar' or 'cultivated variety'.

<sup>493</sup> R B Wynn-Williams, above n 424, 8.

<sup>494</sup> These are vegetables such as broccoli, brussell sprouts, cabbage, cauliflower, swedes, turnips, radish, broccoflower and Asian greens. This species group also includes fodder crops such as kale and rape.

<sup>495</sup> These are quick growing manure crops and a nectar source for bees.

<sup>496</sup> This is a tufted perennial grass used for grazing in poor soil conditions or inaccessible rough terrain.

protected variety for the commercial production of fruit, flowers or other products of the variety.

The limits and exceptions to the granting of plant variety rights under the legislation are that other persons are free to:

1. grow or use the protected variety for non-commercial purposes
2. use the plants or parts of the protected variety for human consumption or other non-propagating purposes
3. use a protected variety for plant breeding, except for the repeated use of a protected variety for the commercial production of F1 hybrid seed, which is prohibited without the authority of the holder of the plant variety rights.

The criteria used to determine the eligibility of a plant variety for protection under the legislation is that:

1. it is new
2. is distinct, uniform and stable
3. an acceptable denomination (variety name) is proposed.

Regarding these criteria, a variety is considered to be new if the propagating material, whole plant or harvested material of the variety has not been sold or offered for sale with the agreement of the owner in New Zealand for more than one year before the date of the application. In addition to this, the varietal material must not have been offered for sale or sold overseas for more than six years before the date of the application for woody plants or more than four years in the case of non-woody plants.

These prior sale rules do not apply where the sale is under a contractual agreement to increase the applicant's stock or for evaluative trials or tests where all of the material produced directly or indirectly and all unused propagating material becomes the sole property of the applicant at the conclusion of the contractual agreement.

In respect of the criteria for distinctness, uniformity and stability, the variety must be:

1. distinct from all commonly known varieties existing at the date of the application in one or more combinations of morphological (shape, colour) characteristics, physiological (disease resistance) characteristics or others
2. sufficiently uniform
3. able to remain true to the provided description after repeated propagation
4. given a proposed denomination that conforms to internationally accepted guidelines under the *UPOV Convention*.

The term of protection that is granted to the holder of plant variety rights in New Zealand is 20 years for non-woody plants and 23 years for woody plants, beginning from the date of the grant of rights.

As with the previous jurisdictions, there is no requirement under the statute in New Zealand to disclose the use of traditional knowledge when an application for plant variety rights is lodged.

#### **6.5.4 Trademarks Act – New Zealand**

Under the *Trademarks Act 2002* an applicant is able to register a mark for goods or services in particular classes as long as the mark identifies a denoting feature such as colour, shape, smell,

sound or others as stated in Section 5.<sup>497</sup> The validity of the trademark upon registration is ten years, with an extension of the protection through registration upon expiry of the original registration for an indefinite period as long as the mark is used.

Trademark registration is permissible for plants and plant products according to the various classes of registration that are available. Trademarks in New Zealand are utilised to denote particular goods or services and create a recognisable brand in the marketplace.

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<sup>497</sup> *Trademarks Act 2002 (NZ) s 5.*



### **Case Study – ZESPRI**

The gold Kiwifruit, which is the subject of registered plant variety protection as Hort16A, has been trademarked by the corporation as ZESPRI and GOLD & ZESPRI which appears on the label attached to the fruit. This use of the trademarks alerts the consumer to the fact that the fruit has been cultivated in New Zealand by the corporation rather than in the northern hemisphere. These marks are used to distinguish the protected variety from others in the marketplace.

As with the jurisdictions of Australia, Canada and the United States of America, there is no formal obligation for disclosure contained in any New Zealand statute concerning formal proprietary protection mechanisms. There is a requirement that any Māori symbols that are used or any references to Māori culture be non-offensive to Māori in their use. The question as to whether there is another mechanism contained in the Treaty of Waitangi will be examined separately, as the spirit of the Treaty and its obligations must be adhered to when reading any other statute.

### **6.5.5 The Treaty of Waitangi – A Mechanism for the Protection of Traditional Knowledge Used in the Commercialisation of Agricultural Commodities Produced from Genetic Resources?**

The Treaty of Waitangi ('the Treaty') has several principles as well as key obligations that are important to its continued operation. In 1989 the then Labour Government announced the principles by which it would act when considering or dealing with issues that arose under the Treaty as being:

1. ***the kawanatanga principle*** where Article 1 of the Treaty gives the right to the Crown to enact laws and its obligation to govern. It also reflects the balance between the first two articles of the Treaty, that of the exchange of sovereignty (Article 1) by Māori for the protection of the Crown (Article 2).
2. ***the rangatiratanga principle*** where Article 2 provides a guarantee to iwi Māori over the ability to control and enjoy the resources and taonga that it is their desire to retain.
3. ***the principle of equality*** where under Article 3 a guarantee of legal equality between Māori and other citizens of New Zealand is given.
4. ***The principle of reasonable cooperation*** – this is seen by the Crown as the establishment of a fair and equitable basis for two peoples in one country as both a dual and unity model, where the duality denotes the cultural distinctiveness and the unity denotes the sense of common purpose and community. In order for these to operate there needs to be reasonable cooperation through good faith consultation on major issues of importance and common concern, with the outcome being partnership.

5. ***The principle of redress*** where the Crown will provide a mechanism to address any grievances that may arise from the Treaty, with the objective being reconciliation as the outcome.<sup>498</sup>

These five principles provide a basis from which the Treaty can operate and interact with New Zealand statutes and common law. They also give the obligation to ensure that these principles are adhered to, over to the Crown. It is through this mechanism that the Crown seeks to enforce any third party obligation to applicants for proprietary protection such as in the *Trademarks Act*.

Given these principles and the requirement to adhere to the tenets of the Treaty, most statutory obligations are silent regarding the protection of traditional knowledge that may attach to genetic resources. The issue of access and ownership of the resources is currently being tested in *Wai 262*<sup>499</sup>, the matter of the claim concerning 'the place of Māori culture, identity and traditional knowledge in New Zealand's laws, and in government policies and practices.'<sup>500</sup>

The report of the Waitangi Tribunal considered the options for the future beyond the settlement of historical grievances and made several recommendations that are currently the subject of public and government response. In summary the recommendations of the Waitangi Tribunal are:

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<sup>498</sup> J Hayward, *The Principles of the Treaty of Waitangi*, 475–494 <[http://www.waitangi-tribunal.govt.nz/doclibrary/public/Appendix\(99\).pdf](http://www.waitangi-tribunal.govt.nz/doclibrary/public/Appendix(99).pdf)> accessed on 23 April 2012.

<sup>499</sup> Report of the Waitangi Tribunal, *Wai 262* (2011) accessed at <http://www.waitangitribunal.govt.nz/reports/downloadpdf.asp?ReportID={BF981901-5B55-441C-A93E-8E84B67B76E9}> on 2 July 2012.

<sup>500</sup> 'Waitangi Tribunal – Time to Move beyond Grievance in Treaty Relationship, Tribunal says' media statement accessed at <<http://www.waitangi-tribunal.govt.nz/news/media/wai262.asp>> on 24 April 2012.

- The establishment of new partnership bodies in education, conservation, and culture and heritage; a new commission to protect Māori cultural works against derogatory or offensive uses and unauthorised commercial uses; a new funding agent for mātauranga Māori in science; and expanded roles for some existing bodies including Te Taura Whiri (the Māori Language Commission), the newly established national rongoā body Te Paepae Matua mō te Rongoā, and Māori advisory bodies relating to patents and environmental protection.
- Improved support for rongoā Māori (Māori traditional healing), te reo Māori, and other aspects of Māori culture and Māori traditional knowledge.
- Amendments to laws covering Māori language, resource management, wildlife, conservation, cultural artefacts, environmental protection, patents and plant varieties, and more.<sup>501</sup>

The final preferred option for the future protection of traditional knowledge associated with genetic resources will not eventuate for several years, given the lengthy consultation period that is required.

### ***6.6 Other Non-Legislative Methods of Proprietary Protection in the Four Jurisdictions***

Apart from the legislative schematics of the four jurisdictions to protect proprietary interests, other mechanisms that are available primarily through contracts, both negotiated and unilateral include:

1. bag tags or seed wrap licences
2. negotiated licences

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<sup>501</sup> Ibid.

3. compulsory licensing
4. cross-licensing
5. confidential agreements or confidentiality clauses
6. material transfer agreements (MAT)
7. sale or assignment agreements
8. joint venture agreements and
9. collaboration agreements.

#### **6.6.1 Bag Tags or Seed Wrap Licences**

The unilateral contract measures of bag-tags or seed-wrap licenses operate in the same manner as shrink-wrap licenses on computer software. These are express licence agreements that are printed on the product, the bag of seed and are referred to as bag-tag or seed-wrap licenses that stipulate the conditions of use for the product. Upon opening the bag, the purchaser becomes bound to these conditions by their conduct. Should future conduct by the purchaser contravene this unilateral condition, the manufacturer has the option to bring proceedings against the purchaser for breach of contract. Monsanto in the United States of America has done so on several occasions, with the most recent being *Monsanto v Scruggs*<sup>502</sup> concerning the use of Roundup Ready<sup>®</sup> soybeans which are self-pollinating and replicate perfectly.

#### **6.6.2 Licensing Arrangements**

The use of licencing arrangements allows the owner of the goods to negotiate and insist on the terms of the licence relating to the use of the goods. This can include an exemption for

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<sup>502</sup> *Monsanto Co v Scruggs* 459 F 3d 1328-2006.

research-only use, specify the geographical region for use, set the term of the licence and the use of information generated from the use of the goods. The ability to undertake enforcement actions concerning these licences will be dependent upon the nation state domestic jurisdiction, bilateral or multilateral agreements between nation states such as free trade agreements if the goods are used in another jurisdiction, and the jurisdiction in which the contract is vested.

Some examples of licencing agreements that can be used include:

1. technology licence
2. option licence
3. patent licence
4. humanitarian licence and
5. franchising licence.

### ***6.6.3 Confidentiality Agreements or Clauses***

These are often insisted upon by the producer of the goods to ensure that the technology utilised in the process of propagating the seeds or cultivars, for instance, is retained by the purchaser and not on-sold to competitors or disclosed to others. This is particularly important to the producer if there is no proprietary protection such as a patent attached to the goods.

### ***6.6.4 Material Transfer Agreements***

These agreements are usually entered into by gene banks or research institutes on the supply of germplasm, cultivars, seeds or other genetic material for further research purposes. They operate in the same manner as a contract and can include specific provisions concerning the protection or non-protection of products derived from the original genetic material supplied. They can include confidentiality clauses or benefit-sharing clauses concerning the transfer of

technology associated with the research. They can also be used in international agreements to denote obligations for all parties to multilateral treaties such as the *ITPGRFA* which has a Standard Material Transfer Agreement (SMTA) that stipulates all uses and the threshold triggers concerning the benefits with regard to the genetic material that is accessed from the Multilateral System (MLS).

### ***6.7 Summation of the Options for the Protection of Traditional Knowledge Attaching to Genetic Resources Utilised to Generate Agricultural Commodities in the Selected Domestic Jurisdictions***

Each of the four jurisdictions offers similar statute protection of proprietary interests in agricultural commodities, with no tangible protection evident for traditional knowledge that is associated with the genetic resources base from which the agricultural commodities are developed. One jurisdiction, New Zealand, does have the Treaty of Waitangi, which in principle offers some tenet of proprietary protection for technically cultural concerns in some restricted areas. However, the level of proprietary protection for all forms of traditional knowledge is currently under review with an extensive consultation process given the report of the Waitangi Tribunal into *Wai 262*. It will be interesting to monitor the outcomes of the consultations and the statutory amendments or operations of regulations concerning the application processes for proprietary protection, including the possible mandating of the disclosure of associated traditional knowledge that may follow, as this will give the other three jurisdictions some options to address this issue.

In terms of commercial interest protection by means of contract, each jurisdiction has the ability to enable each party to the contract to place an express obligation for the protection of traditional knowledge through various means. Alternatively a unilateral contract can be entered into, with the purchaser of the agricultural commodities agreeing to the terms through their conduct.

At present, the most viable means of protection for traditional knowledge utilised to generate agricultural commodities from genetic resources would be through contractual obligation. This allows the holder of the traditional knowledge to negotiate an acceptable level of protection and benefit flow from the use and commercialisation of the traditional knowledge. This is possible only if the domestic jurisdictions recognise the ownership of the traditional knowledge resting with the traditional owners. There is nothing in the statutes examined to suggest that this would be challenged for those genetic resources with attached traditional knowledge as long as the traditional knowledge is not currently in the public domain.

One major impediment to the inclusion of traditional knowledge in the intellectual property schematic through the use of patents is the inability of the applicant or the officiating body to examine the proposed invention against a prior art base. The granting of patent protection in the four jurisdictions is dependent on this examination as the primary criteria for determining the patentability of any proposed new invention. The examination against the prior art base establishes novelty and unobviousness of the art that relates to the proposed invention.

