行政院國家科學委員會專題研究計畫　成果報告

傳統知識智財權保護之研究----子計畫六

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計畫主持人：郭華仁

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行政院國家科學委員會補助專題研究計畫期末報告

傳統知識智財權保護之研究

計畫類別：□ 個別型計畫　　■ 整合型計畫
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計畫主持人：郭華仁 教授
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計畫參與人員： 研究助理陳士章、研究生周欣宜

成果報告類型(依經費核定清單規定繳交):□精簡報告　■完整報告

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執行單位：台灣大學農藝學系

中　華　民　國　93　年　4　月　30　日

中文摘要

在1970年代以後，西方化工以及藥品跨國公司逐漸熱中於前往生物資源豐富地區進行生物探勘，這些生物資源豐富地區經常在熱帶開發中國家，特別是這些國家的原住民生活圈。跨國公司由這些資源進一步研發，並且經由智財權保障其研發結果而獲利。原本對於原住民智慧創作的保護僅限於人類學者所重視的民間傳說、音樂、舞蹈等，就因之而擴充到民族生物學者以及相關保育團體對於生物多樣性保護的關懷。這些部門認為原住民、地方社群在農業、醫療、生態以及其他方面的傳統知識對於社群的永續發展是相當珍貴的憑藉。這些思潮最後具體地呈現於1992年的生物多樣性公約，特別是在第8（j）條：「依照國家立法，尊重、保存和維持原住民和地方社區體現傳統生活方式而與生物多樣性的保護和持久使用相關的知識、創新和做法並促進其廣泛應用，由此等知識、創新和做法的擁有者認可和參與其事並鼓勵公平地分享因利用此等知識、創新和做法而獲得的惠益」。

此外，世界智財組織（WIPO）從1998年開始，在南亞、南太平洋、阿拉伯國家、東南非、西非、美洲等28個國家進行了九次的實情調查，訪問的對象囊括原住民與地方社群居民、政府官員、學術研究單位以及非政府組織等。這些訪問肯定了傳統知識在許多領域的確是產業技術不斷創新的來源，包括農業、藥物、藝術等。

近年來，對於傳統知識的保護，各方的研究相當豐碩，基於對保護傳統知識的目標，在各個國際論壇中已有相當數量的著作以及許多關於規則與行動的建議。本為主要目的在於比較傳統知識與近代科技間特性的異同，並將報告國際保護傳統知識之方法，以及台灣之保護現況，以作為討論傳統知識保護的參考。

關鍵詞：傳統知識；智慧財產；生物多樣性公約；原住民；地方社區

Abstract

Starting in the 1970s, multinational pharmaceutical and chemical corporations gradually started heading to areas in other parts of the world, areas rich in biodiversity, to conduct bio-prospecting concerning natural resources. These areas are frequently in developing countries of tropical areas, and especially in areas where indigenous peoples live. The multinational corporations further researched and developed these resources, and the protected the results of the R&D with intellectual property (IP) protection to make a profit. These activities raise the issues of protecting genetic resources and traditional knowledge (TK).

Originally, protection was restricted to for certain creations (such as folklore, music, dance, etc.) of indigenous people, but later biologists and other environmental groups pushed for expansion of this protection to include protection of other forms of biodiversity. These groups felt that the traditional knowledge of indigenous peoples and local communities in the fields of agriculture, medicine, and ecology, etc., could have very important contributions for sustainable development. These ideas are present in the 1992 Convention on Biodiversity (CBD), specifically 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.

Moreover, from 1998, the World Intellectual Property Organization (WIPO) has conducted nine fact-finding missions in 28 countries (including countries in South Asia, the South Pacific, Arab nations, Southeast Africa, West Africa, the Americas, etc.), visiting indigenous peoples, and local tribes, governmental officials, the scholarly research institutions, and non-governmental associations (NGOs) etc. These visits affirm that TK in many fields (including agriculture, medicine, art, etc.) is the source for innovative technology.

Many scholars have conducted research regarding TK protection in recent years, with the goal of increasing protection of TK. Moreover, international forums have distributed many suggestions for action plans and regulations.

The goal of this article is to compare TK with modern technology, and to discuss the protection of TK at the international level, as well as in Taiwan, as a reference for the different methods of TK protection.

Keywords: Traditional Knowledge, Intellectual Property, CBD, indigenous people, local communities

目錄

壹、報告內容

一、前言

在 1970 年代以後，西方化工以及藥品跨國公司逐漸熱中於前往生物資源豐富地區進行生物探勘，這些生物資源豐富地區經常在熱帶開發中國家，特別是這些國家的原住民生活圈。跨國公司由這些資源進一步研發，並且經由智財權保障其研發結果而獲利。原本對於原住民智慧創作的保護僅限於人類學者所重視的民間傳說、音樂、舞蹈等，就因之而擴充到民族生物學者以及相關保育團體對於生物多樣性保護的關懷。這些部門認為原住民、地方社群在農業、醫療、生態以及其他方面的傳統知識對於社群的永續發展是相當珍貴的憑藉。這些思潮最後具體地呈現於 1992 年的生物多樣性公約，特別是在第 8(j)條：「依照國家立法，尊重、保存和維持原住民和地方社區體現傳統生活方式而與生物多樣性的保護和持久使用相關的知識、創新和做法並促進其廣泛應用，由此等知識、創新和做法的擁有者認可和參與其事並鼓勵公平地分享因利用此等知識、創新和做法而獲得的惠益」。

傳統知識相較於近代科技，既然有其可資利用之處，因此傳統知識利用智慧產權或其他相關法律的保護，可算是順理成章。世界智財組織（WIPO）從 1998 年開始，在南亞、南太平洋、阿拉伯國家、東南非、西非、美洲等 28 個國家進行了九次的實情調查，訪問的對象囊括原住民與地方社群居民、政府官員、學術研究單位以及非政府組織等。這些訪問肯定了傳統知識在許多領域的確是產業技術不斷創新的來源，包括農業、藥物、藝術等。

近年來，對於傳統知識的保護，各方的研究相當豐碩，基於對保護傳統知識的目標，在各個國際論壇中已有相當數量的著作以及許多關於規則與行動的建議。本研究主要目的在於比較傳統知識與近代科技間特性的異同，並將報告傳統知識保護的國際現況，以作為討論傳統知識保護的參考。

二、什麼是傳統知識？

傳統知識的定義為何，對於其保護機制類型的選擇與保護範圍，將有著重要影響。一般而言，傳統知識係由多類型且跨領域的知識所組成，包括醫療、狩獵、農業生產等使用的生物、其他材料、以及生產方式等；此外廣義的傳統知識也及於設計、文學、音樂、宗教儀式和其他技術和工藝等。此 一廣泛的內容也包括功能和美學性質的資訊，即所有可以用於農業或工業的方法和產品以及無形的文化價值等。傳統知識透過以下方式予以區別：構成的要素，知識潛在的或實際的應用，文獻化程度，個體所有或集體所有形式，以及其法律狀態。

傳統知識產生的背景和表現形式多所不同。有些傳統知識已被文獻化，即已被以某種方式正式表現出來(例如紡織品設計，傳統醫學)。然而，當今絕大部分的傳統知識是未被文獻化或是約定俗成的，例如，原住民於部落間醫療知識，基於傳統的信仰、準則和實踐，歷經數世紀的以家族爲單位的嘗試錯誤，不斷改良，並透過世代口耳相傳而沿用迄今。

傳統知識可能被個人擁有（例如治療經驗和宗教儀式)、可能被一個群體中的某些成員所有，或者可爲群體中的所有成員獲及（即共同知識)，例如，已被數百萬婦女和老人掌握的關於藥用植物的家庭療法的知識。

傳統知識在脫離當地、傳統或氏族的環境下，某些傳統知識依然能夠被妥善運用。但情況也並非總是如此。傳統知識中常有一些與神靈、精神有關的組成部分，它們僅適用當地社群，一旦離開當地社群環境就不能運用的傳統知識，將不具有商業交易的價值，儘管該傳統知識對當地社群是有價值的。

總而言之，傳統知識包括了不同類別、不同功能的資訊，它的出現時間經常是早期而且不可考，但是會順應時代而發展，適應時代而變更。傳統知識以各種非文獻和文獻形式表現出來，根據其潛在或實際的用途而可能具備商業價值。

多數情況下，傳統知識由那些在過去已經發展成熟的知識所構成。它們已經被世代沿用，並且在許多情況下已被人類學家、歷史學家、植物學家或其他研究學者和觀察家收集和公開。然而，傳統知識並非靜止不動，它因不斷的改進或適應改變的情況而不斷演變並產生新的資訊。

世界智財組織 (WIPO)的「傳統知識、遺傳資源與民俗創作智慧財產權之政府間委員會」(以下簡稱 IGC）秘書處於 2003 年七月中旬所開之第五次會期中，再次重申傳統知識之意含，依其官方文件所載，「傳統知識」係指基於傳統而生之文學的、藝術的或科學的作品、表演，發明、科學發現、外觀設計（designs)、標幟(marks)；名稱或符號、未公開之資訊，以及其他一切基於傳統在工業、科學、文學或藝術領域內智能活動所生之創新/新發明（innovations）與創作（creations)。其中之「基於傳統」係指某種知識體系、創作、創新及文化表達方式，其通常皆為代代相傳，且被認定爲係某個特定民族或其居住地域所固有的，並會隨著環境變遷而不斷演進者。

從其具體內容觀之，傳統知識包括農業知識、科學知識、技術知識、生態知識、醫藥知識，此包括相關之藥品及治療、生物多樣性相關知識、民俗創作，其方式包括音樂、舞蹈、歌曲、手工藝、設計、傳說及藝術品、語言之要素（elements of languages)，如名稱、地名及符號，以及其他具可變動性之文化財產(movable cultural properties)。

三、傳統知識的特性

要談傳統知識的保護，必須先對於傳統知識的性性加以掌握，才能擬定最恰當的做法。若要引用現代科技的智財權保護框架來建構傳統知識保護的機制，則有必要先對於兩者間的異同加以比較。以下引用一般對於傳統知識特點的分析作文論述的基礎。

1. 傳統知識的起源乃是集體創作的、整體（holistic）的：

近代科技的創新，通常經由簡化影響因素，將不擬探討的因素加以標準化，然後來觀察某些特定因素間的因果關係。就內容而言，近代科技乃是被分門（compartmentalization）的，而其獲得乃是經由化約的（reductionismic）、常是脫離生活的、分析的、以及演繹的方式；即使強調整體觀的生態學，其研究的過程仍然難以避免化約，雖然程度上較輕。反之，傳統知識的起源，是原住民或傳統社區居民基於日常生活上與環境的互動所產生的觀念，這樣所形成的知識可說是整體的，並且經常是經由觀念的傳遞，集體演繹而成。

然而集體創作並非傳統知識的必要條件，個人的獨創是可能的；反之近代科技的創新也不排除集體創作的方式，雖然其創新常侷限於少數受過訓練的個人或小團體。

近代科技的論證常是基於現象背後的抽象概念，其描述經常是數量化的，而其概念的演繹是推進式的；反之由於傳統知識的整體性，因此其內容常是敘述性的、是直覺的、是為現象的關聯，而其概念的演繹經常是重複驗證的、侷限於現象的；不過這並不表示傳統知識缺乏抽象概念的支持，印度與中國傳統醫學可以為例。

2. 傳統知識之傳遞基於代代口語相傳：

原住民傳統上並無文字，因此其知識的累積只能靠代代間的口語或肢體語言來傳遞。反之近代科技的傳承則主要是仰賴文字紀錄與發表，教授者的功能只是加速知識的傳遞。

然而並非所有傳統知識都缺乏文字記載，例如中國、印度傳統醫學都是經由經典的出版而擴散流傳，而這兩者目前都被 WIPO 視為傳統知識的典範。新的傳統知識，也可望經由文字記載而流傳。

3. 傳統知識具變動性，會因社會環境變遷而演進：

傳統知識既然是人類生活與環境的互動所產生，因此在環境的變遷之下，傳統知識並非靜止的，而是動態的；因此所謂傳統，並非一定指過去的知識，而是指該

知識產生的方式是「傳統的」。

近代科技當然也是經常演進，而且其速度遠比傳統知識者快速，其改變的幅度可能是相當巨大的。然而這並步表示現代「傳統知識」的創新速度一定很慢，特別是在傳播時代，原住民與傳統社區居民與環境的互動所產生的觀念，是可能在短期間擴散流傳的。不過傳統知識的變動，似乎缺乏典範性的革命，除非受到外來文化巨大的衝擊。傳統中醫從秦漢之際到目前為止仍然以陰陽五行為基礎，可見一斑。

4. 傳統知識的創新者經常無法可考：

許多傳統知識由於是長期集體的創作所產生，而且其過程缺乏文字記載，因此常無法認定知識的創新者。反之近代科技除了文字記載為常規外，也相當重視原創者身分的確定。然而當今傳統知識的形成，既然可能發生於短期之內，因此其創新者也可能能夠指認。

5. 傳統知識常歸屬於某個特定居住地域的人民：

特定的傳統知識經常是創新、保存於於較為封閉的社會，為特定地區的居民所共有，或者某地區的個人或少數人所擁有；然而傳統知識的擁有者通常對之並不具有如西方社會所賦予的私權。反之近代科技起源於西方世界，而且已生根於接受西化的社會，其擴散是系統性的，既快速而且廣泛，而知識的創新者可以經由智財權的申請而成為私權。不過傳統知識並非無擴散，不過其擴散較為侷促，而且是不具有系統系的。

比較傳統知識以及近代科技，除了以上的分析外，也可以採「操作性定義」的觀點，就西方智財（專利）權的要件來比較，提供為傳統知識智財權保護的參考。

1. 新穎性

申請專利權的近代科技發明，不得為既有技術（prior art），也就是說申請之時已經被揭露者。準此，曾經被外人訪談紀錄而且發表過者，都可以算是既有技術，而無法為現行專利法所保障。

2. 可重複性

傳統知識既然是住民基於與環境的交感而產生，因此該項知識常需要在恰當的時空環境下才能重現（有效）。然而近代科技基於化約式的探索，因此只要掌握特

定的條件，遵循發明的步驟，比較易於重複該項發明。傳統知識若經近代科技分析其抽象的原理，其結果常能不限於時空而達到可重複性的要求。

不過鑒於生物具有變異的特質，因此生物學的近代科技，其可重複性與一般工業發明者相比，是較為低落的。以植物育種家權利--專利的特別法--而言，其重複性體現於申請要件新穎性、可區別性、一致性、穩定性中的一致性與穩定性。然而植物品種一致性與穩定性的審查基準，會因植物的遺傳特性而有差別，例如自交作物的一致性與穩定性要求較高，而異交作物則允許較為寬鬆的標準。

3. 非顯而易見性

專利權的授與，因發明的高度而有不同的保護程度，高度的創新可以享有發明專利，對物品形狀、構造或裝置的創作或改良者可授與新型專利，而對物品之形狀、花紋、色彩或其結合之創作者得給予新式樣專利。傳統知識也有難易不同的創新，例如中藥的全新配方以及其加減方即是。

4. 工業可利用性

近代科技並非全可為專利來保護，例如不涉及物質材料的自然科學理論因為不具工業可利用性，因此不得為專利之授與。甚至於某些可用以生產的發明，如生「生產動植物的實質生物程序」，可得以排除專利權之外。同樣的，廣義的傳統知識也有若干成分也是不得授與專利，例如舞蹈之不具工業可利用性以及農業知識之實質生物程序。

四、傳統知識保護的國際現狀：智慧財產權以外保護方式

傳統知識以智慧財產權以外方式保護者有：國家設置保護區、針對瀕臨絕種物種採取保護措施、限制土地開發、文化遺產保護、物種棲息地保護等；此外，CBD、農糧條約等國際公約所明定落實遺傳資源或傳統知識取得、利益共享機制，亦為傳統知識保護方式之一。

（一）生物多樣性公約（CBD）

1992 年各國領袖在 Rio de Janeiro 舉行的地球高峰會議（Earth Summit）通過生物多樣性公約，明定各國應致力於生物多樣性之保育、組成之永續利用、公平合理分享遺傳資源所衍生之利用利益，包括以適當方式取得遺傳資源及相關技術之適當移轉，並考量資源、技術之一切權利及提供適當資金（Art.1 CBD）。

CBD 雖明定各國政府應履行之基本政策與義務、跨國性技術與財務合作機制，但

CBD 規定之義務與責任，需由會員國內國政府落實之。在南北國家不同利益考量下，完全達成 CBD 立法成效實有困難。無論如何，CBD 就採取必要措施防止傳統滅絕、遺傳資源取得、公平合理分享利益、原住民及地方社區共同參與機制、國際合作等事宜均有規範。

（二）聯合國農糧條約（FAO）

鑑於農糧植物乃民生必需品，相關智慧財產權保護問題攸關民生所需，因此，在聯合國農糧組織（FAO）督促下，歷經七年協商，終於在去年 11 月 3 日由會員國通過農糧條約，以就農糧植物種源之智財權保護問題訂定國際規範標準。

由農糧條約第一條立法目的可知，本條約與生物多樣性公約具有一致性的立法目的與精神：農糧植物種源之保育及永續利用。為達此等目的，會員國應致力於農糧種源之保育、研究、蒐集、分類、研析與建檔事宜，並監控、維持農糧種源之多樣性（農糧條約第五條及第六條）。此外，會員國相互間、或透過 FAO，應就前述農糧種源保育等事宜建立合作與分享機制、落實本公約內容；會員國亦應協助開發中國家建立或擴展農糧種源之保育及永續利用；此等協助應包含對開發中國家之技術協助（農糧條約第七條及第八條）。

農糧條約承認農民權（Farmers’ Rights）存在，肯定在地社群、原住民及所有農民對於農糧種源所為貢獻。此外，對於農糧種源取得與利益分享之多邊系統、資訊交換、技術取得與移轉、執行力建構（capacity-building）、物品轉移協議（Material Transfer Agreement, MTA）、設置國際性的專責組織等均有規範。

（三）世界智慧財產權組織（WIPO）

WIPO 在今年 9 月的會員國大會上除討論對 IGC 委員會的授權及 WIPO 涉及傳統知識、遺傳資源與民俗創作等領域未來討論議題，會議另就未來議題之具體目標以及可能的進程進行探討，並提出一系列繼續推動的工作建議，整理如下：

工作 1：傳統知識之保護的立法政策建議

該次會議提出，IGC 委員會於之後兩年在國際層面的傳統知識和民俗創作保護上，應朝更具體的目標進行。但，各國代表團對進行這些工作的適當形式和立法政策建議有不同意見。一些代表團認爲當務之急是在 2005 年之前，建立一個有法律約束力的國際協定；另一些代表團則建議先在近期確定能加強國際共識的建議和原則，日後再談是否建立一個有法律約束力的國際條約。一些非政府組織（NGO）代表則強調應當加強與擴展對傳統知識習慣法（例如原住民社區適用的習慣法和議定書）的國際肯認，建議 IGC 委員會對本議題作一詳盡之研究，確保

原住民族（indigenous peoples）和地方社區（local community）的代表能在所有國際協議的推動上有充分之參與。

工作 2：加強國際共識一致性

該次會議同時強調應使 WIPO 在傳統知識領域的智慧財產權工作與生物多樣性公約 （CBD）、世界糧農組織（FAO）和聯合國教科文組織（UNESCO）的條約制定和實施及其他國際協議相互協調。

工作 3：加強各國傳統知識保護機制之交流

該次會議鼓勵對傳統知識和民俗創作的現有法律保護形式繼續進行交流，包括傳統知識的定義，把傳統知識作爲智慧財產權保護的政策問題，對傳統知識用專門立法或特別法保護的智慧財產權法律制度選擇等。

工作 4：彙整各國傳統知識保護的調查研究

由哥斯大黎加、尼日、秘魯、菲律賓、葡萄牙、美國和尚比亞等國學者或外交官組成的專家小組，介紹用專門立法或特別法機制保護傳統知識可能出現的各種問題，概述在國家和區域層面解決這些問題的具體法律措施，並彙整各國詳細的調查研究報告，案例研究和法律分析，提供 IGC 委員會在思考各種解決方案和不同政策的成本與評價，作一符合國際間需求的政策。

工作 6：關於民俗創作保護問題

關於民俗創作保護問題，ＩＧＣ委員會對民俗創作的法律保護問題提出一項綜合報告。委員會並且對提出的民間文化保護的新建議進行辯論。例如，關於「公共領域」的定義，許多原住民社區認爲從原住民的角度，根據現有的智慧財產權法律已屬於公共領域範圍的民俗創作資訊，但根據習慣法和宗教對其使用的限制，實際上不能算落入公共領域。

ＩＧＣ委員會還對 WIPO 在該領域正在進行的工作進行討論，包括協助建立一個有效的國家和區域民俗創作保護系統，以及制定「WIPO 民俗創作法律保護實用指南」。

工作 7：傳統知識文獻化相關議題討論

傳統知識文獻化也是會議的主要內容之一。許多國家的社區都在從事對其傳統知識與相關遺傳資源文獻化的活動。爲了保存這些傳統知識，對這些傳統知識進行編撰即文獻化是有必要的。但，文獻化的過程同時將使得傳統知識擁有者的利益，因此被損害。這顯示應事先採取一適當授權程序，傳統知識才能在不需徵

求同意，例如不需受習慣法和習俗限制的情況下被獲取、傳播和使用。對此，ＩＧＣ委員會表示將爲“傳統知識和遺傳資源文獻化對智慧財產權的影響”制定一個解決機制。該機制本身不鼓勵或促進文獻化，它只是防止傳統知識文獻化對相關社群的利益造成損害（例如傳統知識在非故意情況下被視爲進入公共領域）。該機制只要任務在明確：當社群爲文化、宗教、法律或商業理由願保留對文獻化資料的控制時，這些資料的文獻化並不意味著它們已進入公共領域，只要原住民族或地方社區不是有意識要放棄對傳統知識之權利，文獻化不能導致原住民族或地方社區對其傳統知識權利的喪失和失去控制。但，一些與會代表對原住民族和地方社區的傳統知識文獻化措施持懷疑態度，強調要保障原住民族和地方社區能全面參與該機制的制訂與產生。

（四）保護內容

1.保存傳統知識

在符合聯合國憲章及國際法之基本原則下，CBD 會員國得依據內國環境政策，有權亦有義務確保管轄區域內之特定活動，或控制特定活動對其他國家或管轄區域外的環境造成損害。因此，任何活動對於生物多樣性有不利影響者，CBD\會員國享有權限採取一定措施（及第四條）。

CBD 第 8 條 j 款明定：由於原住民及地方社區與生物多樣性之保持及永續利用具有重要關係，因此，會員國應透過內國立法方式，尊重、保存及維持原住民與地方社區之知識、創新與生活方式。

查明與監測措施乃防止傳統知識滅絕之重要措施。亦即：會員國應盡可能、且以適當方式（CBD 第七條）：

（a）查明對保持及永續利用生物多樣性重要之組成。

（b）以抽樣或其他技術監測前述保持及永續利用生物多樣性重要之組成，對於具有緊急性及永續利用潛力大者，應採取必要措施。

（c）透過採樣或監測方式，查明特定過程或活動類型對於生物多樣性之保持及永續利用影響，或可能產生重大不利影響。

（d）保管、整理前述調查、監測數據資料。

2.確保原住民及在地社群共同參與

在擁有傳統知識之原住民與在地社群的認可與參與下，應促進傳統知識之廣泛應用（CBD 第八條第 j 款）。

CBD 第十條第 c 款及第 d 款明定：傳統文化下之生物資源固有利用方式，若符合生物多樣性之保持及永續利用需求者，會員國應盡可能的保護及鼓勵該生物資源

之固有利用方式。在生物多樣性已減少地區，會員國應支持原住民規劃及實行相關補救措施。

3.資訊交換

前述WIPO所建置之傳統知識相關文獻檢索系統、傳統知識資料庫等，均為落實資訊交換之重要方式。

4.傳統知識取得程序—事前同意與充分揭露

菲律賓Executive Order No.247, 1995, Sec.2(a)明定：在原住民部落或在地社群進行遺傳資源探勘前，需取得該社群之請准，並不得違反該社群之習慣法。