Without this examination, patentability is unachievable.

In all four selected jurisdictions there is no prior art base for traditional knowledge. Until such a prior art base exists the availability of patent protection for traditional knowledge, even with

disclosure at the point of application, is unattainable in the present legal schematic. To do otherwise would place traditional knowledge above all others at law.

## ***Section Seven: International Trade In Commodities Generated From***

### ***Agrobiodiversity***

'The multilateral trading system, with the World Trade Organization (WTO) at its centre, is the most important tool of global economic management and development we possess.'<sup>503</sup>

The trade in commodities generated from agrobiodiversity is globally important as it is these commodities that provide the food to feed the planet's population. Without this trade the continuation of the security of food would be significantly compromised. This trade is of vital importance on the most basic of levels. The international legal schematic that governs this trade is that primarily of the WTO under the *GATT Agreement*.

#### ***7.1 The World Trade Organization (WTO)***

*The Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations* (the Marrakesh Agreement) was concluded 15 April 1994 and entered into force 1 January 1995. This agreement is the most significant and comprehensive international multilateral trade agreement that consists of a brief basic agreement of sixteen articles with several annexes for specific agreements and undertakings. The relationship between the *Marrakesh Agreement* and the binding nature of the annexes is stated in Article II of the *Marrakesh Agreement*:

2. The agreements and associated legal instruments included in Annexes 1, 2 and 3 (hereinafter referred to as "Multilateral Trade Agreements") are integral parts of this Agreement, binding on all Members.

Annex 1 contains most of the substantive law of the WTO and is split into three parts:

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<sup>503</sup> P Sutherland et al, above n 165, 81.

Annex 1A containing the thirteen multilateral agreements on the trade in goods

Annex 1B containing the *General Agreement on Trade in Services* and

Annex 1C containing the *TRIPS Agreement*.

### **7.1.1 The Multilateral Trade Agreements**

The *GATT Agreement* was first negotiated and agreed to in 1947 and updated in 1994. The Annexes to the agreement form the main obligations for the nation states who are Members to the WTO, with no obligations attaching to non-members.

The Annexes that were negotiated in the *Marrakesh Agreement* were:

ANNEX 1A: Multilateral Agreements on Trade in Goods

*General Agreement on Tariffs and Trade (GATT Agreement) 1994*

Agreement on Agriculture

*Agreement on the Application of Sanitary and Phytosanitary Measures  
(SPS Agreement)*

Agreement on Textiles and Clothing

*Agreement on Technical Barriers to Trade (TBT Agreement)*

Agreement on Trade-Related Investment Measures

Agreement on the Implementation of Article VI of the General

Agreement on Tariffs and Trade 1994

Agreement on Preshipment Inspection

Agreement on Rules of Origin

Agreement on Import Licensing Procedures

Agreement on Subsidies and Countervailing Measures

Agreement on Safeguards

ANNEX 1B: General Agreement on Trade in Services and Annexes

ANNEX 1C: *Agreement on Trade-Related Aspects of Intellectual Property Rights*  
(*TRIPS Agreement*)

ANNEX 2: Understanding on Rules and Procedures Governing the Settlement of  
Disputes

ANNEX 3: Trade Policy Review Mechanism

ANNEX 4: Plurilateral Trade Agreements  
Agreement on Trade in Civil Aircraft  
Agreement on Government Procurement.

From these agreements contained in the Annexes, the relevant agreements for the research question: *'Can traditional knowledge be characterised to give it the required level of certainty to recognise it as a legal construction? And are we able to then apply proprietary protection to that knowledge when it is used to develop agricultural commodities for international trade?'* are the:

1. *GATT Agreement 1994*
2. *Agreement on Agriculture*<sup>504</sup>
3. *SPS Agreement*
4. *TBT Agreement*
5. *Agreement on Rules of Origin*
6. *Agreement on Subsidies and Countervailing Measures and*

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<sup>504</sup> *Marrakesh Agreement Establishing the World Trade Organization*, opened for signature 15 April 1994, 1867 UNTS 3 (entered into force 1 January 1995) annex 1A (*'Agreement on Agriculture'*).

## 7. *TRIPS Agreement.*

All of these agreements require investigation concerning the framework that they provide for the legitimate trade of agricultural commodities generated from genetic resources to ensure that the trade undertaken by nation states in these commodities is conducted with the required level of legal certainty to ensure that the transaction is valid at law.

### **7.1.1(a) The General Agreement on Tariffs and Trade (GATT) Agreement 1994**

This is the central pivotal agreement in the *Marrakesh Agreement* as it creates the legal framework for the trade in goods with the required level of legal certainty at an international level. This Agreement contains several key principles for the trade in goods between nation states who are Members of the WTO including:

1. Rules on the most-favoured-nation treatment (Article I)
2. Tariff concessions (Article II)
3. National treatment on internal taxation and regulation (Article III)
4. Anti-dumping and countervailing duties (Article VI)
5. Valuation for customs purposes (Article VII)
6. Customs fees and formalities (Article VIII)
7. Marks of origin (Article IX)
8. Publication and administration of trade regulations (Article X)
9. Quantitative restrictions (Article XI)
10. Exchange arrangements (Article XIV)
11. Subsidies (Article XVI)
12. Government assistance to economic development (Article XVIII)

13. Safeguard measures (Article XIX) and

14. Regional economic integration (Article XXIV)

15. Of these provisions, the ones that are pertinent to the research question are: Articles I, II, III, VI, IX, XVI and XIX. The other remaining articles deal primarily with the methods of valuation of the goods and the administration of taxation and other economic regulatory methods for the goods both at an internal and external level. While these arrangements under the agreements are important to the continued trade in agricultural commodities generated from genetic resources, they are not key given their primarily administrative function in the legal schematic. As such, they will not be evaluated in great depth singularly, but may well be referred to as a conglomerated grouping of administrative regulatory methods agreed between nation states. The other articles that are directly relevant to the research question will be evaluated on the basis of their direct ability to determine, with the required level of legal certainty, the legal exchange of agricultural goods generated from genetic resources between nation states.

The two additional agreements under *GATT* and the ensuing WTO negotiation rounds that will be examined as being relevant to the research question are the *Agreement on Agriculture* and the *SPS Agreement*.

### **Rules on the Most-Favoured-Nation Treatment and National Treatment Obligations– Articles I and III**

This has two components that are the lynchpins of the multilateral trading system; the most favoured nation treatment obligation and the national treatment obligation. The most favoured nation treatment obligation requires that a WTO Member who grants certain favourable

treatment to another country to grant the same favourable treatment to all other WTO Members as there is an express prohibition against discrimination between trading partners. The scope of this obligation was examined by the Appellate Body in *Canada – Certain Measures Affecting the Automotive Industry* with the statement on the actual scope of the obligation being:

The words of Article I:1 refer not to some advantages granted “with respect to” the subjects that fall within the defined scope of the Article, but to “any advantage”; not to some products, but to “any product”; and not to like products from some other Members, but to like products originating in or destined for “all other” Members.<sup>505</sup>

The national treatment obligation requires a WTO Member to treat foreign products, services and service suppliers not less favourably than it treats like domestic products, services and service suppliers, as once foreign products have entered the domestic market of the WTO Member they should not be subject to less favourable taxation or regulation than like domestic products. This was given a three tier test by the Appellate Body in *Korea -Measures Affecting Imports of Fresh, Chilled and Frozen Beef* where it was stated that the three elements must be satisfied for a breach of the article with the three elements being:

[T]hat the imported and domestic products at issue are ‘like products’; that the measure at issue is a ‘law, regulation or requirement affecting their internal sale, offering for sale, purchase, transportation, distribution, or use’; and that the imported products are accorded ‘less favourable’ treatment than that accorded to like domestic products.<sup>506</sup>

In terms of the research question, this obligation is important as it prevents the use of trade measures to discriminate against or prevent the competitive access to markets for agricultural commodities generated from genetic resources.

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<sup>505</sup> Appellate Body Report, *Canada – Certain Measures Affecting the Automotive Industry*, DS139/R (31 May 2000), para 79 <[http://www.worldtradelaw.net/reports/wtopanels/canada-autos\(panel\).pdf](http://www.worldtradelaw.net/reports/wtopanels/canada-autos(panel).pdf)> accessed on 20 March 2011.

<sup>506</sup> Appellate Body Report, *Korea – Measures Affecting Imports of Fresh, Chilled and Frozen Beef*, SD161/AB/R (11 December 2000), para 133 <[http://www.worldtradelaw.net/reports/wtoab/korea-beef\(ab\).pdf](http://www.worldtradelaw.net/reports/wtoab/korea-beef(ab).pdf)> accessed on 20 March 2011.

## Tariff Concessions – Article II

This Article deals with the rules on customs duties relating to the protection of tariff concessions or bindings agreed to in the conducted tariff negotiations by Members. These rules centre on the treatment of products imported being no less favourable than is provided for in the Members schedule. This means that a Member may not impose customs duties in excess of the duties set out in their schedule. This was examined by the Appellate Body in *Argentina-Measures Affecting Imports of Footwear, Textiles, Apparel and Other Items* concerning the application of a thirty-five per cent *ad valorem* but in practice the products were subject to the higher duty of either the *ad valorem* duty or a minimum specific import duty called the DIEM, and the Appellate body noted that this practice contravened the Article as:

Paragraph (a) of Article II: I contains a general prohibition against according treatment less favourable to imports than that provided for in a Member's Schedule. Paragraph (b) prohibits a specific kind of practice that will always be inconsistent with paragraph (a): that is, the application of ordinary customs duties in excess of those provided for in the Schedule.<sup>507</sup>

For agricultural commodities produced from genetic resources the application of tariff barriers can preclude these goods from a competitive place in the channels of commerce of the importing country. The obligation to not impose such a barrier is critical to the agricultural commodities being able to both gain access to the markets of the importing country and to be placed competitively against domestically produced goods that are similar in nature.

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<sup>507</sup> Appellate Body Report, *Argentina – Measures Affecting Imports of Footwear, Textiles, Apparel and Other Items*, 98-0000 (27 March 1998), para 45 <[http://www.worldtradelaw.net/reports/wtoab/argentina-textiles\(ab\).pdf](http://www.worldtradelaw.net/reports/wtoab/argentina-textiles(ab).pdf)> accessed on 20 March 2011.

## Anti-Dumping and Countervailing Duties and Subsidies – Articles VI and XVI

The agreed measures for dumping and anti-dumping are set out in Article VI and in the WTO *Agreement on Implementation of Article VI of the GATT Agreement 1994* (the *Anti-Dumping Agreement*<sup>508</sup>). The term ‘dumping’ refers to a situation of international price discrimination involving the price and cost of a good in the exporting country in relation to the price of the good in the importing country. This term is defined as the introduction of a good into the channels of commerce of another country at less than its normal value, which means the good has been ‘dumped’ into the importing country at a price that is lower than that of a like good that is destined for the same importing country.<sup>509</sup> It is important to note that the *WTO Agreement* does not prohibit the practice of dumping but creates an obligation on the Members of the WTO to condemn this practice if it causes injury to an established industry in the importing Member country.

If, after an investigation within the terms of the *Anti-Dumping Agreement* is conducted, and it is determined that there is dumping within the channels of commerce that have caused the injury to an industry producing a like good, Members are able to impose anti-dumping measures such as definitive anti-dumping duties and price undertakings.<sup>510</sup>

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<sup>508</sup> *Marrakesh Agreement Establishing the World Trade Organization*, opened for signature 15 April 1994, 1867 UNTS 3 (entered into force 1 January 1995) annex 1A (‘*Anti-Dumping Agreement*’).

<sup>509</sup> *Anti-Dumping Agreement* art 2.1.

<sup>510</sup> Appellate Body Report, *United States – Anti-Dumping Act of 1916*, DS136 28 August 2000 para 137 accessed at <[http://www.worldtradelaw.net/reports/wtopanelsfull/us-1916act\(panel\)\(ec\)\(full\).pdf](http://www.worldtradelaw.net/reports/wtopanelsfull/us-1916act(panel)(ec)(full).pdf)> on 20 March 2010.

Without this obligation on Members to the WTO agricultural commodities produced from genetic resources would be subject to market failure as domestically produced goods as the 'dumped' agricultural commodities would negate the sale of domestically produced like goods.

Subsidies and countervailing measures which are sometimes utilised to create an unfair or inequitable market advantage are also addressed under *GATT* in Article XVI under the *Agreement on Subsidies and Countervailing Measures (SCM Agreement)*, which established three categories of subsidies:

- (a) **Prohibited subsidies**- those contingent on export performance or on the use of domestic over imported goods
- (b) **Actionable subsidies** – those which create adverse effects and serious prejudice to another WTO Member and
- (c) **Non-actionable subsidies** – assistance given to industrial research and assistance to disadvantaged regions.

Under this agreement certain subsidies, financial contributions in the form of public funding for private industries that confer a benefit to the private company that would not have otherwise been available to the company in the marketplace,<sup>511</sup> are defined as actionable or prohibited subsidies that can attract a countervailing duty, a special duty that is imposed as a mechanism to offset the damage caused by the subsidy, which is imposed by the affected Member to the WTO. If the affected industry is agricultural, before any countervailing duty can be applied a

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<sup>511</sup> Panel Report, *Canada- Measures Affecting the Importation of Milk and the Exportation of Dairy Products*, DS113 (27 January 2003) <[http://www.worldtradelaw.net/reports/wto/canada-milk\(ab\)\(21.511\).doc](http://www.worldtradelaw.net/reports/wto/canada-milk(ab)(21.511).doc)> accessed on 21 March 2012.

public investigation must be conducted according to the *SCM Agreement* and Article 10 of the *Agreement on Agriculture*.

For agricultural commodities produced from genetic resources these measures attempt to provide a level playing field in terms of market access and economic return.

**Marks of Origin – Article IX and Rules of Origin – Kyoto Convention on the Simplification and Harmonisation of Customs Procedures (the ‘Kyoto Convention’<sup>512</sup>)**

The marks of origin applied to goods are a consumer protection against false and misleading information or claims on imported goods. The marks applied or affixed to goods that denote the origin of the goods must not be applied in a discriminatory manner or be applied in such a way as to be unreasonably cumbersome to the detriment of the good. These marks of origin applied to imported goods are used to determine the applicable rates of tariff duties that are payable for the imported goods under the *Kyoto Convention*.

Article IX of the *GATT Agreement* of 1994 required an implementation device that would harmonise the marks of origin arrangements. This implementation device was the *Kyoto Convention*, which addressed some of the implementation issues that arose with the classification of imported goods for both tariff purposes and consumer protection and information issues. This Convention is administered by the World Customs Organization as the peak international body for all nation state border protection and revenue collection agencies.

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<sup>512</sup> *The Kyoto Convention on the Simplification and Harmonization of Customs Procedures*, signed 18 May 1973 (effective 25 September 1974 and amended in 1998)

In order to future proof the implementation requirements in the developing face of bilateral and multilateral trade, particularly with the increasing prevalence of free trade agreements between Members, the *Agreement on Rules of Origin* was negotiated during the Uruguay Round<sup>513</sup> of the WTO.

The *Agreement on Rules of Origin* was a device to harmonise the rules applicable in each Member country as a means of reducing the trade barriers by increasing the level of transparency and predictability concerning the origin rules that were applied to goods seeking importation or exportation. This harmonisation process for non-preferential rules of origin is binding on all Member countries as it is the intention that this will facilitate further trade liberalisation.

While this ideal of trade liberalisation has seen an increase in market access for goods, the associated ability to negotiate variations in the rules of origin for produced goods has resulted in the source of some components for the production of these goods being lost as an identifier for consumers. This has resulted in agricultural commodities being produced from various components sourced from various geographical origins but being ruled as having one origin for tariff purposes.

This differentiation demonstrates the divide between the origin of the produced goods for tariff purposes and the geographical origin of the component parts in terms of traceability for the recognition of use and benefit sharing. Origin labelling can address some of these concerns but

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<sup>513</sup> The Uruguay Round of negotiations for the WTO were held between 1986 to 1992, with the Agreement on Rules of Origin being reached at the conclusion of the negotiating round in 1992. *Marrakesh Agreement Establishing the World Trade Organization*, opened for signature 15 April 1994, 1867 UNTS 3 (entered into force 1 January 1995) annex 1A ('*Agreement on Rules of Origin*').

only if this labelling is applied to all commodities domestically produced in a specific nation state regardless of the rules of origin agreements that may apply under free or preferred trade agreements. This would ensure that the components utilised to construct the commodities were able to be recognised. Another method of ensuring this recognition would be to institute certificate of origin procedures for the components as a traceability requirement. This latter method could only be instituted at a domestic level unless an international agreement required all signatories to undertake such action.

### **Safeguards – Article XIX and the *Agreement on Safeguards*<sup>514</sup>**

In terms of international trade, a 'safeguard' is an emergency measure put in place by an importing country to protect the domestic industry from an unforeseen increase of imports of any product which is causing, or which is likely to cause serious injury to the domestic industry. Under the mechanism provided by *GATT* Article XIX, it permitted importing countries to institute a safety valve for the effects of the trade liberalisation that continuous tariff concessions would cause certain domestic industries by allowing an emergency measure as a redress that ordinarily would cause a contravention of the rules and principles of the *GATT Agreement*.

The Article provided that where the application of certain tariff concessions increased the level of imports into a nation state and as a result caused or threatened to cause serious injury to a domestic industry, then a WTO Member could institute measures to prevent or remedy the injury. These measures had to meet certain conditions such as:

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<sup>514</sup> *Marrakesh Agreement Establishing the World Trade Organization*, opened for signature 15 April 1994, 1867 UNTS 3 (entered into force 1 January 1995) annex 1A ('*Agreement on Safeguards*').

- (a) The products imported into the markets are in increased quantities;
- (b) These increased imports resulted from unforeseen consequences of the implementation of the GATT obligations for trade liberalisation; and
- (c) The increased imports were the causal reasons for the serious injury or threat of serious injury to a domestic industry of like or competitive goods.<sup>515</sup>

In order to meet the requirements for the provision of safeguards, those parties that were to be affected by the proposed measures were to be notified in advance or as soon as practically possible to enable compensation measures to be provided. If the goods affected were agricultural products, the imposition of safeguards was permissible under Article 5 of the *Agreement on Agriculture*.

The operation of Article XIX was rather problematic given the interpretive basis that could be applied to the conditions and the lack of an appropriate dispute resolution mechanism should problems arise. As a result, further negotiations between WTO Members were held during the Uruguay Round, with the result being the *Agreement on Safeguards*.<sup>516</sup>

The *Agreement on Safeguards* has as its objective to continue to enhance competition and trade liberalisation by ensuring that any measures imposed are transparent, time limited and permitted causes of action. Articles 1 and 2 set out these obligations and the conditions under which safeguards may be instituted by importing countries.

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<sup>515</sup> M Rafiqul Islam, above n 46, 319–321.

<sup>516</sup> T Stewart, (ed), *The GATT Uruguay Round: A Negotiating History 1986-1992* (Kluwer, 1993) vol II, 1717.

Article 1 emphasises that the instituting of safeguard measures must be done as an emergency import restriction to remedy or mitigate the serious injury or threat of injury caused by increased imports to a WTO Member's domestic industry. Article 2 stipulates the conditions that must be satisfied to institute safeguard measures. These conditions include:

- (a) There is an increase in import flows of a product into the market, either in absolute terms or relative to domestic production
- (b) Such imports occur in conditions that cause or threaten to cause serious injury to the domestic industry of like or directly competitive products
- (c) There exists a causal link between the surge of imports and serious injury and
- (d) Measures to curb such injury are to be applied in a non-discriminatory manner.<sup>517</sup>

The instituted safeguard measures should not be applied for a period longer than four years unless after investigation it is deemed necessary for the measures to continue to remedy serious injury to the domestic industry. If this is deemed necessary the importing Member must maintain the level of concession to the exporting Member under Article 8 and they must observe the notification and consultation conditions specified in Article 12. In total, the length of the safeguard measures cannot exceed eight years.

### **7.1.1(b) The Agreement on Agriculture**

The issue of how to deal with agricultural commodities was the most contentious issue of the subsequent negotiation rounds after the original *GATT* 1947 was agreed. During the Uruguay Round the issue of agricultural protection almost saw the collapse of the negotiations as the issue was the access to the protected European Union marketplace, with the Cairns Group<sup>518</sup> of

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<sup>517</sup> M Rafiqul Islam, above n 46, 324.

<sup>518</sup> This group has eighteen members: Argentina, Australia, Bolivia, Brazil, Canada, Chile, Columbia, Costa Rica, Fiji, Guatemala, Indonesia, Malaysia, New Zealand, Paraguay, Philippines, South Africa, Thailand and Uruguay.

like-minded fair-trading agricultural exporters in conjunction with the United States of America advocated the elimination of export subsidies prevalent in the European Union. The two sort to increase the trade liberalisation of the European Union by pursuing a market-orientated agricultural trading system rather than the managed markets approach through commodity agreements favoured by the European Union.

Those food net-importing countries such as Japan and Korea advocated for the maintenance of minimal trade-distorting domestic supports in order to protect their ban on rice imports, where developing countries advocated for binding commitments towards the gradual phasing out of tariffs and quotas, in conjunction with the elimination of export subsidies. These nation states also advocated to maintain minimal trade-distorting domestic supports given their dependant nature on agricultural commodities and to ensure continued food security.

With bilateral discussions and negotiations primarily occurring between the European Union and the United states of America to resolve the opposing views primarily driving the solution, several bilateral agreements were concluded including the Blair House Agreement<sup>519</sup> between the United States of America and the European Union in 1992 and the initial framework agreement for agriculture based on the Dunkel document being negotiated in 1993.<sup>520</sup> The *Agreement on Agriculture* was adopted with an implantation period of six years<sup>521</sup>.

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<sup>519</sup> 'A Memorandum of Understanding on Oilseeds' that was negotiated during the Uruguay Round. It is referred to as the 'Blair Agreement' by both nations.

<sup>520</sup> T Stewart, above n 516, vol I, 168; B Hoekman, 'Agriculture and the Uruguay Round' (1989) 23 *Journal of World Trade* 83.

<sup>521</sup> *Agreement on Agriculture* art 1(f).

The *Agreement on Agriculture* has as its objective to halt and reverse the protectionism of the sector, remove all trade distorting practices and to reform the trade in agricultural commodities in line with the goals of trade liberalisation. This goal is to be achieved by the reduction of barriers in agricultural trade such as limited market access, domestic supports and export subsidies. The latter two reduction regimes are separated in a desire to create mechanisms that have an aspiration of minimising the level of trade distortion that could occur through implementation and to ensure a consistent level of food security and environmental protection for each Member nation state. In summary, the structure of the *Agreement on Agriculture* covers the following:

- (a) Part 1 Article 1 details the technical nature of the *Agreement on Agriculture* including the aggregate measurement of support,<sup>522</sup> budgetary outlays, equivalent measurement of support, implementation period, export subsidies, the basic agricultural commodities and market access conditions
- (b) Part 1 Article 2 stipulates the agricultural commodities covered as listed in Annex 1. This is not an exhaustive list of agricultural commodities and it does not seek to limit the agricultural commodities covered by the *SPS Agreement*
- (c) Part II details all of the concessions and commitments concerning the progressive reduction of domestic supports and export subsidies made by Member nation states.

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<sup>522</sup> The Aggregate Measure of Support (AMS) is an index that is used to measure the monetary value of the level of government support that is given to the agricultural sector of the nation state economy. This includes all types of support from financial arrangements contained in budgets, revenue transfers and other similar mechanisms that would see a shift in revenue from the consumer to the agricultural producer as these measures would distort market prices. These measures also include direct payments, input credits and interest subsidies on loans.

### 7.1.1.(c) The Agreement on the Application of Sanitary and Phytosanitary Measures

Under the terms of *GATT* each nation state Member of the WTO is entitled to adopt measures to protect the public health and safety of its population. The sanitary measures are to mitigate the risk of harm to both human and animal health, while the phytosanitary measures are to protect plant health. However, both of these measures have the ability to provide trade-distorting measures by providing domestic commodities with a protection mechanism couched in terms of risk mitigation.

In order to minimise the extent to which these measures can be utilised as trade protection mechanisms, the *SPS Agreement* was negotiated during the Uruguay Round. This was based largely on the Working Group draft text provided by the GATT Director-General Arthur Dunkel known as the Dunkel Text.<sup>523</sup>

The *SPS Agreement* is an endorsement of each Members right to adopt and enforce measures that are necessary to protect human, animal or plant life from risk as long as the measures that are applied are not a hidden barrier to international trade. The application of these measures is subject to a multilateral framework of rules and disciplines, emphasising the value of international standards such as the Codex Alimentarius Commission (Codex) for food safety, the International Office of Epizootics (Epizootics) for animal safety and the *International Plant Protection Convention* 1951 for plant safety.

The *SPS Agreement* states in Article 1 that all measures must be developed and implemented according to the *Agreement*, particularly Annex A which defines all terms and Article 1(a)-(d)

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<sup>523</sup> *Dunkell Text*, GATT Doc MTN.TNC/W/FA (20 December 1991).

which lists all protective measures that are covered. This Article stipulates that all measures, procedures, regulations or requirements that are taken by Members to address the risks posed by pests, diseases or disease causing organisms or toxins, additives or contaminants that are found in food, beverages or feedstuffs. These measures may apply in a range across the supply chain from the production or processing of goods through to the labelling and transportation of the goods produced. Examples of the measures that may be implemented to address these risks include import bans whether total or partial, inspection quarantine requirements, conformity certificates and specification of the maximum levels of pesticide residue that is permitted.