5.利益共享機制

應使傳統知識之擁有者，能公平地共享此等知識、創新與生活方式利用所獲得的利益（CBD第八條第j款)。根據CBD第十五條第g項規定，會員國應以法律、行政規則或其他政策措施，落實利益分享機制。

6.國際合作

為保持及永續利用生物多樣性、發展公民意識與教育，會員國間應儘可能與其他國家直接或透過國際組織方式合作（CBD第五條及第十三條第b款)。

會員國應相互合作，特別是向開發中國家提供財務或其他協助，以落實本公約第八條原境保育相關措施（CBD第八條第m款)。

會員國應考量開發中國家之特別需求，就查明、保持及永續利用生物多樣性事宜，建立並維持一定的科學、技術教育與訓練；會員國亦應協助開發中國家落實此等教育與訓練事宜（CBD第十二條)。

五、初步建構我國保護傳統知識之模式

初步提出我國在保護傳統知識可以思考的兩個面向：建構「台灣傳統知識及其創新資料庫」以及「傳統知識智財權權利取得與惠益均享」，方便提供我國建構一套完善的傳統知識保護制度時之參考。

（一）地區傳統知識及創新資料庫

涉及已公開傳統知識的專利申請不應被授予專利權。問題在於傳統知識往往不能提供詳細資料，或者即使有文字資料也不容易被專利審查員檢索到。特別是關於傳統知識的資訊不太可能在各國專利審查專責機關於專利申請的新穎性和創造性時，在其所架設的專利檢索資料庫中發現。為解決這一問題，WIPO以及以印度為例的開發中國家正在尋求建構傳統知識資料庫。這些資料庫不僅可以詳細地記錄大量已被公開的傳統知識，而且還會先作一資料處理，符合於國際分類

標準（WIPO 國際專利分類(IPC)體系），以便專利審查員能容易地取得該資料。

傳統知識資料庫的建立不僅在防止不當專利授權方面有意義，而且更重要的是有助於傳統知識的保存、促進和可能的開發。此外，WIPO 和許多發展中國家的憂慮之一，就是 WIPO 發掘出來的許多資料庫中所記載資訊的利用是否得到該知識所有人的事先知情同意。在 WIPO 關於傳統知識文獻化的討論中，開發中國家對於所有資料庫中能夠或者應該包括的資料類型仍存在明顯分歧。例如，一些國家主張這樣的資料庫只適用於已經經過整理，能夠為公眾得到的資訊，而另一些國家主張也可包括還未經整理的傳統知識。

（二）傳統知識以地理標示保護與惠益均享

如果一項專利申請的內容由傳統知識組成或由傳統知識產生，則申請人應當在其專利申請中明確指出這些傳統知識的來源，並證明取得了享有這些資源的國家的事先知情同意。

各政府應明文規定申請專利時，需要檢交新發明來源的驗證：根據傳統知識與地方種原發展出來的申請案件需要提出保證聲明，詳述 1.）該發明如何用到的哪一個地方的原住民或地方社區的哪些遺傳資源、傳統知識、創新或慣法；2.）事先向前述原住民或地方社區請准通過、惠益公平分享等協議的文件；3.）將這些驗證的體系提升為國際標準化。

六、台灣傳統知識英文網站之創設

台灣傳統知識網站（TTKW）係本研究計畫之重要工作之一，亦為台灣第一個關於傳統知識資料庫及其智慧財產權保護的學術網站。本站係以介紹台灣之傳統知識以及其研究給予國外研究者認識，故全以英文為主，另附有一中文網頁係為提供國內研究者之平台，網址為 http://tk.agron.ntu.edu.tw/，附屬於國立台灣大學農藝學系伺服器底下。目前已經完成整個網站的架構，以及部分內容，其餘將持續充實。(部分網頁畫面請見附錄)

網站資訊的提供約略可分為十大領域，分別敘述如下：計畫緣起及說明（TK Research Project)；台灣原住民族(The Indigenous Peoples)；地方社區(Local Communities)；民族植物學（Ethnobotany in Taiwan)；民族動物學（Ethnozoology in Taiwan)；民族生態學（Ethnoecology in Taiwan)；基於傳統知識所衍生之創新（Innovations)；傳統知識之保護（Protection of TK)；國內外傳統知識相關網站連結（Related Websites)；及台灣傳統知識智慧財產權中文網頁。

(1)台灣原住民族（The Indigenous Peoples)：

該網頁內容，簡介台灣各族原住民族，計有 Ami、Atayal、Bunun、Paiwan、Puyuma、Rukai、Saysiyat、Thao、Tsou、Tao 等族。透過外接英文網頁，介紹台灣原住民各族基本資料，便於國外研究學者了解我國原住民基本狀況。

(2)地方社區（Local Community）：

該網頁內容，分三部分：第一、1600 至 2000 年農業史（Brief History of Agriculture 1600-2000）；第二、農村（Farming Villages）；第三、漁村（Fishing Villages）。並蒐集與地方社區相關傳統知識之學術論文，收錄計有台灣的都市農業（Taiwan's Urban Agriculture）一文由 Robin Turner 所撰，以彰化縣花壇都市農業為例；另外，以照片介紹台灣農民製作米粉的過程。

(3)民族植物學（Ethnobotany in Taiwan）：

該網頁內容，主要分三部分：

i. 台灣原住民族植物學資料庫（Ethnobotanical Data of Taiwan Indigenous Peoples, 1900-2000）：本英文資料庫為台灣原住民族植物學資料庫中文版編譯而成，內容約略計有 700 種植物的用途，以學名字首 A 至 Z 排列，說明個別植物之用途。依以下用途整理：食用植物、香料用植物、食鹽代用植物、造酒用植物、咀嚼用植物、藥用植物、洗滌用植物、染齒用植物、染料用植物、裝飾用植物、毒魚用植物、造船用植物、器具用植物、纖維用植物、建築用植物、其他用植物；

ii. 學術論文：計有：南投縣泰雅族賽德克亞族民族植物之研究，張汶肇所撰；民族植物與其生育環境相關性之研究－以泰雅族鎮西堡部落為例，黃詩硯所撰等碩士論文；

iii. 台灣各民族運用植物之個別介紹：目前蒐集有鄒族如小米的栽培及其運用與鄒族人用 Arenga engleri Beccari 做成的雨衣。

(4)民族動物學（Ethnozoology in Taiwan）

該網頁內容，主要分兩部分：第一、台灣各原住民族與動物關係之個別介紹：目前蒐集有鄒族如捕魚及毒魚方式的傳統知識；第二、學術論文：已收錄有：Intertidal Crabs Culture of Iratay Village, a Yami Tribe 等文章。

(5)民族生態學（Ethnoecology in Taiwan）：

該網頁內容，主要分兩部分：第一、台灣各原住民族運用生態智慧之個別介紹：目前蒐集有鄒族在高山利用耕地的獨特方式以及種植小米等技術的傳統知識；第二、相關學術論著之蒐集。

(6)基於傳統知識所衍生之創新（Innovations）：

該網頁內容，主要分兩部分：第一、台灣各原住民族與地方社區傳統知識創新之個別介紹：目前蒐集有排灣族製作其傳統琉璃珠之介紹；第二、學術論文：已收錄：有看不見的技術 —「蓮霧變成黑珍珠」的技術發展史，楊弘任所撰。

(7)傳統知識之保護（Protection of TK）：

該網頁內容，主要分兩部分：

i. 規範傳統知識保護之法律或國際協定（Laws）：

1. 初步蒐集並彙整台灣與傳統知識相關之法律，計有 Aborigine Reservation Land Development Management Procedure 以及 Mountain Slope Conservation & Utilization Law 兩部法律。

2. 初步蒐集並彙整各國與傳統知識相關之法律，計有孟加拉、巴西、哥斯大黎加、印度、巴基斯坦、巴拿馬、秘魯、菲律賓等八國。

3. 初步蒐集並彙整國際組織與傳統知識相關之協定，計有東南亞國協、安地斯山脈社區、拉丁美洲、非洲國家組織、太平洋論壇等五個國際組織。

ii. 探討傳統知識保護之論著（ Essays ,Thesis, Report, Forum, Meeting）：

1. 初步蒐集並彙整台灣與傳統知識相關之論著，計有 IPR draft law for Aborigines under attack；Intellectual Property Rights of the Aboriginal Peoples of Taiwan；Taiwan Aboriginal SIingers Settle Copyright Lawsuit 等。

2. 初步蒐集並彙整各國與傳統知識相關之論著，計有 Traditional Knowledge and Patentability；Biodiversity and Biotechnology and the Protection of Traditional Knowledge 等。

3. 初步蒐集並彙整各國與傳統知識相關之論著，計有：Intellectual Property Rights and Biodiversity: Process and Synergies；Assemblies of the Member States of WIPO；52 document(s) of Seventh Ordinary Meeting of the Conference of the Parties to the Convention on Biological Diversity；Intellectual Property and Traditional Knowledge: Our Identity, Our Future 等。

(8)國內外傳統知識相關網站連結（Related Websites）：

該網頁內容，主要分兩部分：

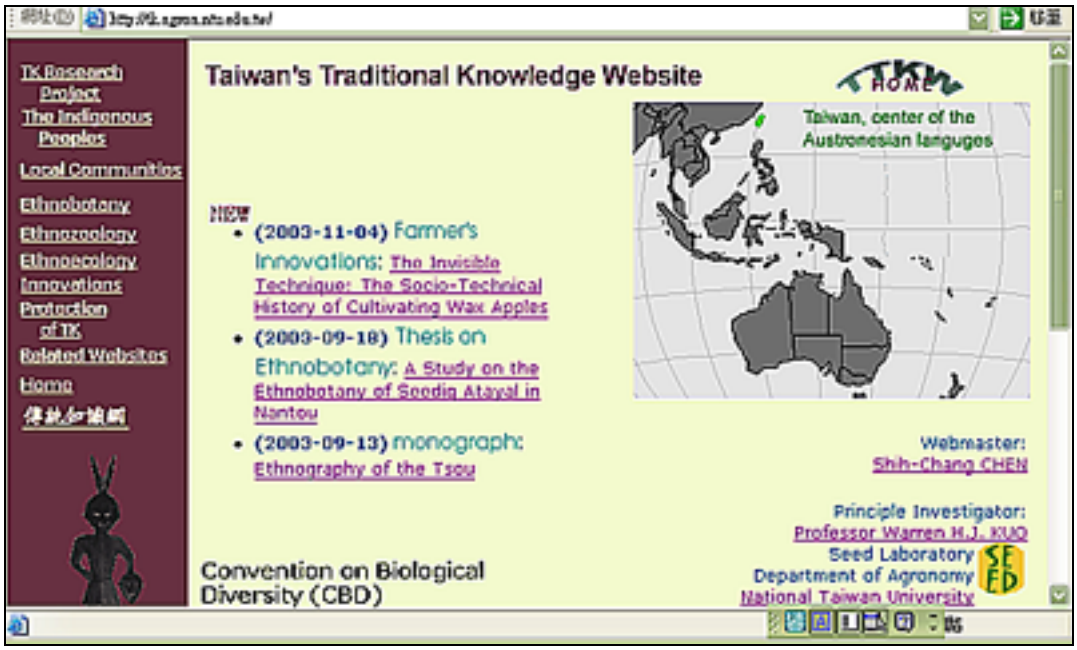
i. 本國相關網站連結：計有行政院原住民族委員會、北縣市原民局、中研院民族學研究所、東華大學民族學院、布農文教基金會以及泰雅等相關網站。

ii. 外國相關網站連結：計有生物多樣性公約網站（CBD）、世界智慧財產權組織（WIPO）、國際糧農組織（FAO）、聯合國教科文組織（UNESCO）以及相關國組織與學術研究機構網站。

(9)台灣傳統知識智慧財產權網：

該網頁為中文網站，係針對台灣的傳統知識研究者所架設，內容目前主要為兩部份：民族植物資料庫以及傳統知識智財權保護。

網址：http://tk.agron.ntu.edu.tw/



貳、參考文獻

中文資料

1. 郭華仁、陳昭華、陳士章、周欣宜，*傳統知識的特性及其保護的國際現狀*，「台灣原住民族傳統醫療與生物倫理」研習會，台北：福華國際文教會館。清華大學科技法律研究所主辦，2004 年 5 月 14 日。http://seed.agron.ntu.edu.tw/publication/TK2004.pdf
2. 郭華仁，原住民的植物遺傳資源權與傳統知識權。*蔡中涵編：生物多樣性與台灣原住民族發展*。台北：台灣原住民文教基金會，2000 年，頁 165-185。
3. 郭華仁，專利與植物育種家權的接軌及其問題，*植物種苗 6(3)*。2004 年，頁 1-10。
4. 郭華仁，台灣民族植物學資料庫之建構。*賴明洲編：植物生物多樣性與植物資源永續利用研討會論文集*。台中：東海大學，2003 年，頁 211-217。

英文資料

1. Carols Correa, *Traditional Knowledge and Intellectual Property：Issues and Options Surrounding the Protection of Traditional Knowledge*,(2001), p.4.
2. Commission on Intellectual Property Rights, *the Final Report, Chapter 4: Traditional Knowledge*, http://www.iprcommission.org/graphic/documents/final_report.htm.
3. Nuno Pires de Carvalho, *In Search of Effective Protection for Traditional Knowledge*, University School of Law's Washington University, St. Louis, Missouri, April 4-6, 2003.
4. WIPO, *Intellectual property needs and expectations of traditional knowledge holders*, WIPO Report on Fact-Finding Missions on Intellectual Property and Traditional Knowledge (1998-1999), p25.
5. WIPO Information Note on Traditional Knowledge, *WIPO International Forum on "Intellectual Property and Traditional Knowledge: Our Identity, Our Future"*, Muscat, January 21 and 22, 2002, note 1. http://www.wipo.int/arab/en/meetings/2002/muscat_forum_ip/iptk_mct02_i3.htm
6. WIPO, *WIPO Reviews of Existing Intellectual Property Protection of TK* (Document No. WIPO/GRTKF/IC/3/7) 25 March 2002.

附錄 A：出席國際學術會議心得報告

行政院國家科學委員會補助專題研究計畫期末報告

傳統知識智財權保護之研究

計畫編號：NSC 92 － 3112 － H － 002 － 003 －

執行期間： 92 年 6 月 1 日 至 93 年 5 月 31 日

計畫主持人：郭華仁 教授

出席人：陳士章 研究助理

計畫名稱	後基因時代智慧財產法制應有之理性思維-子計畫六 傳統知識智財權保護之研究
執行單位	台灣大學農藝學系
主持人	郭華仁 教授
協同主持人	陳昭華 副教授
會議名稱	發展中的生物科技相關智慧財產制度-歐亞觀點 ***The Evolution of the IP-system, especially in Biotechnology*** ***-European and Asian Perspectives***
會議日期	93 年 8 月 17 日 至 93 年 8 月 18 日
會議地點	芬蘭瑞典經濟學院**IPR Center**
發表論文 會議名稱	**Nature of Traditional Knowledge and its Protection— -Taiwan's Perspective** ***The Evolution of the IP-system, especially in Biotechnology***

會議議程

Sunday, 15 August 2004

15.20 Arrival at the Helsinki-Vantaa Airport (Flight AY842)

Professor Bruun will meet you at the airport.

15.30 Transportation to Helka Hotel

Monday, 16 August 2004

10:00-11:00 Visit IPR University president

11.00 – 11.30 Visit and introduction of the IPR University Center

Ms Mansala will meet you at the Helka Hotel.……. (附件一).

11.30 – 13.00 Lunch offered by Marianne Stenius, Rector of the Hanken School of Economics and Business Administration

13.00 – 14.00 Discussion on the co-operation

14.30 – 17.00 Helsinki Sightseeing

Free evening

Tuesday, 17 August 2004

10.00 – 17.00 Symposium "The Evolution of the IP-system in Biotechnology – European and Asian Perspectives" in Hanken premises..
(附件四) 會議議程

18.30 Departure from Helka Hotel to the dinner

Ms Mansala and Professor Bruun will meet you at the Helka Hotel.

19.00 Water Bus from the Market Square to Suomenlinna Sea Fortress

19.30 Dinner for all participants …… …. (附件二)

Walhalla Restaurant, Suomenlinna Sea Fortress

Wednesday, 18 August 2004

9.00 – 17.00 Symposium "The Evolution of the IP-system in Biotechnology – European and Asian Perspectives" in Hanken premises Free evening

Thursday, 19 August 2004

10.00 – 12.00 Presentation of Westlaw Online Service in Hanken premises *Nick Mole, West*(原訂參訪芬蘭科學院一事，因芬蘭投遞申請書較晚

之故，錯失申請時間，故無法如期參訪，改安排介紹west law)

會議過程

整體研究團隊於200 4年8月15 日下午於芬蘭首都赫爾辛基(Helsinki)會齊，並於次日上午前往會見該學院之校長，接著於中午參加由主辦單位大學智慧財產中心(IPR University Center of Finland) 主任Nicklas Bruun 教授所主持之歡迎儀式(reception)。正式之研討會"The Evolution of the IP- system, especially in Biotechnology – European and Asian Perspective"於次日召開，議程共計有兩整天，分別於200 4年8月17-18 日間假位於芬蘭瑞典經濟與商業學院(Swedish College of Economic & Business Administration) 召開。

在第一天開場時先由對方主持人Nicklas Bruun 教授及我方計劃主持人范建得教授致詞，其後並由我方邀請之德國幕尼黑大學Max Planch Institute for Patent Law 之Christopher Heath 教授專題演講會議過程 (keynote speech)，講題為："The Evolution of the IP-system –European Perspective."緊接著會議的議程正式展開。本次會議配合雙方之共同研究，共計安排三大議題；即"Current Trend of the IP-system,""The IP-system, Copyright and Traditional Knowledge,""Biotechnology Perspective"三大主題。
第一大主題於8月17 日完成，雙方共計發表論文 6 篇(其內容詳見附件議程資料)，第二與第三主題則於次日完成，雙方共計發表論文8 篇(其內容詳見附件議程資料)，全部議程共計發表論文14 篇，其中我方有 7 篇。

會議的次日(19日)預先安排的參訪芬蘭科學院(Academy Finland) 因故取銷，改變為在會議場地聽取該中心安排之資料庫介紹以及與對方人員之交流。

會議心得

一、　在這次的會議中，我深刻感受到國外學者們的表達能力都很不錯。我認為原因並不只是因為英語是他們的母語，而是他們的表達技巧很有條理，能讓聽眾清楚的理解他們的邏輯。我認為這種能力非常重要，在未來我將儘可能的多參加國際研討會，以磨練自己的膽識與表達能力。

二、　本次的交流活動已經為雙方後續的共同研究奠定基礎，其中芬蘭與會人員中並有參與政府科研經費分配、參與政府規劃保護傳統知識計劃、參與籌設國家智慧財產法庭等專業人員，深度交流之下，雙方人員已建立未來續行推動共同研究的良好基礎。

三、　我方之論文出版規劃業已徵得德國知名機構慕尼黑大學

Max-Planc 智慧財產研究中心的同意，納入其出版之叢書，並將隨其發行網絡遍及歐美相關研究機構。

四、 我方研究人員表現認真，會議全程包括研究助理及工作人員在內均無人缺席， 且每一個人員均參與討論，是一場成功的交流。

五、 本次會議之舉行確實證明我方人員之素質及研究水平均高，只要進一步克服語言及國際參與的心理障礙，將能為我國研究成果之國際參與奠基。

六、 基本上，我們認為本次的交流從規劃、撰寫全文論文、發表論文、參與討論、匯集論文在國際發行、推動後續合作，本次與會團隊成員已成功的執行原訂工作目標。

七、 由於芬蘭方面對於此次交流十分滿意，以積極表示希望在 IP 領域之合作研究有更符合「歐亞」稱謂的架構，故此明年希望能真正擴大邀請包括其他歐亞國家之專家與會，這點我們也希望爭取捕助單位的支持。

八、 本子計畫研究團隊由郭華仁教授代表上台報告，由於其所製作投影片之內容豐富，在報告完畢後隨即引起熱烈回應與討論，不僅達到台灣的直智財法中傳統知識等相關議題之研究成果，提供至國際學界之效果，更藉由此次赴芬蘭參與研討會，帶回豐富的後續研究方向資訊。

附錄 B：發表之論文

Nature of Traditional Knowledge and its Protection --- Taiwan's Perspective

Warren H.J. KUO[1], Jau-Hwa CHEN[2],
Shih-Chang CHEN[3],
and Shin-Yee CHOU[4]

[1] Professor, Department of Agronomy, National Taiwan University.

[2] Associate Professor, Department of Financial and Economic Laws, Fu-Jen Catholic University.

[3] Assistant, Department of Agronomy, National Taiwan University.

[4] Graduate Student, Department of Financial and Economic Laws, Fu-Jen Catholic University.

I. Introduction

Starting in the 1970s, multinational pharmaceutical and chemical corporations gradually started heading to areas in other parts of the world, areas rich in biodiversity, to conduct bio-prospecting concerning natural resources. These areas are frequently in developing countries of tropical areas, and especially in areas where indigenous peoples live. The multinational corporations further researched and developed these resources, and the protected the results of the R&D with intellectual property (IP) protection to make a profit. These activities raise the issues of protecting genetic resources and traditional knowledge (TK).

Originally, protection was restricted to for certain creations (such as folklore, music, dance, etc.) of indigenous people, but later biologists and other environmental groups pushed for expansion of this protection to include protection of other forms of biodiversity. These groups felt that the traditional knowledge of indigenous peoples and local communities in the fields of agriculture, medicine, and ecology, etc., could have very important contributions for sustainable development. These ideas are present in the 1992 Convention on Biodiversity (CBD), specifically 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.

Moreover, from 1998, the World Intellectual Property Organization (WIPO) has conducted nine fact-finding missions in 28 countries (including countries in South Asia, the South Pacific, Arab nations, Southeast Africa, West Africa, the Americas, etc.), visiting indigenous peoples, and local tribes, governmental officials, the scholarly research institutions, and non-governmental associations (NGOs) etc. These visits affirm that TK in many fields (including agriculture, medicine, art, etc.) is the source for innovative technology.

Many scholars have conducted research regarding TK protection in recent years, with the goal of increasing protection of TK. Moreover,

international forums have distributed many suggestions for action plans and regulations. The goal of this article is to compare TK with modern technology, and to discuss the protection of TK at the international level, as well as in Taiwan, as a reference for the different methods of TK protection.

II. The Definition of Traditional Knowledge (TK)

What is TK? In July 2003, the Secretariat of the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC), defined TK as: tradition-based literary, artistic or scientific works; performances; inventions; scientific discoveries; designs; marks, names and symbols; undisclosed information; and all other tradition-based innovations and creations resulting from intellectual activity in the industrial, scientific, literary or artistic fields.[1] "Tradition-based" 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.[2] Categories of traditional knowledge could include: agricultural knowledge; scientific knowledge; technical knowledge; ecological knowledge; medicinal knowledge including related medicines and remedies; biodiversity-related knowledge; "expressions of folklore" in the form of music, dance, song, handicrafts, designs, stories and artwork; elements of languages, such as names, geographical indications and symbols; and, movable cultural properties.[3]

In reference to the above, the elements of TK include the following four points:

2. The scope of TK

TK includes technical knowledge (including agricultural, technical, ecological, medical, and other forms of related technical knowledge), in

[1] WIPO 2003 Composite Study on Protection of Traditional Knowledge. WIPO/GRTKF/IC/5/8, p. 24. http://www.wipo.int/documents/en/meetings/2003/igc/pdf/grtkf_ic_5_8.pdf

[2] WIPO 2001 Intellectual Property Needs and Expectations of Traditional Knowledge Holders, Report on Fact-Finding Missions on Intellectual Property and Traditional Knowledge (1998-1999).