Article 2 of the *SPS Agreement* limits the application of the measures to the extent necessary to provide the level of protection for human, animal and plant health from the imported goods.

Any applied measure must be based on sufficient scientific evidence to prevent any arbitrary or discriminatory application. This element of the *SPS Agreement* in terms of the adherence to international standards was tested in the *EC- Measures Concerning Meat and Meat Products (Hormones) (Beef Hormone Dispute.)*<sup>524</sup> This dispute tested the use of the precautionary principle under Article 5 which allows the use of a risk assessment and scientific evidence for the setting of SPS measures. The dispute centred on the use of the guiding international standard set by Codex as a benchmark for the implementation of the risk assessment based on the precautionary principle.

In the Beef Hormone Dispute the use of scientific evidence was examined using the factors listed in Article 5 of the *SPS Agreement*. The conclusion reached was that the result of the risk

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<sup>524</sup> Appellate Body Report, *EC- Measures Concerning Meat and Meat Products (Hormones) (Beef Hormone Dispute)*, DS26/R/USA (January 1998) accessed at <[http://www.worldtradelaw.net/reports/wtoab/ec-hormones\(ab\).pdf](http://www.worldtradelaw.net/reports/wtoab/ec-hormones(ab).pdf)> 20 March 2010.

assessment used to implement the SPS measure must be sufficient to support its use as there must be a causal link. The *SPS Agreement* does not permit measures unrelated to trade or those implemented for the protection of consumer interests or the environment. There are limitations placed on the adoption of the precautionary principle to give effect to consumer and environmental concerns even if the effects are irreversible and an inference to the precautionary principle can be drawn.<sup>525</sup> The conclusion in the dispute was that the obligations of Members under the *SPS Agreement* are paramount. This means that the precautionary principle is unable to be applied in a manner that is inconsistent with the *SPS Agreement* as such an application would be based on precaution rather than sufficient scientific justification. This was further reinforced in Japan- Measures Affecting the Importation of Apples when the dispute panel sort to distinguish between scientific insufficiency and scientific uncertainty given that Article 5(7) referred to scientific insufficiency,<sup>526</sup> thus further narrowing the use of the precautionary principle in international trade.

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<sup>525</sup> *SPS Agreement* art 3(3) and 5(7).

<sup>526</sup> Appellate Body Report, *Japan- Measures Affecting the Importation of Apples*, DS245/AB/R (Adopted 10 December 2003) <<http://www.ejil.org/journal/curdevs/sr44.html>> accessed on 10 March 2006.

***PART THREE: OPTIONS FOR REFORM***

## ***Section Eight: Issues to Address in International Alignment***

The global arena for trade in commodities is one that is contextualised by the international agreements between nation states. These agreements can be at a bilateral or multilateral level with the number of parties ranging from one to many. They can seek to cover obligations concerning the elements and rules of trade in commodities between nation states. At times these trade agreements can seek to reference or make the terms consistent with other existing international agreements. This is sometimes undertaken to ensure that the trade obligations are balanced against environmental commitments and outcomes as they are presented in the multi-lateral environmental agreements. This sometimes presents as a juxtaposition of mutually exclusive interests – trade and the environment. Triangulated to this is the ambit of proprietary rights protection that is exercised at a domestic and global level. This triumvirate has the potential to create significant friction between the developed nation states and the less developed nation states or those with economies in transition when considering the use of traditional knowledge in the creation of an agricultural commodity for the purpose of international trade.

Agricultural commodities are traded globally for the main purpose of the provision of food, a basic staple of life. Whether these commodities are traded for consumption or as the elements to produce goods for consumption, they are exchanged both within and across borders on a daily basis. Both developed and developing nation states are critically dependant on this continued trade for the future sustainability of life, increased diversity in terms of genetic resources available for research or commercial exploitation, and economic growth and return on the commodification of the genetic resources. Vital to this continued trade in agricultural

commodities is the global ability to conserve the diverse base of genetic resources available from which these commodities can be constructed. Without this diversity in the base genetic stock the possibilities available through either traditional breeding techniques or research and development will be severely restricted.

Whether nation states are import or export dependant on these agricultural commodities creates its own tensions. These tensions are often clearly evident in the cross border transactions between nation states where proprietary rights such as trademarks or patents are sometimes enforced. This enforcement can take the form of the actions of the border agencies in various domestic jurisdictions to remove the protected agricultural commodities from the channels of commerce as an initial responsive measure. This is done until enforcement procedures through the courts can be undertaken by the rights holder in the majority of the domestic jurisdictions. The subject matter of these proprietary rights for instance can be the genetic resources components or the agricultural commodities comprised of genetic resources.

This triumvirate and the constant tensions for nations dependent on the importation and exportation of genetic resources and the agricultural commodities that they generate highlights the issues that need to be considered in the alignment of any international agreements. These issues for the continued research and development of agricultural commodities generated from genetic resources are the:

- availability of a diverse genetic resources base now and into the future
- continued access to the diverse genetic resources base
- continued use of existing technologies to manipulate genetic resources

- access to channels of commerce in international markets for the trade of resultant agricultural commodities
- availability of proprietary and other forms of protection for developed agricultural commodities or the methodology used to generate the agricultural commodities
- availability of the benefits derived from the manipulation and development of genetic resources for the development of agricultural commodities
- recognition of the value of the traditional knowledge that attaches to the genetic resources
- mechanisms for the use of traditional knowledge with the PIC of the holders of such knowledge and
- protection of the traditional knowledge when utilised in a commercial manner to ensure a financial benefit flow.

From the examination of the international legal agreement schematic in Part Two it was seen that these issues, while salient considerations, were not always enshrined or aligned. To some extent recognition was paid to their existence either through substantive containment in the operative provisions or acknowledgement in the chapeau text. None of the agreements examined in Part Two contained all of the issues in their legal framework, leaving a misalignment and a series of competing unanswered interests that were, at times, attempted to be dealt with in the nation state domestic provisions.

Of these issues the pivotal one is traditional knowledge and the status that it is accorded both at international law and in the legislative framework at a nation state level.

As was evidenced in the earlier Parts One and Two, traditional knowledge at law is a technically treated construction that does not hold any substantive form. It holds a clearly delineated function at a technical level but does not, at present, possess the necessary components at law to be declared a substantive form that can be protected by the existing schematic.

### ***8.1 Elements of the Substantive Form***

As discussed in Parts One and Two for a construction to have legal meaning it must contain recognisable elements that together give it a substantive form at law that is able to be recognised, defined, controlled, traded and protected. Substantive form is usually represented as part of the statutory framework of the legal system of nation states and this is interfaced with the obligations at law that apply to those nation states as a direct result of international agreements that have been entered into to define, control and normalise international conduct.

The premise under which statutory frameworks are constructed is one that needs to be considered, particularly the reasoning behind the framework, at a domestic nation state level. If the statutory framework is to be developed as the regulatory responsibility for the outcome of social or commercial processes, it will seek to be highly interventionist and directional. If on the other hand, the statutory framework is designed with a restrictive focus to install, correct and redefine the democratic self-regulatory mechanisms it will be more of a facilitative mechanism designed to provide a deregulated guidance platform, rather than a definitive absolute regulatory frame.

## **8.2 Two Approaches to the Construction of the Statutory Legal Framework and the Resultant Legal System**

Purposive law and the bureaucratic structures that are associated with it to give it effect were referred to as the 'formal rationality' by Max Weber.<sup>527</sup> This rationality is a formal rational legal system which creates and applies a universal body of rules. This rationality is dependent on the legal profession employing legal reasoning to advise and resolve conflicts where possible, while recognising that the judiciary are able to definitively resolve such conflicts should the aggrieved parties be unable to come to an agreement. This is the current system of most domestic nation state statutory frameworks and the accompanying legal and bureaucratic support systems. They seek to create a formal rationally based realm in which the conduct of the members of the nation state is undertaken and provide a mechanism to arbitrate on conflict when the parties involved cannot reach a resolution using the designed mechanisms within the statutory frame. This formal rationality is able to be seen as having formal attributes where the conceptually abstract becomes precisely defined and procedures are entrenched to deal with the conflicts that arise.<sup>528</sup> These are dealt with through rules of legal interpretation and application in order to provide a basis of uniformity and continuity within the system. This substantive or formal rationality requires comprehensive regulation of conduct to deliver the outcomes required on a consistent basis.

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<sup>527</sup> M Rheinstein, *Max Weber on Law in Economy and Society* (Harvard University Press, 1954) 61.

<sup>528</sup> *Ibid* 301.

In contrast to the formal rationality of Weber, Nonet and Selznick propose the system of 'responsive law' which is a shift towards a participatory and purposive system which leads to a move towards greater substantive rationality and an emergence of reflexive rationality.<sup>529</sup> This reflexive rationality involves both substantive and reflexive elements that continue to evolve through changes in internal law. This recognises the complex social and legal evolution in which changes to the legal system framework can be explained as encompassing the internal dynamics of the legal system and the impacts that a changing societal structure has on that legal system.

The tenet that responsive law rests on is an increased participation in the law making mechanism given that they perceive law to be a dynamic multidimensional framework that has as its identifiable dimensions social, political and institutional constructions.<sup>530</sup> The ability of the law to develop in this model is not restricted to norms, principles and basic concepts of law but to a dynamic interfacing of the societal forces, institutional constraints, organisational structures and conceptual potentials. This model is responsive as it provides a legal system whose 'main point is that a determinate disposition to change is traced such that systematic forces set in motion at one stage are said to produce characteristic outcomes at another'.<sup>531</sup> As an example of this process, they cite the first stage as repressive law which serves the purpose of legitimising power, but this also gives a generation of pressures that seek to undermine the specific structures and allow the emergence of a new type that they call autonomous law which is stage two. The final stage is reached utilising the internal modes of reasoning and concepts of

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<sup>529</sup> P Nonet and P Selznick, *Law and Society in Transition: Towards Responsive Law* (Harper, 1978).

<sup>530</sup> P Selznick, 'Law: The Sociology of Law', (1959) 9 *International Encyclopedia of Social Sciences*, 50.

<sup>531</sup> P Nonet and P Selznick, above n 528, 20.

participation that are permitted to develop within autonomous law to break the boundaries of formal thought and generate pressures to transform to a more responsive type of law, the final stage.<sup>532</sup> The process of this transformation is prefaced on the concept of 'institutional logic' of the legal order and classified by other legal theorists as a neo-evolutionary approach.<sup>533</sup>

The neo-evolutionists approach to legal autonomy is that it is a system that produces and reproduces by itself the elements of which it consists. This premise can be expressed as the law changing in reaction only to its own impulses as the legal order of norms, doctrines, institutions and organisations reproduces itself. The important contextual distinction is that this change is not an isolated internal one as these responses are linked to the environment (societal, political and institutional) in which the law operates. This concept of the process of a self-referential legal system permits the taking into account the 'distinctively legal; character of specific normative phenomena without relinquishing a broader social science perspective'.<sup>534</sup> This provides a basis for social and legal co-evolution rather than each evolving in isolation and remaining totally unconnected until a crisis of conflict arises. This permits the legal system to undertake institutional design that is focussed on enablement and facilitation<sup>535</sup> and to incorporate the politicisation of the law through methods of political participation, such as social advocacy, in order to integrate different interests into the process.<sup>536</sup> This reflexive rationality is centred on the process orientation of the structuring of the institutions in

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<sup>532</sup> Ibid.51–71.

<sup>533</sup> Other legal theorists who would purport to agree with this theory would be Jürgen Habermas and Niklas Luhmann.

<sup>534</sup> D Trubeck, 'Complexity and Contradiction in the Legal Order: Balbus and the Challenge of Critical Social Thought About Law' (1977) 11 *Law & Society Review* 529, 540.

<sup>535</sup> P Nonet and P Selznick, above n 528, 111.

<sup>536</sup> Ibid 95.

conjunction with the organisation of active participation which generates procedural norms. These norms will regulate the processes, organisation and the distribution of rights and competencies. Under this system the legal control of social action is not direct and finite as the legal system itself only determines the organisation and procedural premises of future action.<sup>537</sup>

***8.2.1 Are the Two Approaches to the Construction of a Statutory Legal Framework and the Resultant Legal Systems Able to Adequately Deal with Traditional Knowledge When it is Associated with Genetic Resources in the Agricultural Sphere?***

The issues identified earlier in this section for the continued research and development of agricultural commodities generated from genetic resources would need to be addressed and encompassed by any statutory legal framework to give the required level of legal certainty for all parties involved in the various transactions. These issues can be clustered into the broad areas concerning genetic resources of:

- availability and access
- use and commercialisation and
- benefit flow and protection.

These clusters are the ones that are needed as inclusions in the substantive statutory form to bring resolution to the current conflicts and provide a legal framework that provides the required level of legal certainty for all parties to the transactions. The focal question is whether the created substantive form can be derived from the tenets of Weber's 'formal rationality' or from reflexive law.

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<sup>537</sup> G Teubner, 'Substantive and Reflexive Elements in Modern Law' (1983) 17(2) *Law & Society Review*, 255.