[3] Mugabe, J. 1998 Intellectual property protection and traditional knowledge, an exploration in international policy discourse. http://www.acts.or.ke/paper%20-%20intellectual%20property.htm

addition to general TK (including music, dance, sculpture, weaving, designs, clothing, and other folk custom techniques, and other expression of folklore). While the first kind of TK concerns knowledge of natural resources or science and technology, the second kind of TK concerns cultural expression of the humanities and the arts (note that many people refer to the second kind of TK as “expression of folklore” or “expressions of traditional culture”). The two types of TK are different, and the types of protection for these two types of TK are naturally different as well.

3. Whether or not documented

The background of TK and manifestation of TK is quite different; some TK is documented, such as TK concerning traditional medicine. However, the vast majority of TK is NOT documented, perhaps due to custom (for example, the transmission of indigenous medical knowledge by word of mouth from master to disciple, or transmission by movement or performance of a dance, play, or ceremony, etc.). Whether one publishes or records the knowledge makes no difference at all, TK published or not, is still traditional knowledge of the peoples.

4. Ownership of TK

Because tribes and indigenous peoples develop ideas, opinions, or thoughts as TK, the creation of TK is a process of gradual accumulation over time. This is not to say that it is not the product of each individual. The creation of TK may be the work of one individual or the joint efforts of a group of individuals. Therefore, an individual, a family, or a local community, or a tribe may all own TK. For example, several million women and older people have traditional household remedies from their mastery of knowledge of the special medicinal properties of plants. Most TK involves collective ownership by a group of people.

5. Continuous evolution

While TK often appeared in early times when tracing the origin of this knowledge was impossible, TK still changes with the times. For this reason, TK is not truly ancient, backward, or unchangeable knowledge, as TK can develop new information and improvements as a result of this unceasing change.

III. Characteristics of TK

When discussing TK protection, one must first grasp the special characteristics of TK, in order to create the best type of protection system for TK. For this, a comparison of TK and modern science will help explain the special characteristics of TK.

1. The creation of TK is collective and holistic

Science relies on an abstract conceptual framework to interpret phenomena. The description of phenomena is usually quantifiable by scientific experiments, and follows a step-by-step scientific deductive process. In order to figure out the conceptual relationship of complex phenomena of the world, scientific inquiries always involve reduction process. Cause and effect between certain factors are easier to be found by standardizing and leaving alone, as far as possible, all other factors that the inquirer do not looking for. Even with ecology as a science of complex interactions among living and non-living matters of the whole ecosystem, it is inevitable for the research process to be somewhat reductionistic.

On the other hand, indigenous peoples or local communities live their lives with vast knowledge formed over the centuries during their daily life interacting with the environment. Epistemologically, this type of knowledge is holistic in nature and cannot be dissected. For example, a festival after the taboo month celebrating the beginning of the hunting season should avoid the breeding season of the animal, a form of TK that assures sustainable hunting. TK is an articulation of phenomena. Instead of step-by-step deduction, TK uses the repeated verification of an idea that a person or group of people deduce from facts.

However, TK is not necessarily a collective creation. Individual creation is also possible. On the other hand, modern science and technology do not exclude collective creation for innovations; although usually only one or more trained individuals own the technology as a small, definite group of individuals.

2. Oral transmission of TK from generation to generation

Traditionally indigenous peoples have no writing system. Indigenous people would transmit knowledge by oral language or by body language. On the other hand, the transmission of scientific information

relies on written records and publications, and a teacher simply accelerates the transmission of this knowledge orally.

However, not all TK lack the written records. For example, the distribution of classics on Chinese and Indian traditional medicine disseminated TK on Chinese and Indian traditional medicine. WIPO considers both forms of medicine as model forms of TK. Today, indigenous peoples may also use writing to transmit their TK, whether new or old.

3. TK is changeable, and may evolve because of changes in the social environment

“Traditional” does not just mean knowledge of the past, but rather that the method of creation of this knowledge is in the “traditional” way. Since people’s interaction with the environment produces TK, TK is by no means static, but rather dynamic, because of environmental changes. Since, in the past, the environment changed very slowly, TK also changed in a very slow and continuous way.

Science and technology change frequently, and at a rate that is faster than the rate at which TK changes. However, this does not mean that the speed of innovation of modern "TK" is slow. Today, indigenous peoples and tribal inhabitants may exchange new ideas very quickly. Nevertheless, TK changes are not typically revolutionary, unless outside influences affect such TK. Traditional Chinese medicine still maintains the concepts of the five elements and the principles of Yin and Yang from the Chin and Han Dynasty, a good example to illustrate the nature of the TK.

4. The innovator is often unidentifiable

Many peoples accumulate TK as a collective creation without a written record. Therefore, the innovators are often unidentifiable. Modern technology, by contrast, has written records as a rule, and places great emphasis on the importance of determining the original creator. Nevertheless, since, in modern times, indigenous peoples can invent some TK quickly, their innovator usually is identifiable.

5. Residents of specific areas share TK

Often a closed society creates and preserves its TK. The

dissemination of TK is limited and non-systematic. One individual, a small group of individuals, or even an entire community may all share TK. The indigenous peoples usually do not have the same concept of private property as in mainstream society. Modern technology, however, spreads in a broad and systematic manner, and mainstream culture embraces science by granting the specific individuals who create technology individual rights through the IP system.

IV. Methods of Protection of TK

Due to the non-dissectible nature of TK, the realization of TK usually relies upon physical materials. Medicine in indigenous peoples often consists of learning which herbs heal people. Extinction of that plant species means the disappearance of the concept. The disappearance of the concept may leave the herb useless to the people. Because of this, TK protection is of two kinds, which are by no means clear-cut. The first is non-IP protection of TK, while the second is IP protection of TK. Non-IP protection focuses on protection of ecological resources, while IP protection focuses on the protection of the knowledge.

6. Non-IP protection of TK

Non-IP protection includes establishing conservation parks, protecting endangered species, restricting development, protecting cultural remains, and conserving habitats, among other forms of protection. Moreover, the CBD, the Convention of Agriculture, and other international agreements provide protection to genetic resources or TK, and the benefit sharing mechanism. These are the non-IP type protections of TK.

1.1 **International regulations**

1.1.1 Convention on Biological Diversity (CBD)

The objectives of the Convention on Biological Diversity (CBD) include the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies,

and by appropriate funding (CBD Article 1).[4]

Although the CBD created basic policies and obligations and a system of cooperation of transnational technology and finance, the implementation of the CBD obligations is for each CBD Contracting Party. Given the different perspectives of North and South countries, the purpose of the CBD may prove difficult to meet. Despite that, the CBD has important provisions concerning keeping traditions from disappearing:

a), respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities (Article 8(j)),

b), access to genetic resources (Article 15),

c), 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 (Article 15.7),

d), International cooperation, etc.

1.1.2 Food and Agriculture Organization (FAO)

After seven years of negotiations, in November 2001 the FAO Conference adopted the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), which came into force in June 29, 2004, after ratification by 55 countries. This legally binding Treaty covers all plant genetic resources relevant to food and agriculture. 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 Convention on Biological Diversity, for sustainable agriculture and food security.

The legislative purpose of the ITPGRFA matches that of the CBD, with respect to “the conservation and sustainable usage of plant genetic resources for food and agriculture.” In order to meet the goal, each Contracting Party shall, subject to national legislation, and in cooperation with other Contracting Parties where appropriate, promote an integrated approach to the exploration, conservation and sustainable use of plant genetic resources for food and agriculture and shall in particular:[5]

[4] http://www.biodiv.org/convention/articles.asp
[5] ftp://ext-ftp.fao.org/ag/cgrfa/it/ITPGRe.pdf

a), survey and inventory plant genetic resources for food and agriculture, taking into account the status and degree of variation in existing populations, including those that are of potential use and, as feasible, assess any threats to them;

b), promote the collection of plant genetic resources for food and agriculture and relevant associated information on those plant genetic resources that are under threat or are of potential use;

c), promote or support, as appropriate, farmers and local communities' efforts to manage and conserve on-farm their plant genetic resources for food and agriculture;

d), promote *in situ* conservation of wild crop relatives and wild plants for food production, including in protected areas, by supporting, *inter alia*, the efforts of indigenous and local communities;

e), cooperate to promote the development of an efficient and sustainable system of *ex situ* conservation, giving due attention to the need for adequate documentation, characterization, regeneration and evaluation, and promote the development and transfer of appropriate technologies for this purpose with a view to improving the sustainable use of plant genetic resources for food and agriculture;

f), monitor the maintenance of the viability, degree of variation, and the genetic integrity of collections of plant genetic resources for food and agriculture (Article 5.1).

Moreover, the ITPGRFA requires cooperation among the Contracting Parties, including: enhancing international activities to promote conservation, evaluation, documentation, genetic enhancement, plant breeding, seed multiplication; and sharing, providing access to, and exchanging, plant genetic resources for food and agriculture and appropriate information and technology; and establishing or strengthening the capabilities of developing countries and countries with economies in transition with respect to conservation and sustainable use of plant genetic resources for food and agriculture. (Article 7.1 and 7.2(a) and (b))

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 centre 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 (Article 9.1). Other related provisions include: (a) The multilateral system of access and benefit-sharing (Article 10); (b) The exchange of information, access to and transfer of technology, capacity-building, sharing of monetary and other benefits of commercialization (Article 13); and (c) material transfer agreements (MTA) (Article 12.4, 12.5).

1.1.3 World Intellectual Property Organization (WIPO)

In the year 2000, WIPO established the Intergovernmental Committee for member states to discuss TK protection. This Intergovernmental Committee held several meetings, focusing on (a) the definition and protection of TK; (b) the standardized contract of accession of genetic resources and benefit sharing; and (c) constructing electronic search databases, including traditional knowledge, contract clauses, and judicial opinions, as well as for prior arts research and for public use.[6]

1.2 **Scope of protection**

Non-IP protection of TK includes the following kinds of protection:

1.2.1 Conservation of Genetic Resources

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction (CBD Article 3). CBD Article 4 defines the jurisdictional scope. Therefore, the CBD Contracting Parties bear the obligation to take certain steps to prevent activities that will harm biodiversity.

Under CBD Article 8(j), each Contracting Party shall, as far as possible and as appropriate, and subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional life styles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of

[6] See http://www.wipo.int/tk/en/databases/tkportal/index.html.

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.

Identifying TK and monitoring TK are important steps to prevent the disappearance of TK. Under CBD Article 7, this means that each Contracting Party shall, as far as possible and as appropriate, in particular for the purposes of Articles 8 to 10, (a) identify components of biological diversity important for its conservation and sustainable use having regard to the indicative list of categories set down in Annex I; (b) monitor, through sampling and other techniques, the components of biological diversity identified pursuant to subparagraph (a) above, paying particular attention to those requiring urgent conservation measures and those which offer the greatest potential for sustainable use; (c) identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and other techniques; and (d) maintain and organize, by any mechanism data, derived from identification and monitoring activities pursuant to subparagraphs (a), (b) and (c) above.

1.2.2 Establishing databases

Over the years, ethnobiologists have explored and recorded TK of indigenous peoples around the world for academic or commercial purposes. The record is by no means a complete picture of the TK. Rather these records are simply the written observations of trained scientists who interpret what they see or hear within the context of the scientific paradigm. Although the comprehensiveness of TK may sometimes sound unfamiliar or even absurd to ethnobiologists, TK often supplies scientists with ideas or hints that may eventually prove useful in modern technology. In this way, much traditional knowledge is dissected to fit the form that is compatible to the IP systems of the mainstream societies.

The patent on turmeric is just one of many famous biopiracy cases. Since the patent authorities lack information about existing technologies related to TK, they may not realize the technologies are from foreign TK and may grant the patent to applicants. The main reason for the lack of information is that TK often exists orally, or is recorded in ways that patent

authorities do not understand. Therefore, although the technology exists in the original country, TK is not common knowledge, and patent authorities around the world have no record of this TK. Establishing databases is an important way to prevent others from taking TK and trying to patent this TK, whether at home or abroad.

A TK database in the examination system of patent authorities helps ensure that when examining patent applications, the patent authority considers TK information as prior art. More over, when deciding whether to include TK in the database, consultation of the TK holders is necessary, in order to ensure that the TK holders obtain remuneration if another uses the TK holder's respective TK.

CBD Article 10(c) and (d) require CBD Contracting Parties, as far as possible and as appropriate, to: a) protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements; and b) support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced.

1.2.3 Procedures of TK acquisition - Prior informed consent

In Article 15(5) of the CBD it is stated that access to genetic resources shall be subject to prior informed consent of the Contracting Party, providing such resources, unless otherwise determined by that Party. The Philippines implemented these provisions into national law. Under Section 2 of the Philippines' Executive Order No. 247 "Implementing Rules and Regulations on the Prospecting of Biological and Genetic Resources", it requires that prospecting of biological and genetic resources within areas of local communities, including ancestral lands and domains of indigenous communities shall be allowed only with the prior informed consent of such communities obtained through specific procedures.[7]

"Prior informed consent" is not only required for the acquisition of germplasm, but also may be required for biologists whose work is to record TK. Under CBD Article 8(j), one should "respect" knowledge, innovations and practices of indigenous and local communities

[7] http://users.ox.ac.uk/~wgtrr/rp.htm

embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity. Entering the territories of other peoples and learning the “secrets” of these people without their prior informed consent is clearly not respectful of their knowledge.

1.2.4 Benefit sharing

CBD Contracting Parties shall, as far as possible and as appropriate, 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 (CBD Article 8(j)). According to CBD Article 15(7), each CBD 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.

1.2.5 Ensuring participation of indigenous peoples and local communities

Since *in situ* conservation is of greatest importance, each Contracting Party of the CBD, where appropriate, shall allow for public participation in procedures of environmental impact assessment on those projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects (CBD Article 14(a)). Moreover, the CBD recognizes the vital role that women play in the conservation and sustainable use of biological diversity, stressing the need for the full participation of women at all levels of policymaking and implementation in biological diversity conservation (CBD Preamble).

1.2.6 International cooperation

Each CBD Contracting Party is required, as far as possible and as appropriate, to cooperate with other Contracting Parties, directly or, where appropriate, through competent international organizations, in respect of areas beyond national jurisdiction and on other matters of mutual interest, for the conservation and sustainable use of biological

diversity (CBD Article 5). Moreover, each CBD Contracting Party is required to cooperate with other States and international organizations in developing educational and public awareness programmes, with respect to conservation and sustainable use of biological diversity (CBD Article 13(b)).

Each CBD Contracting Party is required, as far as possible and as appropriate, to cooperate in providing financial and other support for *in-situ* conservation, particularly to developing countries (CBD Article 8(m)).

The CBD Contracting Parties, taking into account the special needs of developing countries, are required to establish and maintain programmes for scientific and technical education and training in measures for the identification, conservation and sustainable use of biological diversity and its components and provide support for such education and training for the specific needs of developing countries (CBD Article 12(a)).

7. IP protection of TK

7.1 **Background**

IP protection for TK is of two kinds: one is positive legal protection, and the other is defensive protection. Positive protection is protection under the existing IP system, under a *sui generis* system, or by court interpretation. Defensive protection, however, is a form of special protection, that is, by provisions adopted in the law or by the regulatory authorities to prevent the claiming or the granting of IP rights to unauthorized persons or organizations concerning TK, cultural expression, or products. For example, revealing TK makes TK no longer novel, a requirement for patent. Positive protection measures may also provide defensive protection and *vice versa*. The distinction between the two forms of protection, then, is not always clear.[8]

7.2 **Positive protection**

[8] Dutfield, G. 2003 Protecting Traditional Knowledge and Folklore: A review of progress in diplomacy and policy formulation. International Centre for Trade and Sustainable Development (ICTSD), Geneva. http://www.ictsd.org/pubs/ictsd_series/iprs/CS_dutfield.pdf

2.2.1 Protecting TK under the existing IP system

The main pattern of protection of TK as IP is as follows: Protecting under the existing IP system can avoid setting up new legislations or creating new rights. However, due basic differences between TK and IP, some modifications of current legal system are required. Some possible modifications include the following:

2.2.1.1 Patent Law

Is protection of TK under the Patent Law possible? First, one must determine whether TK is patentable subject matter, that is, a creation of technical concepts by utilizing the rules of nature. Then, one must determine whether the TK meets the requirements of novelty, inventive step, and industrial applicability.

According to TRIPs, patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application (TRIPS Article 27). Those applicable products made from TK or processes of TK should not be excluded from this provision. Some scientific inventions are not applicable and hence not patentable, such as mathematical equations. TK is not different. Much TK is not associated with physical materials; these inventions may not be patented. Essentially biological processes for the production of plants and animals of indigenous peoples or farmers may also not be patented.

Novelty is one of the criteria for patentability of an invention. Much TK has been documented and published, and is seen as prior art, which may be used as evidence precluding patentability. On the contrary, TK that remains undisclosed to the outside world does not lose its novelty, even if it has existed for many centuries. Modern inventions of a big company should be considered novel as long as it has not been published before the time of application, notwithstanding that the inventions were invented twenty years ago.

Many inventions can be patented, but only if they can be repeated independently of the participating persons. Modern technologies that are based on the reductionistic approach meet the criteria of repeatability more easily than TK, which is of a holistic nature, since it often requires the same environment in which it was created to achieve the same

functions. Modern inventions that are based on TK are more repeatable because so many factors that form TK have been excluded during the invention process.

The level of repeatability required by the patent protection is somehow lowered after that patent covered biological invention. For example, in the system of plant breeders' rights, a *sui generis* patent law, requires the variety to be both uniform and stable. That means that one should be able to reproduce the variety repeatedly. However, while the self-pollinated species require a higher level of uniformity and stability, cross-pollinated species do not.

The level of the inventive step (sometimes called "non-obviousness") required varies in the patent systems of different countries. Minor improvements of prior patented invention sometimes can obtain patents. Many new formulas of traditional Chinese medicines have been patented now in China.[9]

Some scholars believe that patent protection of TK is inappropriate, and that people should not obtain patent protection on TK at all. Two methods can prevent the patenting of TK. Firstly exclude TK itself from protection entirely. Secondly include TK as prior technology, ensuring that patent offices compare TK with patent applications during the patent examination. If the country takes the second approach, these countries could require for the applicant for a patent based on TK to submit with the application the authorization of the TK holders.[10] Countries could adopt the "absolute novelty" in the patent examination procedure, and require the inclusion of TK published or disclosed publicly prior to the application as prior technology. Countries should demand a higher inventive step requirement when examining patents related to TK, in order to prevent applications that are simply based on TK from becoming patents. These are all ways that prevent people from copying another's TK and applying for a patent.[11]

However, this is not to say that anything related to TK is not patentable. TK-based inventions, which meet the requirements of

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[9] Chen, K.J. (Editor-in-Chief) 1997 Chinese Patent Medicines. (English Translation) Hunan Science & Technology Press, 1997.

[10] Wen-Yin Chen 1994 The Feasibility Study of Traditional Knowledge Protection Under Patent System, *CHENCHI L. J.*, 78:189-90.

[11] Brett, N. 2002 Australia Patent Law Changes. http://ficpi.org/newsletters/50/AUreform.html.

novelty, inventive step, and industrial applicability, are still patentable. Many countries have enacted legislation requiring TK owners to consent to the TK-related parts, for the TK-based invention to be patentable. Without the consent of the TK owners, some laws require the patent authorities to reject the application.[12]

For example, in the Andean Community on a Common Industrial Property Regime Decision 486 (Decision 486) Article 26 states that applications for patents shall be filed with the competent national office and shall contain:[13]

a), a copy of the contract for access, if the products or processes for which a patent application is being filed were obtained or developed from genetic resources or byproducts originating in one of the Member Countries;

b), if applicable, a copy of the document that certifies the license or authorization to use the traditional knowledge of indigenous, African American, or local communities in the Member Countries where the products or processes whose protection is being requested was obtained or developed on the basis of the knowledge originating in any one of the Member Countries, pursuant to the provisions of Decision 391 and its effective amendments and regulations;

c), the certificate of deposit of the biological material, if applicable; and,

d), a copy of the document attesting to the transfer of the patent right by the inventor to the applicant or assignee.

Thus, anyone (including inventors or pharmaceutical multinational companies) wishing to access those resources must file an application and sign an access contract with the suppliers.

Moreover, the Andean Community on a Common Industrial Property Regime Decision 391 (Decision 391) creates provisions for access contracts:

The State and the applicant requesting the access may enter into access contracts (Decision 391 Article 32).

The terms of the access contract must be in keeping with the

[12] supra note 2, p. 76.

[13] Ruiz, M. 2002 The Andean Community's New Industrial Property Regime: Creating Synergies between the CBD and Intellectual Property Rights, BRIDGES, 4(9). http://www.iprsonline.org/ictsd/docs/RuizBridgesYear4N9NovDec2000.pdf.

provisions of this Decision and Member Country national legislation (Decision 391 Article 33).

The access contract shall bear in mind the rights and interests of the suppliers of genetic resources and their by-products, the biological resources that contain them and the intangible component as applicable, in accordance with the corresponding contracts (Decision 391 Article 34).

When access is requested to genetic resources or their by-products with an intangible component, the access contract shall incorporate, as an integral part of that contract, an annex stipulating the fair and equitable distribution of the profits from use of that component (Decision 391 Article 35).[14]

The competent national authority may, either ex officio or at the request of a party, and at any time, declare a patent null and void (Decision 486 Article 75).

In conclusion, countries could use the system under Decision 486 to ensure that t hey fulfill the general principles under the CBD.[15]

2.2.1.2 Trade secret law

According to TRIPS Article 39(2), natural and legal persons shall have the possibility of preventing information lawfully within their control from being disclosed to, acquired by, or used by others without their consent in a manner contrary to honest commercial practices so long as such information:

a), is secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question;

b), has commercial value because it is secret; and

c), has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret.

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[14] Larrea Monard, H.A. 2001 Intellectual property, traditional knowledge and Genetic resources: Recent legislative developments in the Andean community. WIPO/ECTK/SOF/01/3.13 p. 5-6.

[15] Ruiz, M. 2000 The Andean Community's New Industrial Property Regime: Creating Synergies Between the CBD and Intellectual Property Rights. http://www.iprsonline.org/ictsd/docs/RuizBridgesYear4N9NovDec2000.pdf

Trade secret law can protect TK that meets the above requirements. Moreover, in order to provide more effective protection of TK, countries can consider analyzing and categorizing TK and storing TK in a limited-access database, to protect this TK from disclosure[16].

However, trade secret protection of TK is difficult. Trade secrets of TK are hard to maintain. TK (originally known only by residents in local communities) may become non-secret when researchers, government organizations, or other institutions publish this TK. If TK has commercial value, maintaining the secrecy of such TK is even more difficult.

2.2.1.3 Trademark law

Trademark law may protect TK by approval marks or collective marks. Australia and New Zealand[17] allow protection of indigenous innovations and creations with various marks. First, in Australia, the National Indigenous Arts Advocacy Association created a Label of Authenticity in 1999 to protect the arts, products, and services the indigenous peoples.

Two related cases exist:

The first case (brought with the aid of the Indigenous and Torres Strait Islander Commission (ATSIC) and the Australia Council for the Arts) concerns the traditional musical instrument, the didgeridoo. In this case, non-indigenous and non-Torres Strait Islanders manufactured and exported this instrument. The indigenous peoples expressed the need for an authentication mark to control such activities.

The second case concerns Tiwi artists who created an authenticity label for registration as a trademark, and developed rules for its use, management, and enforcement.[18]

Second, in New Zealand, the 2002 amendments to the New Zealand Trade Mark Act contain a number of provisions designed to address concerns of Maori regarding the inappropriate registration of Maori text

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[16] Dutfield, G. 1999 The public and private domains: Intellectual property rights in traditional ecological knowledge. WP 03/99, OIPRC Electronic Journal of Intellectual Property Rights. http://www.oiprc.ox.ac.uk/EJWP0399.html

[17] '"The registration of collective and certification trademarks to protect tradition-based innovations and creations is under active exploration in Australia and New Zealand." WIPO Report 2001 (supra note 2), p. 73.