### **8.3 Domestic Nation State Statutory Frameworks**

The decision of a domestic nation state to provide a statutory framework for the availability of, access to, use and development, benefit flow and protection of genetic resources within its geographical boundaries that have associated traditional knowledge is the first step towards providing certainty for the future. The design of that statutory framework can either be directed at the finite control of the action or establish the organisational and procedural mechanisms for the future. The latter is one that reflects the intent to be responsive to the societal and political pressures of the future while still providing the legal schematic of certainty for the present.

Some of the domestic nation states that have decided and designed statutory frameworks with the intent of achieving the latter are Brazil, Peru, Panama and the Philippines. Some have chosen to establish a statutory framework specifically for the protection of associated traditional knowledge, a *sui generis* approach, while others have the intent of a protection of the genetic resource itself as the prime objective of the statutory framework. Those domestic nation states that have utilised a *sui generis* approach have not always done so from a defensive protection frame. Some have utilised this regime as a means to establish a set of future facing organisational and procedural mechanisms, taking a more reflexive approach to the regulatory statutory framework.

#### **8.3.1 Brazil**

The nation state of Brazil has utilised a *sui generis* regime in its statutory design with the *Provisional Measure No 2.186-16, of August 23, 2001* which had as its intention, as stated in Article 1 the provision of '*benefits, rights and obligations concerning* :

- I. [A]ccess to components of the genetic heritage on the national territory, on the continental shelf and in the exclusive economic zone for purposes of scientific research, technological development or biological protection;
- II. [A]ccess to traditional knowledge relating to the genetic heritage that is relevant to the conservation of biological diversity, the integrity of the Country's genetic heritage and the use of its components;
- III. [T]he fair and equitable sharing of benefits deriving from the exploitation of components of the genetic heritage and the associated traditional knowledge; and
- IV. [A]ccess to and transfer of technology for the conservation and use of biological diversity.<sup>538</sup>

This intent is governed by the CGEN<sup>539</sup> (The Council for Genetic Heritage Management) which must give authorisation for access to genetic heritage<sup>540</sup> (resources) and associated traditional knowledge<sup>541</sup> for the purpose of research, bioprospecting or technological development.<sup>542</sup> To enable the CGEN is grant authorisation, the three actions that must be undertaken are: the obtaining of PIC from indigenous and local communities<sup>543</sup> to access and/or utilise their associated traditional knowledge; a benefit sharing arrangement in the form of a contract

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<sup>538</sup> *Provisional Measure No. 2.186-16 (2001) ('Provisional Measure')* < <http://www.farmersrights.org/pdf/americas/Brazil/Brazil-access01.pdf> > accessed on 21 January 2013.

<sup>539</sup> This is the acronym used in Portuguese for the Council.

<sup>540</sup> This is defined in the Provisional Measure at Chapter II Article 7(I) as information of genetic origin contained in samples of all or part of plant, fungal, microbial or animal specimens, in the forms of molecules and substances deriving from the metabolism of such living beings and extracts obtained from such organisms, live or dead, encountered in-situ, including domestic situations, or kept in ex-situ collections after in-situ collection within the national territory, on the continental shelf or in the exclusive economic zone.

<sup>541</sup> This is defined in the Provisional Measure at Chapter II Article 7 II as information or individual or collective practices of an indigenous or local community having real or potential value and associated with the genetic heritage.

<sup>542</sup> Paulino Franco de Carvalho Neto, Head of the Environment Division, Ministry of Foreign Affairs of Brazil, 'Lessons from developing access and benefit sharing legislation in Brazil in light of the Nagoya Protocol' (Presented at the International Symposium on Domestic Measures to Implement the Obligations under the Nagoya Protocol, (Tokyo, 8 March 2012) 7–8 <[http://isp.unu.edu/news/2012/files/nagoya-protocol/05\\_Brazil.pdf](http://isp.unu.edu/news/2012/files/nagoya-protocol/05_Brazil.pdf)> accessed on 21 January 2013.

<sup>543</sup> Local communities is defined in the Provisional Measure at Chapter II Article 7(III) as human group, including remnants of Quilombo communities, distinguished by its cultural conditions, that traditionally organises itself throughout successive generations and through its own customs and preserves its social and economic institutions.

stipulating that any economic gain derived from a resultant process or product be paid to the providers of the genetic resources and associated traditional knowledge; and the submission of the contracts to CGEN.

This statutory framework of the Provisional Measure No 2.186 -16 has several decrees which provide procedural, punitive and administrative mechanisms. These include the:

- institutional competencies and powers of CGEN, including the administrative powers to be exercised<sup>544</sup>
- procedures for the access to and use of genetic resources and associated traditional knowledge, including the use and format of the Terms of Transfer of Material as the standard contractual instrument<sup>545</sup>
- procedures for the access to and transfer of technology associated with the development of genetic resources (whether component or whole) and associated traditional knowledge, including the use of joint venture schemes or partnerships as the economic vehicle<sup>546</sup>
- procedures and mechanisms for the flow and disbursement of economic benefits arising from the commercialisation of genetic resources and associated traditional knowledge, including but not limited to profits, royalties, training and licensing of products and services. Should the contracts signed not conform to the terms stipulated by the legislation, they will be voided<sup>547</sup>

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<sup>544</sup> *Provisional Measure* ch IV art 10–15.

<sup>545</sup> *Provisional Measure* ch V art 16–20.

<sup>546</sup> *Provisional Measure* ch VI art 21–23.

<sup>547</sup> *Provisional Measure* ch VII art 24–29, including the sole unnumbered paragraph.

- administrative sanctions ranging from a warning through to a ban on engaging contractually with public authorities for a period of up to five years for non-compliance with the legislation<sup>548</sup> and
- obligation to disclose through specification to origin of the genetic resources and the associated traditional knowledge should intellectual proprietary protection be sought for either the derived product or process. The methodology for the calculation of royalties is also included.<sup>549</sup>

Even given the stipulated intent and the detailed procedures and administrative and punitive mechanisms, the Brazilian government has identified some implementation difficulties with the legislation. These range from the high level of bureaucracy required working as a disincentive for users of genetic resources to comply through to enforcement concerns for the effectiveness of the penalty regime and the declining of patent applications given the challenges to the legislation raised in the judicial system by affected parties.<sup>550</sup> However, the Brazilian government has also identified that the *Nagoya Protocol* may offer some possible solutions for some of these concerns should a global regime on ABS be achieved.

Of particular interest to the research question are the elements that would move towards an increased level of required legal certainty for the parties involved in the commercialisation into agricultural commodities of the genetic resources and associated traditional knowledge. These elements are the opportunity to create a legally binding global regime on ABS that clearly

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<sup>548</sup> *Provisional Measure* ch VIII art 30.

<sup>549</sup> *Provisional Measure* ch IX art 31.

<sup>550</sup> Paulino Franco de Carvalho Neto, above n 542, 15–19.

articulates the relationships with existing international obligations under other related instruments and the use of international certificates of compliance with domestic nation state legislation. This latter point offers promise as this compliance could also be achieved through a global certification mark on the commercial product. This would denote the product as being compliant whether it is a process or a tangible good. This would also make enforcement of the proprietary protection at nation state borders simple as it could be included in the current mechanisms for the enforcement of trademarks. It would still, however, require the holder of the mark to institute proceedings against the misuse of the mark. The issue that would arise here would be whether the holder of the mark should be the commercial entity producing the product or the issuer of the mark as the certifier of compliance.

### **8.3.2 Peru**

The Peruvian Law No 27,811 has as its intent the protection of traditional knowledge and the increasing application of that knowledge and practices.<sup>551</sup> This statute has a broad set of definitions of the key terms, particularly indigenous peoples, collective knowledge, PIC and the specific license contract to be concluded in Article 2. The scope of the reach of indigenous peoples claim in the definition extends from the time prior to the formation of the Peruvian nation state<sup>552</sup>, with a set of requirements that a specific territorial area and a maintained

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<sup>551</sup> *Peruvian Law No 27,811 Law Introducing a Protection Regime for the Collective Knowledge of Indigenous Peoples Derived from Biological Resources* title IV art 5 <<http://www.farmersrights.org/pdf/americas/Peru/Peru-tk02.pdf>> accessed on 21 January 2013.

<sup>552</sup> Indigenous peoples is defined as 'aboriginal peoples holding rights that existed prior to the formation of the Peruvian State, maintaining a culture of their own, occupying a specific territorial area and recognising themselves as such. These include peoples in voluntary isolation or with which contact has not been made, and also rural and native communities. The term "indigenous" shall encompass, and may be used as a synonym of, "aboriginal", "Traditional", "ethnic", "ancestral", "native", or other such word.' *Peruvian Law No 27,811 art 2(A)*.

culture are in existence in conjunction with recognition by the peoples of themselves as indigenous. The collective knowledge definition reinforces the transgenerational nature of the knowledge and its basis in communities<sup>553</sup> and the right to assert ownership of that knowledge in its utilisation. This definition however is time bound and it is questionable whether protection for future traditional knowledge could be covered by the statutory framework in its current form.

The statutory framework of the *Peruvian Law No 27,811* provides administrative mechanisms and procedures, in conjunction with requirements for the substantive form of any legally binding agreements to utilise the genetic resources and the associated traditional knowledge.

These include the:

- creation of three registers of traditional knowledge for the purposes of preservation and safeguard and to enable the defence of indigenous peoples interests<sup>554</sup>
- creation of a central administrative body the Office of Inventions and New Technology of the National Institute for the Defense of Competition and Intellectual Property (INDECOP) <sup>555</sup> to assess each application for the use of genetic resources and associated traditional knowledge<sup>556</sup>
- specifications for the contractual licence to utilise genetic resources and associated traditional knowledge, including the obligation to provide a financial benefit flow to the

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<sup>553</sup> Collective knowledge is defined as 'the accumulated, transgenerational knowledge evolved by indigenous peoples and communities concerning the properties, uses and characteristics of biological diversity.' *Peruvian Law No 27,811* art 2(B)

<sup>554</sup> *Peruvian Law No 27,811* title IV art 15–24.

<sup>555</sup> *Peruvian Law No 27,811* title XII art 63–66.

<sup>556</sup> *Peruvian Law No 27,811* title VII art 25–31.

Fund for the Development of Indigenous Peoples through commercialisation and enforcement by way of fines for non-compliance<sup>557</sup> and

- infringement regime of fines and sanctions for non-compliance with the statutory framework.<sup>558</sup>

Of particular interest to the research question is the use of the registers to create a prior art base for traditional knowledge within the territorial boundaries of the Peruvian nation state.

This is a formal rationality defensive regulatory approach to the issue that has a common legal schematic with existing proprietary protection frameworks in a domestic jurisdiction. This is in contrast to the Brazilian approach which seeks to be reflexive and future focused.

### **8.3.3 Panama**

The Panamanian Law No 20 of June 26, 2000 (*Special Intellectual Property Regime Governing the Collective Rights of Indigenous People for the Protection and Defense of their Cultural Identity and their Traditional Knowledge*) is also a defensive sui generis regime that bears significant similarities to the Peruvian model. The intent of the statutory framework is:

[T]o protect the collective rights of intellectual property and traditional knowledge of the indigenous communities upon their creations such as inventions, models, drawings and designs, innovations contained in pictures, figures, symbols, illustrations, old carved stones and others; likewise, the cultural elements of their history, music, art and traditional artistic expressions, capable of commercial use, through a special registration system, promotion, commercialization of their rights in order to stand out the value of indigenous cultures and to apply social justice.<sup>559</sup>

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<sup>557</sup> Peruvian Law No 27,811 art 8, 13 and 62.

<sup>558</sup> Peruvian Law No 27,811 title XI art 47–62.

<sup>559</sup> Panamanian Law No 20 of June 26, 2000 ch 1 art 1 <<http://www.farmersrights.org/pdf/americas/Panama/Panama-tk00%2011.pdf>> accessed on 22 January 2013.

The scope and assertion of proprietary rights to traditional knowledge is also specifically stated in the Panamanian domestic nation state statutory framework as:

The customs, traditions, believing, spirituality, religiosity, folkloric expressions, artistic manifestations, traditional knowledge and any other type of traditional expressions of the indigenous communities, constitute part of their cultural assets: consequently, cannot be object of any form of exclusive right by unauthorized third parties under the intellectual property system such as copyrights, industrial models, trademarks, geographical indications and others, unless the application is filed by the indigenous community. However, rights previously recognized under the legislation on the matter will be respected and will not be affected.<sup>560</sup>

The statutory framework of the *Panamanian Law No 20* provides administrative mechanisms and procedures, in conjunction with requirements for the substantive form of any legally binding agreements to utilise the genetic resources and the associated traditional knowledge.