[18] WIPO Report 2001 (supra note 2), p. 73.

and imagery as trade marks, including:

Absolute grounds for refusal to register a trade mark where the Commissioner of Trade Marks considers on reasonable grounds that its use or registration would be likely to "offend a significant section of the community," including Maori (New Zealand Trade Marks Act Section 17).

A provision requiring the Commissioner of Trade Marks to appoint an advisory committee to advise the Commissioner whether the proposed registration or use of a trade mark that is, or appears to be, derivative of Maori text and imagery is likely to be offensive to Maori.[19]

Article 136 of the Andean Community Decision 486[20] provides that those signs the use of which in commerce may constitute an impediment to the rights of third parties, may likewise not be registered as trademarks, in particular where the signs:

a) consist of the name of indigenous, African American, or local communities, or of such denominations, words, letters, characters, or signs as are used to distinguish their products, services or methods of processing, or that constitute an expression of their culture or practice, unless the application is filed by the community itself or with its express consent; and,

b) consist of a total or partial reproduction, imitation, translation, transliteration, or transcription of a well-known sign belonging to a third party without regard to the type of product or service to which it shall be applied, the use of which would lead to a likelihood of confusion or mistaken association with that party, taking unfair advantage of the prestige of the sign; or weakening its distinctive force or its use for commercial or advertising purposes.

Moreover, geographical indications[21], indication of source[22], or appellations of origin[23] are important methods to protect traditional knowledge. These three types of protection are very similar. According to TRIPS Article 22, geographical indications are, for the

[19] WIPO Report 2001 (supra note 2), p. 74
[20] See supra note 13.
[21] Usage under TRIPS.
[22] Usage from the Paris Convention for the Protection of Industrial Property and the Madrid Agreement for the repression of false or deceptive indication of source on goods.
[23] Usage from Lisbon Agreement for the protection of Appellation of Origin and their international registration.

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. Under certain circumstances, the above methods of protection can be an important way to protect TK. However, geographical indications, indication of source, or appellations of origin can only prevent products from being passed off as goods from that particular area. These protections do not protect TK *per se*.

2.2.1.4 Copyright law and other related rights

When TK concerns the expression of folklore, since it is similar to the "work" in copyright law, some countries protect this TK under copyright law. However, protection of TK as copyright may encounter the following problems:

An expression of folklore is not exactly the same as the "work," the subject matter protected under copyright law. Copyright law does not protect many expressions of folklore, such as religious activities, architectural styles. Copyright law does not protect these. Moreover, the expression of folklore may not be in fixed form. Some countries require fixation for a certain period of time for protection. Expressions of folklore (such as oral literature, religious activities, secret prescription) are often not fixed and thus are not protectable under the copyright law. Generally speaking, expressions of folklore include more than works defined under the copyright laws.

> Copyright law has the basic principles concerning requirements of original creation, identification of the author, and the term of protection. However, many expressions of folklore are formed over a long period of time, and lack original creation. Meanwhile, the creator of expression of folklore often is non-identifiable. Most folklore creations exceed the term of copyright protection. In conclusion, to include expression of folklore into copyright protection would require huge changes to the copyright law, even possibly threatening the purpose of copyright.
>
> Due to the above reasons, UNESCO and WIPO approved the Model Provisions for National Laws on the Protection of Expressions of Folklore against Illicit Exploitation and Other Prejudicial Actions (Model Provisions), which established a *sui generis* system independent of the copyright law.[24] Furthermore, the Model Provisions use the term "expression of folklore" to substitute the term "works of folklore" in traditional copyright law. The main purpose is to highlight the difference between "folklore creations" and copyright works, and note that a *sui generis* regime is more appropriate for protecting folklore.

[24] WIPO 2002 Final report on national experiences with the legal protection of expressions of folklore. WIPO/GRTKF/IC/3/10. http://www.wipo.int/documents/en/meetings/2002/igc/pdf/grtkfic3_10.pdf

2.2.2 Designing a *sui generis* regime for the Protection of TK

On June 26, 2000, Panama's Legislative Assembly created Law No. 20 on the special intellectual property regime upon collective rights of indigenous communities, for the protection of their cultural identities and traditional knowledge upon their creations (such as inventions, models, drawings and designs, innovations), as well as the cultural elements of their history, music, art and traditional artistic expressions, capable of commercial use (Panama's Law No. 20).[25] The purpose of Panama's Law No. 20 is to protect the collective rights of intellectual property and traditional knowledge of the indigenous communities, and Panama's Law No. 20 includes many provisions for the protection of TK, including IP protection.

7.3 **Defensive protection**

Defensive protection of TK includes specific ways to prevent others from obtaining IP protection on TK. For example, establishing TK databases or including information concerning TK as prior technology, are ways to prevent others from patenting TK. WIPO provides the following suggestions:[26]

a), before establishing a database, approval of TK holders is necessary.

b), the date of disclosure should be marked clearly, to identify whether the application lacks novelty.

c), the form of media of the disclosure is important to consider, ensuring that the content of databases over the Internet will not disappear, and that the databases remain unchangeable.

d), the disclosure of TK should be as detailed as possible.

e), the degree of disclosure is also important. If one local community teaches this TK in the community, this does not necessarily mean that this TK is public. Countries should deem the TK of one isolated community not public knowledge until this TK is disclosed to outsiders.

> Although the disclosure of TK in a database is for defensive purposes, the process of the disclosure can create new forms of IP (such as copyright or database protection). TK deserves proper treatment under these forms of IP protection.

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[25] Legislative assembly, LAW No. 20 (of June 26, 2000).
[26] WIPO/GRTKF/IC/5/6.

7.4 **Shortcoming of IP protection of TK**

Since TK and modern technology are so different, not only in production but also in protection, one must ask whether it is even appropriate to protect TK under the current IP system. IP protection of TK may face the following difficulties:

2.4.1 Positive protection

IP protection does not provide complete, but rather fragmented, protection of TK. The main reasons include: TK is an epistemological system that results from man's interaction with the environment. Furthermore, the function and usefulness of TK are closely related to background, culture, and religion. Protecting TK under the current IP system can only provide limited protection. In cases of infringement or misappropriation, IP protection considers damages. However, this does not assist local communities in cases of violations of religious or cultural rights, since compensation for violations of religious and cultural rights under the IP system is limited.

Moreover, exercise of TK often relies on experience. Some experiences may not be documented, which is a basic requirement for IP protection.

Overemphasizing IP protection of TK may affect the management of resources and the respect of culture, which may endanger the conservation of TK.

2.4.2 Defensive legal protection

Although defensive protection can prevent the patenting of TK by others, defensive protection is limited to those disclosed knowledge. As for undisclosed knowledge, the defensive protection system is powerless. Moreover, constructing databases of undisclosed TK may allow others to acquire and misuse data more easily.

V. TK Protection in Taiwan

8. Background

8.1 **Taiwan, an area of rich biodiversity and cultural diversity**

Although Taiwan is a small island, Taiwan has diverse biology, ethnic groups, and culture, and thus has abundant natural and cultural resources. As for the biodiversity, although Taiwan is in the subtropical zone, because two thirds of Taiwan's land is mountainous land (varying in altitude), Taiwan has a

diverse climate. Taiwan has various areas (subtropical, warm temperate, temperate, and cold temperate, sub-frigid, and frigid) with multiple species of botanical and biological resources in these areas. Moreover, as an island, Taiwan has plentiful oceanic biological resources. As for ethnic groups in Taiwan, in addition to the main group of Han Chinese, Taiwan have 12 additional tribes, each of which has its own abundant TK. In sum, Taiwan is rich in TK. Indigenous areas particularly rich with TK remain undiscovered. However, in recent decades, TK is disappearing at a fast rate because of assimilation with other peoples. As such, TK protection is quite urgent.

It is important to note that not only indigenous peoples, but also local communities (such as farming and fishing villages) create TK. This article, however, addresses indigenous peoples' TK in greater detail, however, given the size constraints of this article. A brief description of the social structure of the indigenous peoples is important to understanding the current protection of TK in Taiwan.

8.2 **Taiwan's indigenous peoples and indigenous culture**

Indigenous peoples in Taiwan are of the group of Austronesian peoples.[27, 28] During the 18th and 19th centuries, when Western countries reached the heights of their power at navigating the high seas by ship, Western explorers discovered many coral islands and island groups in the Austronesian area. Scholars refer to these islands as "the Southern Island Groups." Because of similarities in the languages among these peoples, scholars refer to these peoples in this area as the Austronesian peoples. The Austronesian area stretches from Easter Island in the East to Madagascar (on Eastern coast of Africa) in the West, and from Taiwan in the North to the area[29] between New Zealand, the Philippines, Malaysia, Indonesia, Papua New Guinea, etc., (but excluding Australia) in the South. The Austronesian peoples have a population of over two billion people around the world. The geographical distribution of this nation is broad, covering two thirds of the earth, and the people are generally island people. The Austronesian languages are different as well, with approximately one thousand Austronesian languages. This makes up approximately one sixth of the world's languages.

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[27] Mabuchi, T. (馬淵東一) 1998 Taiwan indigenous people. In (Ying-Gui Huang ed.) T*he Thesis Collection of Taiwan Indigenous People's Society and Culture*. Linking Publishing Co., Taipei. p. 47.

[28] Huang, Y.G. (黃應貴) 1998 Two society pattern and its meaning of Taiwan indigenous tribes. In (Ying-Gui Huang ed.) *The Thesis Collection of Taiwan Indigenous People's Society and Culture.* Linking Publishing Co., Taipei. p. 3.

[29] Jian, H.C. (簡後聰) 2003 *Taiwan History*. Wu Nan Publ., Taipei. p.70.

Approximately three billion people inhabit this area. Taiwan has about 448,000 Austronesian people.[30] These are Taiwan's indigenous people.

Taiwan's written records of its indigenous peoples' history began approximately three centuries ago, mainly during the period of the Dutch rule. Thus, the history of Taiwan's indigenous peoples prior to this time was "prehistoric." From where did the indigenous peoples in Taiwan originate? No consistent answer exists at this time.[31]

Some scholars believe Taiwan's indigenous peoples originated in the area surrounding the Philippines, Borneo, and Eastern Indonesia, and that these peoples migrated North to Taiwan. This theory is the "Originating from the South" theory.[32] Other scholars believe that Taiwan itself is the origin of the Austronesian peoples.

Still other scholars believe that Taiwan's indigenous peoples migrated from Southeastern Coast of China to Taiwan, or the "Originating from the Mainland Chinese Continent" theory.[33]

Taiwan has 12 tribes of indigenous peoples. From North to South are the following tribes: Kavalan, Atayal, Truku, Saysiyat, Bunun, Thao, Tsou, Ami, Rukai, Puyuma, Tao (Yami), and Paiwan. Most of the tribes settled on both sides of the Central Mountain, such as the Atayal, Truku, Saysiyat, Bunun, Thao, Tsou, Rukai, and Paiwan. The Kavalan, Ami, Puyuma, and Tao settled on the coast or plains. Prior to the creation of Taiwan's modern communication and transportation infrastructure, most tribes did not communicate with each other due to great distances and inconvenient transportation.

1.2.1 Special Characteristics

1.2.1.1 Oral Transmission

In indigenous peoples' gatherings, the elder of the tribe often tells tribal tradition to successive generations, while noting the factual reliability of this oral transmission. People use language to communicate. Oral transmission plays and important role in passing on tribal culture, cultural restrictions, and tribal knowledge. Tribes can pass down, by oral transmission, folk tales, history, experiences, and TK.

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[30] See at http://www.apc.gov.tw/official/.
[31] Lee, G. G. (李壬癸) 1999 History of Taiwan Indigenous People: Language. The Historical Research Commission of Taiwan Province, Taichung.
[32] Id.
[33] Id.