These include the:

- creation of a registration of Collective Rights and Folkloric Expressions to be administered by the General Office for the Registry of Industrial Property of the Ministry of the Commerce and Industry (DIGERPI)<sup>561</sup>
- provisions for the rights of use and commercialization of traditional knowledge<sup>562</sup> and
- use of prohibitions and sanctions for non-compliance with the domestic statutory framework.<sup>563</sup>

Of particular interest to the research question is, like the Peruvian statutory framework, the use of a register to create a prior art base for traditional knowledge within the territorial boundaries of the Panamanian nation state. This is another example of a formal rationality defensive

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<sup>560</sup> *Panamanian Law No 20 of June 26, 2000* ch I art 2.

<sup>561</sup> *Panamanian Law No 20 of June 26, 2000* ch II art 4–6; ch III art 7–9.

<sup>562</sup> *Panamanian Law No 20 of 26 June, 2000* ch V art 15–16.

<sup>563</sup> *Panamanian Law No 20 of June 26, 2000* ch VI art 17–23.

regulatory approach to the issue that has a common legal schematic with existing proprietary protection frameworks in a domestic jurisdiction. One particular point of difference between the two formal rationality statutory approaches is the lack of the inclusion of the final product in the Panamanian statute. This omission is driven from the prime focus being the intention to protect traditional knowledge as a legal construction.

### **The Philippines**

The *Republic Act No. 8371* known as *The Indigenous Peoples' Rights Act of 1997* has as its intent the protection of traditional knowledge and the recognition that indigenous peoples' have the right to determine the access to and use of that knowledge and that:

The State shall institute and establish the necessary mechanisms to enforce and guarantee the realization of these rights, taking into consideration their customs, traditions, values, beliefs, interests and institutions, and to adopt and implement measures to protect their rights to their ancestral domains.<sup>564</sup>

The *Republic Act* recognises the claim of native title,<sup>565</sup> sustainable traditional resource rights,<sup>566</sup> customary law,<sup>567</sup> and the right to develop lands and natural resources.<sup>568</sup> Similar to the other domestic nation state statutory frameworks, the *Republic Act* provides administrative mechanisms and procedures, in conjunction with requirements for the substantive form of any legally binding agreements to utilise the genetic resources and the associated traditional knowledge. These include the:

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<sup>564</sup> *Republic Act No. 8371* ch I <<http://www.gov.ph/1997/10/29/republic-act-no-8371/>> accessed on 22 January 2013.

<sup>565</sup> *Republic Act No. 8371* ch II s 3(L).

<sup>566</sup> *Republic Act No. 8371* ch II s 3(O).

<sup>567</sup> *Republic Act No. 8371* ch II s 3(F).

<sup>568</sup> *Republic Act No. 8371* ch III s 7(B).

- requirement for free and PIC for the use of any biological and genetic resources and associated traditional knowledge covered by the statute with full disclosure of the intent and scope of the proposed activity to be given in an understandable manner to the indigenous community<sup>569</sup>
- full recognition of the traditional knowledge of indigenous communities in that it is owned, controlled and protected, including their intellectual property rights<sup>570</sup>
- creation of the National Commission on Indigenous Cultural Communities/Indigenous Peoples (NCIP) to protect and promote traditional knowledge at both a domestic nation state level and in international forums<sup>571</sup> and
- procedures available to enforce the rights conferred.<sup>572</sup>

While the domestic statutory framework of the Philippines is drafted to be reflexive to the future advancements and adaptations of traditional knowledge, it does not provide the standardised forms of agreement for the access to and use of genetic resources that are available in the other examined domestic statutory frameworks. Nor does it offer a clear definition of PIC, a cornerstone term for the statute.

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<sup>569</sup> *Republic Act No. 8371* ch II s 3(G); ch VI s 35.

<sup>570</sup> *Republic Act No. 8371* chVI s 34.

<sup>571</sup> *Republic Act No. 8371* ch VII.

<sup>572</sup> *Republic Act No. 8371* ch IX.

### ***8.3.4 Have these Domestic Statutory Frameworks Achieved the Required Level of Legal Certainty for Commercial Transactions in the Course of Trade?***

The domestic statutory frameworks are necessary as the cornerstone of the required level of legal certainty for commercial transactions to be undertaken by parties where the property to be exchanged is to be utilised to produce a product or process for trade. Without the baseline position of the domestic statutory framework, the commercial transactions undertaken will remain at best uncertain and at worst void.

In terms of the research question from the examination above, the key desirable elements of a domestic statutory framework for genetic resources and associated traditional knowledge that is utilised to construct agricultural products or processes for a commercial purpose are:

- clearly defined terms – traditional knowledge, PIC, benefit sharing, genetic resources, commercialisation, intellectual property, indigenous communities/peoples;
- standardised contractual substantive forms – licences, agreements, with included threshold triggers for benefit sharing of financial gain or technology development
- centralised registers of traditional knowledge to create a prior art base for both protection and permitted use
- clear processes for the application of proprietary rights protection for the developer of the agricultural process or product to encourage economic investment in research and development with certainty
- an administrative body that regulates compliance and benefit flow and
- an enforcement regime that is effective and administratively simple.

Once this has been achieved in the domestic nation state statutory framework the compatibility with the existing international legal framework can be enhanced. This could be done through the use of a certification mark on the goods or process to denote compliance with domestic nation state statutes and provide a recognisable proprietary mark on a global trade footing. This mark would also be able to be enforced at nation state borders in a similar manner to existing registered trademarks to ensure that only genuine compliant goods are traded. Which international organisation could undertake the task of registration and monitoring of such a mark will be considered in the next section.

### ***Section Nine: Possible Ways Forward***

As detailed in Section Three traditional knowledge has its own inherent value that has stood the test of time and been embellished by subsequent generations. It has primarily been utilised as a staple foundation by indigenous peoples living a traditional lifestyle as a bank of tested practices to provide for their needs, particularly their sustenance when it is associated with genetic resources. As seen by the research in Section Four it is not presently recognised within the proprietary rights schematic as a legal construction. It is given a technical consideration that does not permit it to be considered on a legal footing. This does not provide the required level of legal certainty to ensure both protection and an ensuing benefit flow. It does not also allow the necessary economic investment to utilise that knowledge to its full commercial potential with the required level of legal certainty demanded by developers. This is demanded to ensure that the resultant product is able to be traded freely for commercial gain. If that resultant product, whether it be a process or tangible good, is encumbered no gain is made by any party for the future use and development of that process or good. Without the required level of legal certainty there is no development, no commercialisation and no benefit flow.

Where does this leave the subsistence indigenous farmer and the observant researcher in the opening scenario?

From the research in Section Eight it is clear that a nation state statutory framework is required to govern and regulate both the access to and use of genetic resources with associated traditional knowledge. This recognises the sovereign nature of nation states to regulate their

own territory to the exclusion of all others. This right extends to the real property within the nation state realm, including the genetic resources that are attached to or roam on that real property and can be controlled. This provides the foundation stone for the future regarding the access to and use of these resources and the associated knowledge to the benefit of all. These nation state statutory frameworks provide the required level of legal certainty for all parties involved in future transactions for the development of the genetic resources with associated traditional knowledge for commercialisation purposes, including the international trade in the ensuing process or commodity.

Agricultural commodities generated from genetic resources with associated traditional knowledge are utilised to provide for the food security of the globe. They are vitally important to guarantee the future survival of the world's inhabitants, particularly in a world where the success of increased agricultural production of staple food and forage crops is the key to future survival. Without food security survival is limited. But this survival requires legal certainty in the transactions to ensure continued development and benefit flow.

Once the foundation of nation state regulatory frameworks concerning genetic resources and associated traditional knowledge is achieved, the next step is providing recognition and protection for that associated traditional knowledge at an international level. This needs to be achieved without compromising the future research and development of agricultural commodities developed for the purpose of international trade. In short, the validity of the investment stream requires endorsement at law.

The research in Sections Four and Six has examined the ability of the current legal paradigm to offer this protection and validity. It falls short on both counts. For the current legal paradigm in

the realm of proprietary protection such as patents to provide what is required would necessitate significant change in the availability of the held information concerning associated traditional knowledge as a prior art base that is recorded and freely available in the same manner as current inventions seeking patentability. For this to occur full disclosure of the associated traditional knowledge would need to be made by the holders of the knowledge in a manner that would permit future seekers of patent proprietary protection the mechanism to check their inventions against the prior art base, particularly if the same associated traditional knowledge is held by different indigenous peoples in more than one nation state. From the research in Section Three this occurrence is unlikely.

The other alternative is to use the nation state statutory framework as the basis for a compliance schematic of access and use. This nation state statutory framework would provide the certification of assurance that the genetic resources and associated traditional knowledge had been legally accessed for a permitted use within the legislative realm of the nation state of origin for the genetic resources. It would not be of concern whether the nation state regulatory framework was based on a reflexive or formal rationality approach, although a reflexive model would provide greater flexibility to respond to political and societal change. A reflexive approach would have greater capacity and capability to be adaptive to policy concerns of nation state governments, international bodies providing governance structures for existing multilateral agreements and other interested parties such as civil society organisations or traditional knowledge holders. What is important is that the nation state regulatory framework concerning genetic resources and associated traditional knowledge exists as a comprehensive

base with the clearly defined parameters discussed in Section Eight. These detailed parameters were:

- clearly defined terms – traditional knowledge, PIC, benefit sharing, genetic resources, commercialisation, intellectual property, indigenous communities/peoples
- standardised contractual substantive forms – licences, agreements, with included threshold triggers for benefit sharing of financial gain or technology development
- centralised registers of traditional knowledge to create a prior art base for both protection and permitted use
- clear processes for the application of proprietary rights protection for the developer of the agricultural process or product to encourage economic investment in research and development with certainty
- an administrative body that regulates compliance and benefit flow and
- an enforcement regime that is effective and administratively simple.

This would provide the required level of legal certainty at a nation state level for all parties concerning the access and use of genetic resources with associated traditional knowledge.

If such accession and utilisation of the genetic resources and associated traditional knowledge complied with the statutory obligations it could be certified as such by the regulating nation state. This would provide a cornerstone of protection for both the holders of the associated traditional knowledge and the researcher or developer to enable them to move with legal certainty towards the commodification of both into an agricultural good or process for the purposes of international trade on a commercial footing. This statutory compliance could be

denoted by a trademark, perhaps a certification mark that would be a visual testament to such compliance.

For this certification mark to have greater credibility and legal validity it would need to be replicated by each nation state for each complying agricultural process or good. This would provide an internationally recognised mark for all complying agricultural commodities entering the channels of commerce on the international market. It would also provide a simple mechanism of enforcement at the border of each nation state through the current trademark regime administered by border agencies as discussed in Section Six. The offending goods could be intercepted and the mark holder could institute action to ensure that no non-complying goods were traded.

If such a certification mark was created it would require an international body to record register and administer its use. The next step is identifying which existing international body would be the most appropriate one to administer the use of the certification mark for agricultural commodities generated from genetic resources and associated traditional knowledge obtained in compliance with nation state statutory frameworks.

The *CBD* is currently pursuing an international agreement concerning ABS for genetic resources. This usage does not include agricultural commodities when read in conjunction with the foundational convention as the responsibility for this subset of genetic resources was given to the FAO. For animal genetic resources no international accord currently exists that could provide the governance required, although multilateral discussions have commenced. If as a result of these discussions a new multilateral agreement could be reached it would have the capability to provide such governance. For plant genetic resources the resultant international

instrument was the *ITPGRFA* which has administered the use of these resources as they are described in the annex.

The *ITPGRFA* has demonstrated its ability to recognise and protect an existing right over genetic resources through the use of the MLS. It has also demonstrated its ability to recognise, protect and disburse the benefits of advancements or additions to the foundational inventions to which these rights attach by making them re-enter the MLS for the use of each party to the *ITPGRFA*.

The mechanism to provide a regulatory compliance oversight exists within this agreement.

For the *ITPGRFA* to administer the certification mark demonstrating compliance with nation state statutory frameworks would require additional agreement from the parties. Whether this is achievable and within the contemplation of the parties to guarantee the future of agricultural commodity development while increasing global food security is an open question. It would provide the required level of legal certainty to move forward into the future while recognising nation state regulatory control over their territorial genetic resources and associated traditional knowledge. The tipping point will be whether the parties to the *ITPGRFA* have both the foresight and the fortitude to pursue such a venture.



## ***Bibliography***

### **A. Articles/Books/Reports:**

Armistead J, 'Whose Cheese is it Anyway? Correctly Slicing the European Regulation Concerning Protections for Geographical Indications' (2000) 10(1) *Transnational Law and Contemporary Problems*

Baer K W, 'A Theory of Intellectual Property and the Biodiversity Treaty' (1995) 21 *Syracuse Journal of International Law and Commerce*

Barton J H, 'The Biodiversity Convention and the Flow of Scientific Information' in K E Hoagland and A Y Rossman (eds), *Global Genetic Resources: Access, Ownership and Intellectual Property Rights* (Association of Systematic Collections, 1997)

Barton J and Berger P (2001) 'Patenting Agriculture' (2001) (Summer) *Issues in Science and Technology* <[http://www.nap.edu/issues/17.4/p\\_barton.htm](http://www.nap.edu/issues/17.4/p_barton.htm)>

Bell J and Pimbert M, 'Introduction' in M. Baumann, J Bell, F Koechlin and M Pimbert (eds), *The Life Industry – Biodiversity, People and Profits* (Intermediate Technology, 1996)

Biber-Klemm S and Cottier T (eds), *Rights to Plant Genetic Resources and Traditional Knowledge – Basic Issues and Perspectives* (Cabi, 2005)

Bosselmann K, 'Plants and Politics: The International Legal Regime Concerning Biotechnology and Biodiversity' (1996) 7 *Colorado Journal International Environmental*

Chambers R, *An Introduction to Property Law in Australia* (Law Book Company, 2001)

Coase Ronald Harry, *The Firm, The Market and The Law* (University Of Chicago Press, 1988)

Cohen J I and Potter C S, 'Conservation of Biodiversity in Natural Habitats and the Concept of Genetic Potential' in C S Potter, J I Cohen and J B Alcorn et al (eds), *Perspectives on Biodiversity: Case Studies of Genetic Resource Conservation and Development* (AAAS, 1993)

Consultative Group on International Agricultural Research, *25 Years of Food and Agriculture Improvement in Developing Countries* (CGIAR, 1996)

Conway G R and Barbier E B, *After the Green Revolution – Sustainable Agriculture for Development* (Earthscan, 1990)

Cromwell E, Cooper D and Mulvany P, 'Defining Agricultural Biodiversity' in *Conservation and Sustainable Use of Agricultural Biodiversity A Sourcebook* (CIP-UPWARD, 2003)

DeBeer J F and Tomkowicz R J, 'Exhaustion of Intellectual Property Rights in Canada' (2009) 25(3) *Canadian Intellectual Property Review* 3 <<http://ssrn.com/abstract=1636425>>

Dietz A, 'The Moral Rights of the Author: Moral Rights and Civil Law Countries' (1995) 19/199 *Columbia Journal of Law and Arts*

Eisenberg R S, 'Genes, Patents and Product Development' (1992) 257 *Science*

Eisenberg R S, 'Proprietary Rights and the Norms of Science in Biotechnology Research' (1987) 97 *Yale Law Journal*

Food and Agriculture Organization, 'What is Agrobiodiversity?' in FAO (ed), *Building on Gender, Agrobiodiversity and Local Knowledge A Training Manual* (FAO, 2004)  
<<http://www.fao.org/docrep/009/y5956e/y5956e00.htm>>

Fowler C, 'Accessing Genetic Resources: International Law Establishes Multilateral System'

(2004) 51 *Genetic Resources and Crop Evolution*

Gaston K J (ed), *Biodiversity, A Biology of Numbers and Difference* (Blackwell Science, 1996)

Glowka L, Burhenne-Guilmin G, and Synge H, 'A Guide to the Convention on Biological Diversity'

(1994) 30 *Environmental Policy and Law Paper No 30*

Gottfrieds Fraenkel 'The Raison d'être of Secondary Plant Substances' (1959) 129(3361) 1416.

Accessed at <<http://www.sciencemag.org/cgi/pdf>>

Greengrass B, 'UPOV and Farmers' Rights' in M S Swaminathan (ed), *Agro-biodiversity and*

*Farmers' Rights* (Konark, 1996)

Gray K and Gray S, 'The Idea of Property in Land' in S Bright and J Dewar (eds), *Land Law;*

*Themes and Perspectives* (Oxford University Press, 1998)

Hayward J, *The Principles of the Treaty of Waitangi*, 475–494 <<http://www.waitangi->

[tribunal.govt.nz/doclibrary/public/Appendix\(99\).pdf](http://www.waitangi-tribunal.govt.nz/doclibrary/public/Appendix(99).pdf)>

Hoekman B, 'Agriculture and the Uruguay Round' (1989) 23 *Journal of World Trade* 83

Hogg P W, *Constitutional Law of Canada* (Carswell, 2<sup>nd</sup> ed, 1985)

International Livestock Research Institute, 'The Economic Valuation of Farm Animal Genetic

Resources' (2001) 36 *Ecological Economics* 1, 2

<<http://www.ilri.org/html/Valuation%20Methods%20Review.pdf>>

Islam M Rafiqul, *International Trade Law of the WTO* (Oxford University Press, 2006)

Jacoby C D and Weiss C, 'Recognizing Property Rights in Traditional Biocultural Contribution', (1997) 16 *Stanford Environmental Law Journal*

Jentoff S, Minde H, Nilsen R (eds), *Indigenous Peoples: Resource Management and Global Rights* (Deltif Eubron, 2004)

Johnson M (ed), *LORE: Capturing Traditional Environmental Knowledge* (Dene Cultural Institute and International Development Research Centre, 1992)

<<http://www.mtnforum.org/sites/default/files/pub/1418.pdf>>

Kate K Ten, and Laird S A, *The Commercial Use of Biodiversity: Access to Genetic Resources and Benefit-Sharing* (Earthscan Publications Limited, 1999)

McCormack S C, 'Patents' in S C McCormack (ed), *Intellectual Property Law in Canada* (Juris Publishing Inc, 2<sup>nd</sup> ed, 2010) 8

McNeely J A, Miller K R, Reid W V, Mettermeier R A, Werner T B, *Conserving the World's Biological Diversity* (IUCN, Gland Switzerland and WRI, CI, WWF-US and the World Bank, 1990)

Menon U, 'Designing a Regime of Access to Genetic Resources: Beyond the Popular Logic of Farmers' Rights and Breeders' Rights' (1997) in International Plant Genetic Resources Institute (ed) *Ethics and Equity in Conservation and Use of Genetic Resources for Sustainable Food Security* (Proceedings of a workshop to develop guidelines for the CGIAR, 21-25 April 1997 Foz do Iguacu Brazil, International Plant Genetic Resources Institute, Rome)

Meyers N, 'An EIA for Rio: Assessing the Environmental Impacts of the United Nations Conference on Environment and Development' (1994) 1(2) *The Australasian Journal of Natural Resources Law and Policy*

Nonet P and Selznick P, *Law and Society in Transition: Towards Responsive Law* (Harper, 1978)

Pagiola S and Kellenberg J, *Mainstreaming Biodiversity in Agricultural Development – Toward Good Practice*, (World Bank, 1997).

Phillips J, *Introduction to Intellectual Property Law* (Butterworths, 1986)

Pollock F, *A First Book of Jurisprudence* (MacMillan & Co, 1929)

Rheinstein M, *Max Weber on Law in Economy and Society* (Harvard University Press, 1954)

Ricketts T H, 'Tropical forest fragments enhance pollinator activity in nearby coffee crops' (2004) 18(5) *Conservation Biology*

Rossenegger P, 'Welcome to Participants' in M S Swaminathan (ed) *Agro-biodiversity and Farmers' Rights* (Konark, 1996)

Selznick P, 'Law: The Sociology of Law', (1959) 9 *International Encyclopedia of Social Sciences*

Shand H, *Human Nature – Agricultural Biodiversity and Farm-Based Food Security* (RAFI, 1997)

Shiva V, *The Violence of the Green Revolution* (Zed, 1991)

Shoemaker R, Harwood J, Day-Rubenstein K, Dunahay T, Heisey P, Hoffman L, Klotz-Ingram C, Lin W, Mitchell L, McBride W and Fernandez-Cornejo J, 'Economic Issues in Biotechnology' (2001) 762 *ERS Agriculture Information Bulletin*

Stewart T, (ed), *The GATT Uruguay Round: A Negotiating History 1986-1992* (Kluwer, 1993) vol II

Sutherland P, Sewell J and Weiner D, 'Challenges Facing the WTO and Policies to Address Global Governance' in G Sampson (ed), *The Role of the World Trade Organization in Global Governance*, (United Nations University Press, 2001)

Swaminathan M S, 'Foreword' in D Altman and K N Watanabe (eds), *Plant Biotechnology Transfer to Developing Countries* (R G Landes, 1995) i.

Teubner G, 'Substantive and Reflexive Elements in Modern Law' (1983) 17(2) *Law & Society Review*

Tisdell C, *Economics and Ecology in Agriculture and Marine Production: Bioeconomics and Resource Use* (Edward Elgar Publishing, 2003)

Trubeck D, 'Complexity and Contradiction in the Legal Order: Balbus and the Challenge of Critical Social Thought About Law' (1977) 11 *Law & Society Review* 529

Twain Mark, *A Connecticut Yankee at King Arthur's Court* <<http://www.digireads.com>>

Vamosi J C, Knight T M, Steets J A, Mazer S J, Burd M and Ashman T, 'Pollination Decays' (2006) 103(4) *Biodiversity Hotspots* <<http://www.pnas.org/cgi/doi/10.1073/pnas.0507165103>>

Van Wijk J and Jaffé W, *Impact of Plant Breeders Rights in Developing Countries* (Inter-American Institute for Cooperation on Agriculture and University of Amsterdam, 1995)

Walden I, 'Preserving Biodiversity: The Role of Property Rights' in T. Swanson (ed), *Intellectual Property Rights and Biodiversity Conservation* (Cambridge University Press, 1995)

Wilson, Edward O, *Diversity of Life* (Penguin Books Limited, 1992)

World Trade Organization, *The Legal Texts: The Results of the Uruguay Round of Multilateral Trade Negotiations*, (Cambridge University Press, 2000)

Wynn-Williams R B, 'Plant Breeder's Rights Legislation with Special Reference to Native Plants' (1987) 29(1–2) *Tuatara: Journal of the Biological Society*

<<http://www.nzetc.org/tm/scholarly/tei-Bio29Tuat01-02-tl-body-d3.html>>

**B: Other**

American University Washington DC, *Giant Geographic Indications and International Trade*

<<http://www1.american.edu/ted/giant/Case%20study%20map/casestudies2.html>>

Arnold B, *Caslon Analytics Intellectual Property – Intellectual Property Guide: Australia* July 2008

<<http://www.caslon.com.au/ipguide3.htm>>

Beaumont N, Townsend M, Mangi S and Austen M, *Marine Biodiversity: An economic valuation* (July 2006) Report provided to the Department for Environment, Food and Rural Affairs, 24.

Accessed at <[http://randd.defra.gov.uk/Document.aspx?Document=WC04029\\_4013\\_FRP.pdf](http://randd.defra.gov.uk/Document.aspx?Document=WC04029_4013_FRP.pdf)>

Beverly and Qamanirjuaq Caribou Management Board, *Management Plan – Part II Action Plans* November 1996 <<http://www.arctic-caribou.com/PDF/actionplans.pdf>>

CGIAR, ‘Lucerne Declaration and Action Programme’, reprinted in *Renewal of the CGIAR – Sustainable Agriculture for Food Security in Developing Countries* (Ministerial-level Meeting, Summary of Proceedings and Decisions, 1995)

CGIAR Consortium, Consortium News, October 2012 <<http://www.cgiar.org/consortium-news/seed-banks-great-and-small/>>

Crop Trust, *Constitution of the Global Crop Diversity Trust*

<<http://www.croptrust.org/sites/default/files/documents/files/WebPDF/Constitution-english.pdf>>

De Janvry A, Graff G, Sadoulet E and Zilberman D, *Technological Change in Agriculture and Poverty Reduction* (University of California, 2000) Concept paper for WDR on Poverty and Development 2000/2001 <<http://www.worldbank.org/poverty/background/dejanvry.pdf>>

Department of Foreign Affairs and Trade, *Australia's Free Trade Agreements*  
<<http://www.dfat.gov.au/fta/>>

Dewan R K, *Basmati Rice Patent Issue* (23 October 2000)  
<<http://www.rkdewan.com/articlesView.jsp?ai=1>>

Ellen R and Harris H, *Concepts of indigenous environmental knowledge in scientific and development studies literature – A critical assessment*, University of Kent at Canterbury, (Draft Paper for the East-West Environmental Linkages Network Workshop 3, Canterbury 8–10 May 1996) <[http://lucy.ukc.ac.uk/Rainforest/SML\\_files/Occpap/indigknow.occpap\\_1.html#Section0](http://lucy.ukc.ac.uk/Rainforest/SML_files/Occpap/indigknow.occpap_1.html#Section0)>

Encyclopedia of Earth, *The Encyclopedia of Earth: Marine Biodiversity* (6 August 2007)  
<[http://www.eoearth.org/article/Marine\\_biodiversity](http://www.eoearth.org/article/Marine_biodiversity)>

European Parliament, *Directive 98/44/EC of the European Parliament and of the Council on the Legal Protection of Biotechnological Inventions*, 6 July 1998 [1998] OJ L 213

Farlex, *Specialised Encyclopaedia and Dictionaries* <<http://www.thefreedictionary.com/>>

Food and Agriculture Organization, *Agricultural Biodiversity*, (Background Paper 1 presented at Multifunctional Character of Agriculture and Land Conference, Maastricht, 12-17 September 1999)

Food and Agriculture Organization (FAO), *Corporate Document Repository*

<<http://www.fao.org/docrep/003/w4230e/w4230e09.htm>>

Food and Agriculture Organization (FAO), *Farmers' Rights* (Report of the Conference of FAO, Res 5/89, 25<sup>th</sup> sess Rome, 11–29 November 1989, Document C89/REP 29 November 1989)

Food and Agriculture Organization (FAO), *Global Strategy*

<<http://www.fao.org/economic/ess/ess-capacity/ess-strategy/en/>>

Food and Agriculture Organization, *Glossary of Terms for Biotechnology for Food and Agriculture*

<<http://www.fao.org/biotech/biotech-glossary/en/>>

Food and Agriculture Organization (FAO), *Progress Report on the FAO Global System for the Conservation and Utilization of Plant Genetic Resources for Food and Agriculture*,

UNEP/CBD/COP/3/15, <<ftp://ftp.fao.org/docrep/fao/meeting/015/aj433e.pdf>>

Food and Agriculture Organization (FAO), *Report on the Commission on Plant Genetic Resources*,

3<sup>rd</sup> Session Rome 17–21 April 1989 <<ftp://ftp.fao.org/docrep/fao/meeting/015/aj401e.pdf>>

GATT, *Dunkell Text*, GATT Doc MTN.TNC/W/FA (20 December 1991)

Goldberg D, *Jack and the Enola Bean* (December 2003) <<http://www1.american.edu/TED/enols-bean.htm>>

Industry Commission, *A Full Repairing Lease: Inquiry into Ecologically Sustainable Land Management* (Industry Commission, 1998)

Intellectual Property and Competition Review Committee (September 2000) *Review of Intellectual Property Legislation under the Competition Principles Agreement Final Report*

International Centre for Trade and Sustainable Development, 'How Best to Conserve Farm Animal Diversity' (2007) 1(1) *News and Analysis*

<http://www.ictsd.or/i/news/bioresreview/12114/>>

International Center for Tropical Agriculture, *Below-ground Biodiversity Research Project of the Tropical Soil Biology and Fertility Institute of the International Centre for Tropical Agriculture*

[http://www.webapp.ciat.cgiar.org/news/pdf/poster07a\\_scmeeting\\_06.pdf](http://www.webapp.ciat.cgiar.org/news/pdf/poster07a_scmeeting_06.pdf)>

International Union for the Protection of New Varieties of Plants (UPOV), *Mission Statement and General Information* <<http://www.upov.int/en/about>>

IP Australia, *Patents and Plants* <<http://www.ipaustralia.gov.au/get-the-right-ip/plant-breeders-rights/pbr-and-other-ip-rights/patents-and-plants/>>

IP Australia, *History of PBR in Australia* <<http://www.ipaustralia.gov.au/get-the-right-ip/plant-breeders-rights/about-pbr/history-of-pbr-in-australia/>>

IUCN, *World Conservation Strategy: Living Resource Conservation for Sustainable Development*,

International Union for Conservation of Nature and Natural Resources (IUCN) 1980

<http://www.data.iucn.org/dbtw-wpd/edocs/wcs-004.pdf>>

Millward and Brown, *BrandZ* <<http://www.top1business.net/top-10-trade-marks-largest-in-the-world>>

Ministry of Foreign Affairs and Trade, *Trade Relationships and Agreements*

<http://www.mfat.govt.nz/Trade-and-Economic-Relations/2-Trade-Relationships-and-Agreements/index.php>>

Mugabe J, *Intellectual Property Protection and Traditional Knowledge: An Exploration in International Policy Discourse* (Panel Discussion Paper provided to WIPO)

<<http://www.wipo.int/tk/en/hr/panrldiscussion/papers/pdf/mugabe.pdf>>

Muir P, *Diminished Crop Diversity* Oregon State University

<<http://people.oregonstate.edu/~muirp/cropdiv.htm>>

Native Science Organisation, *What is traditional knowledge?*

<[http://www.nativescience.org/html/traditional\\_knowledge.html](http://www.nativescience.org/html/traditional_knowledge.html)>

New Zealand Intellectual Property Office, *History of Intellectual Property in New Zealand*

<<http://www.iponz.govt.nz/cms/what-is-ip/history-of-intellectual-property-in-new-zealand>>

Norse Elliot and McManus Roger, *11th Annual Report to the Council on Environmental Quality*

(1980) <[http://robinson.gsu.edu/resources2/files/ethics/elliott\\_norse.pdf](http://robinson.gsu.edu/resources2/files/ethics/elliott_norse.pdf)>

Nottenburg C, *The Enola Bean Controversy* (24 February 2009) Harvest Choice

<<http://harvestchoice.org/files/Enola%20Beanpdf>>

Novafeel, *The Value of Secondary Plant Metabolites* <<http://www.novafeel.com.nutrition/plant-secondary-metabolites.htm>>

Organic Crop Improvement Association International, <<http://www.ocia.org>>

Organisation for Economic Co-operation and Development (OECD), *Glossary of Statistical Terms*

(30 November 2005) <<http://stats.oecd.org/glossary/detail.asp?ID=6359>>

Oxford, *Oxford English Dictionary* <<http://oxforddictionaries.com/>>

Ricketson S, *Intellectual Property Administration and Policy in Australia – An Examination of the Australian Situation, Past and Present, and Recommendations for Future Change*, (Paper presented at the National Innovation Summit, Melbourne, 9–11 February 2000)

Ruiz M, *The International Debate on Traditional Knowledge as Prior Art in the Patent System: Issues and Options for Developing Countries*, Center for International Environmental Law, October 2002 <[http://www.ciel.org/Publications/PriorArt\\_ManuelRuiz\\_Oct02.pdf](http://www.ciel.org/Publications/PriorArt_ManuelRuiz_Oct02.pdf)>

Scarpa R, 'Revealed Preference Valuation Methods for Farm Animal Genetic Material: Principles, Strengths and Weaknesses' (Paper presented at: Valuation of Animal Genetic Resources — An ILRI-FAO Planning Workshop, FAO Rome, 15-17 March 1999)

Scolnick D M, *Patent Update – A Publication of Pepper Hamilton LLP*  
<[http://www.pepperlaw.com/publications\\_update.aspx?ArticleKey=2190](http://www.pepperlaw.com/publications_update.aspx?ArticleKey=2190)>

Sease E J, 'History and Trends in Agricultural Biotechnology Patent Law from a Litigator's Perspective' (Paper presented at the "Seeds of Change" Symposium Banquet, University of Illinois, 9 April 2004)  
<[http://www.agmrc.org/business\\_development/operating\\_a\\_business/legal/artycles/history\\_and\\_trends\\_in\\_agricultural\\_biotechnology\\_patent\\_law\\_from\\_a\\_litigators\\_perspective.cmf](http://www.agmrc.org/business_development/operating_a_business/legal/artycles/history_and_trends_in_agricultural_biotechnology_patent_law_from_a_litigators_perspective.cmf)>

*Star Medical* <<http://www.starmedical.co.uk/cosmeceutical.php>>

Sutherland P D, 'Beyond the Market, a Different Kind of Equity', *International Herald Tribune* (Paris), 20 February 1997

Tabuman T, *Panel Discussion of the United Nations Economic and Social Council 2009 Organizational Session*, <<http://www.un.org/News/Press/docs/2009/ecosoc6385.doc.htm>>

UNEP, *Global Biodiversity Assessment* United Nations System-Wide Earthwatch

<<http://www.un.org/earthwatch/biodiversity/index.html>>

UNESCO & WIPO, *Model Provisions for National Laws on the Protection of Expressions of Folklore Against Illicit Exploitation and Other Prejudicial Actions*, (1985)

<<http://www.wipo.int/tk/en/documents/pdf/1982-folklore-model-prvisions.pdf>>

United Nations, *Declaration on the Rights of Indigenous Peoples*, Res 61/295, adopted by the General Assembly at the 107<sup>th</sup> Plenary Meeting, 13 September 2007,

<[http://www.un.org/esa/secdev/unpfii/documents/DRIPS\\_en.pdf](http://www.un.org/esa/secdev/unpfii/documents/DRIPS_en.pdf)>

United Nations, *Rio Declaration on Environment and Development* (1992)

<<http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm>>

United Nations Department of Economic and Social Affairs (DESA), *Report of the International Expert Group Meeting on the Convention on Biological Diversity's International Regime on Access and Benefit Sharing and Indigenous People's Human Rights*, UN Doc E/C.19/2007 (14 -25 May 2007) <<http://social.un.org/index/IndigenousPeoples/MeetingsandWorkshops/EGMCBD.aspx>>

United Nations Environment Programme (UNEP), *Global Biodiversity Assessment* 1996

United Nations World Commission on Environment and Development, *Our Common Future: Report of the World Commission on Environment and Development* (Presented to the General Assembly of the United Nations as an Annex to document A/42/427 Ch 2: Towards Sustainable Development, 1987) <<http://www.un-documents.net/ocf-02.htm#I>>

United States Patent and Trademark Office, *2107 Guidelines for Examination of Applications for Compliance with the Utility Requirement*

<<http://www.uspto.gov/web/offices/pac/mpep/s2107.html>>

Waitangi Tribunal – Time to Move beyond Grievance in Treaty Relationship, Tribunal says’

media statement accessed at <<http://www.waitangi-tribunal.govt.nz/news/media/wai262.asp>

Waitangi Tribunal, *Wai 262* (2011)

<<http://www.waitangitribunal.govt.nz/reports/downloadpdf.asp?ReportID={BF981901-5B55-441C-A93E-8E84B67B76E9}>>

Webster’s New World Dictionary <<http://www.yourdictionary.com/analogue>>

Wilderswil, *Wilderswil Declaration on Livestock Diversity* (Switzerland, 6 September 2007)

<<http://www.ukabc.org/wilderswil.pdf>>

Wilderswil, *Report of the Forum on Livestock Diversity: Defending Food Sovereignty and*

*Livestock Keepers’ Rights* (Switzerland, 1–4 September 2007)

<[http://www.swissaid.ch/sites/default/files/LivestockDiversityForumReport\\_IPC.pdf](http://www.swissaid.ch/sites/default/files/LivestockDiversityForumReport_IPC.pdf)>

World Intellectual Property Organization, *Definition of Traditional Cultural Expressions*

(expressions of folklore) <<http://www.wipo.int/tk/en/folklore/>>

World Intellectual Property Organization, *Intellectual Property Needs and Expectations of*

*Traditional Knowledge Holders*, Report on Fact Finding Missions on Intellectual Property and

Traditional Knowledge (1998–1999) Geneva April 2001

<<http://www.wipo.int/tk/en/tk/ffm/report/final/pdf/part1.pdf>>

World Intellectual Property Organization Intergovernmental Committee, *Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore*, 11<sup>th</sup> sess, WIPO/GRTKF/1C/11/7 E (Geneva 3–12 July, 2007) <<http://www.wipo.int>>

World Intellectual Property Organization International Forum, *Intellectual Property and Traditional Knowledge: Our Identity, Our Future* <[http://www.wipo.int/arab/en/meetings/2002/muscat\\_forum\\_ip/tpk\\_mct02\\_j3.htm](http://www.wipo.int/arab/en/meetings/2002/muscat_forum_ip/tpk_mct02_j3.htm)>

World Intellectual Property Organization, *Technical Study on Disclosure Requirements in Patent Systems related to Genetic Resources and Traditional Knowledge Study No3*, UN Doc UNEP/CBD/COP/7/INF/17 (February 2004) <[http://www.wipo.int/export/sites/www/tk/en/publications/technical\\_study.pdf](http://www.wipo.int/export/sites/www/tk/en/publications/technical_study.pdf)>

World Intellectual Property Organization, *Traditional Knowledge, Genetic Resources and Traditional Cultural Expressions/Folklore* <<http://www.wipo.int/tk/eng>>

World Intellectual Property Organization, *What is intellectual property?* <<http://www.wipo.int/about-ip/en/>>

World Trade Organization, *Geographical Indications* <[http://www.wto.org/eng/tratop\\_e/trips\\_e/gi\\_e.htm](http://www.wto.org/eng/tratop_e/trips_e/gi_e.htm)>

World Trade Organisation, *Managing the Challenges of WTO Participation: Case Study 35 – Pakistan: The Consequences of a Change in the EU Rice Regime* <[http://www.wto.org/english/res\\_e/booksp\\_e/casestudies\\_e/case35\\_e.htm](http://www.wto.org/english/res_e/booksp_e/casestudies_e/case35_e.htm)>

World Trade Organization, *WTO 26* <[http://www.wto.org/english/docs\\_e/legal\\_e/04-wto.pdf](http://www.wto.org/english/docs_e/legal_e/04-wto.pdf)>

World Trade Organization Press Brief, 'Measures Concerning the Possible Negative Effects of the Uruguay Round Agricultural Reform Programme on Least Developed and Net Food-Importing Developing Countries'

<[http://www.wto.org/English/theWTO\\_e/minist\\_e/min96\\_e/netfood.htm](http://www.wto.org/English/theWTO_e/minist_e/min96_e/netfood.htm)>