1.2.1.2 Closed Societies

Over 4 centuries ago, Taiwan had many tribes. These tribes shared culture, wisdom, and experiences with other tribes. These tribes lived in harmony with the land and its characteristics, and adapted to its conditions and its life forms. Each tribe had its specific domain and territory, and restricted others from entering. Moreover, each tribe had its own social system, such as certain clans of the Tsou and Bunun, the chieftain or aristocrat social classes of the Rukai and Paiwan, the matriarchal society and youth office system of the Puyuma and Ami, and the fishing group system of the Tao.

1.2.1.3 Primitive Lifestyles

In the past, Taiwan's indigenous peoples spent a great deal of time migrating and searching for locations to develop a tribe. Each tribe considered its agriculture, hunting, and fishing needs, in order to create a life in which the tribe could coexist with the land, mountains, and rivers. In agriculture, the indigenous peoples used lading, rotation, and fallow techniques to maintain a balance with the environment, to make the most efficient use of the land. The indigenous peoples cultivated basic staples, such as millet, taro, sweet potato, and rice in a traditional way, despite the hardships of the environment, to supply food to the people.

Hunting demonstrates the intellectual nature of the indigenous peoples. The Tsou and Bunun have a technique for making leather; the Ami and Atayal have a technique for preserving meat or fish. Hunting has significance beyond providing food. Hunting also has significance in rites and ceremonies, whether or not religious, and hunting helps to stabilize the relationships in the tribe. After a successful hunt, a hunter distributes the take in a certain order to everyone in the tribe, not just to the hunter's family, and everyone must follow this order.

1.2.1.4 Living in Harmony with Nature

Indigenous peoples have humble and thankful attitudes toward nature. In every aspect, indigenous peoples try to coexist with nature and learn from nature. Tribes located in high mountainous regions follow basic hunting rules,[34] showing taboos and rules for that specific region. For example, paths connecting to the outside will definitely follow the terrain. The tribes will not destroy the environment for convenience but make the best of the

[34] For example, Atayal tribal hunting rule, so called "GAGA".

environment. On the other hand, as for exalting the power of nature, the indigenous peoples show how the behavior of human beings pleases or displeases the spirits, to teach tribesmen about the changes of nature and to regulate the behavior of the tribesmen.

However, due to the asymmetry of power of the invaders and cross-cultural contacts over the past 400 years, Taiwan has witnessed the destruction of the TK of Taiwan's indigenous peoples and of their social structures that had endured for thousands of years. For example, people have abandoned ecologically sound agricultural practices such as slash-and-burn cultivation. Modern agricultural technologies and powerful agricultural machines in the mountainous areas is one of the reasons why severe landslides occur very frequently in recent years in the areas where indigenous peoples live.

9. Current protection of TK in Taiwan

Although TK is very abundant around Taiwan, Taiwan has no special laws concerning the protection of TK. As such, TK protection in Taiwan is in its beginning stages. The following section discusses the main types of protection of TK in Taiwan.

9.1 Research and establishment of TK databases in Taiwan

Although Western naturalists visited Taiwan before 1900, the Japanese were the first to take intensive ethnological and ethnobiological studies. They began in the beginning of the 1900s. During the fifty years of the Japanese rule of Taiwan, these researchers published a great deal of their research and monographs. However, these studies are by no means extensive. Since the 1945, intensive ethnological and ethnobiological studies have been scarce. In recent years, however, research into these fields has started to revive.

2.1.1 Ethnobotany

Many anthropologists and botanists conducted research concerning ethnology during the Japanese Occupation. Anthropologists Torii Ryuzo (鳥居龍藏, 1898) and Ino Kanori (伊能嘉矩, 1899) were among the most recognized. Anthropology periodicals published most of their researches, but related botanical studies did not begin until 1911. Ethnobotanists such as Yaichi Shimada (島田彌市), Sasaki Syuniti (佐佐木舜一), and Yamada Kinji (山田金治) were among the most famous. Periodicals such as Taiwan's Mountains and Forests (台灣的山林), Tropical Horticulture (熱帶園藝), and

compilations of the Taiwan Forestry Research Institute published some of these botanical researches.

In recent years, a few academic and non-professionals devoted researches to indigenous usage of plants. Current research in Taiwan includes the following categories:

2.1.1.1 Field observation

The groundwork of field observation is to record systematically the usage of plants by or between different tribes. However, the push to expedite plant recording and the failure to understand local culture may result only in a list of plants uses of each tribe, which fails to take into account the full importance of the TK associated with this plant. Nevertheless, some results are promising. For example, Han-Wen Zheng published more than two hundred plant species that the Tao (of Orchid Island) use.[35] Moreover, Chiung-Shi Liu recorded 207 plant species that the Rukai use.[36]

2.1.1.2 Quantitative ethnobotany

These kinds of study began in the middle of the 1980s, mainly by quantifying data.[37] Wang *et al.* focused on the Tao's usage of mountain forests, coastal forests, and growing plants in Lanyu.[38] Huang examined the plant use habits of the Atayal tribe, especially investigating uses of forest plants.[39]

2.1.1.3 *Experimental ethnobotany research*

This method is based on field observation, focusing on how those plants were used as medicines, foods, insect repellants, aromas, and dyes.[40] For example, He and Hsu (2000) recorded the names of plants used as dye, studied the dyeing techniques of the Ami tribe of Hualien, and conducted

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[35] Zheng, Han-Wen (鄭漢文) 1996 Vulgar plants of the Tao. *Eastern Taiwan Study*, no. 1, p. 67-104.

[36] Liu, Chiung-Shi (劉炯錫) 2000 Investigation on traditionally useful plants of Taromak tribe of the Rukai, Taitung. *Bulletin of National Taitung Normal College*, 11: 29-60.

[37] Wen-Chao Chang (張汶肇) 2003 Study on the Ethnobotany of Seediq Atayal in Nantou, Master Thesis, Graduate Institute of Horticulture, National Taiwan University, Taipei.

[38] Wang, [Hs/Sh]iang-Hua (王相華), Jeng, Han-Wen and Pan, Fu-Yi (潘富俊) 2000 Plant usage of [the] Yami tribe, p. 228-248.

[39] Huang, Shih-Yen (黃詩硯) 2003 Study on Ethnobotany and Vegetation Utilization in Cinsbu, Atayal. Master Thesis, Graduate Institute of Botany, National Taiwan University, Taipei.

[40] See supra note 35.

dyeing experiments based on field observations.[41]

2.1.1.4 Applied ethnobotany

This field of research is to integrate experiences about how local residents use plants and manage natural resources through regional investigation. For example, works had been done to develop new products (arts and crafts, edible plants, etc.), natural resource management, ecological tourism, medicine/health, plant protection, and cultural protection.[42]

2.1.1.5 Establishing Databases [43]

The first author of this article conducted a complete survey of the Table of Contents section of each journal published in Taiwan during Japanese ruling era (1895 to 1945) and held in the archives of National Taiwan University, the Taiwan Forestry Research Institute, and the Taiwan Agricultural Research Institute. Twenty one articles concerning ethnobotanical reserach had been selected. We also took a look at post-WWII studies (1945 to 2000), and found 24 articles concerning plant uses of the indigenoue peoples.

According to our survey, Taiwanese indigenoue peoples have used about 700 plants species. We created a database through Microsoft Access. The database has several fields (i.e., commonly-accepted names, synonyms, common names, plant family, indigenous tribes, use, and description). As for use we have classified them by use: as food, as spice, as salt replacement, as medicine, for chewing, for teeth-dyeing, for dyeing generally, for cleaning, for wine-making, for decoration, for fish-poisoning, for construction, for boat-making, for use as a container, for use as fabric, etc. People can use this database to conduct searches in Chinese.

The database contains several categories concerning plant species (i.e., accepted names, synonyms, common names, plant family, indigen ous tribes associated with this plant, use, and description). The plants have been classified by use as food, as spice, as salt replacement, as medicine, for chewing, for teeth-dyeing, for dyeing generally, for cleaning, for wine-making, for decoration, for fish-poisoning, for construction, for boat-making, for use as a container, for use as fabric, etc.

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[41] Id.
[42] Huang, Chi-Reng 2000 Distinction in the Amis' Market: An Alternative Ethnobotany. Master Thesis, Institude of Ethnic Relation and Culture, National Dong-Hwa University, Hualien.
[43] http://tk.agron.ntu.edu.tw/ethnobot/DB1.htm

9.2 **New regulations**

Taiwan has no law providing clear protection of TK, and only existing laws provide some protection to TK. Current legal protections include: (1) patent law, (2) the plant variety protection, (3) trade secret law, (4) trademark law. Recent amendments to the trademark law concern geographical indications. As long as the area's TK has certain features or qualities, people may use geographical indicators on a product or service.

9.3 **Bills for new legislation**

In the year 2000, the Council of Indigenous Affairs under Taiwan's Executive Yuan made a new bill concerning the protection of indigenous peoples' folklore to prevent the disappearance of the TK of Taiwan's indigenous peoples. This bill promotes the protection of expressions of folklore. In 2002, the Executive Yuan passed this bill, but the Legislative Yuan has yet to complete the required three readings for this bill to become law in Taiwan.

9.4 **Infringed cases**

9.4.1 Use of a Performance without permission

In 1998, lawyers for Difang (Chinese name Ying-nan Kuo) and his wife Igay (Chinese name Hsiu-chu Kuo), an indigenous couple of the Ami tribe, filed a copyright infringement suit in the United States against the German pop music group Enigma, related US and German record companies, as well as the International Olympic Committee (IOC).

The couple claimed that Enigma, Virgin Records (Germany), Capitol-EMI Music, Charisma Records of America, Mambo Music (Germany) and the IOC failed to give the Ami couple credit for the use of their voices in Enigma's hit song, "Return to Innocence."

The song contains extended portions of the Ami couple performance of their tribe's "Jubilant Drinking Song."

The Ami couple (both vocalists from the Ami tribe of Eastern Taiwan) sang the "Jubilant Drinking Song" (an important song in Ami celebrations) in Paris in 1988, when the couple was members of a Taiwan mission taking part in a cultural exchange program sponsored by the French Ministry of Culture and Education.

French musicians heard the Ami couple's rendition of the song, a tune passed down from generation to generation among the Ami, and a French museum included their singing on a CD released later that year of Taiwan indigenous music.

The Ami couple were surprised when they learned that their song had been appropriated for Enigma's 1994 pop song "Return to Innocence," and was being used by the IOC in its promotion of the 1996 Summer Olympic Games in Atlanta since the Ami couple did not know of or authorize these uses of the song. The song, boosted by the connection with the Olympics sold millions of copies worldwide.

The Ami couple was puzzled that they were not given any recognition for the Enigma recording.

In the end, this case was settled out of court. The defendants agreed to recognize the couple in future releases, and awarded the couple two platinum albums in respect of their contributions.[44]

9.4.2 Using without Permission

In 1990, the Paiwan brought a copyright infringement case against the manufacturer of bags that copied the sacred symbols of the tribe. However, since books introducing the indigenous peoples had already shown these sacred symbols, the judge found the items lacking original creation and found the defendant not liable for copyright infringement.[45]

10. Significant problems Taiwan may face in protecting TK

In Taiwan, certain difficulties may arise in determining the ownership of rights, especially concerning the TK of indigenous peoples. Although traditionally every tribe had its own living space, the boundaries are no longer very clear, since today different tribes often intermarry and live together. Therefore, determining the ownership of TK is difficult with respect to the TK of indigenous peoples.

Indigenous peoples have a unique social structure and decision-making structure by which indigenous peoples decide how to exercise power (for example, through the decisions of the chiefs or leaders). However, with the

[44] Huang, S.L. (黃秀蘭) 1999 The Copyright infringement case of the “Joyously Drinking Song” of Mr. In-Nan Kuo. Outline in “Taiwan Indigenous People cultural property” Seminar handbook, Taipei.
[45] Judgment No. 2183, 2000, Taiwan High Court Kaohsiung Branch Court.

assimilation of indigenous peoples with non-indigenous peoples, the traditional decision-making power structure of indigenous peoples is rapidly disappearing. Local decision-making (by an elected majority) varies from that of the indigenous tribes. At times, the tribes may lack adequate representation on in local decision-making bodies. As such, the local decision-making body may not fully consider the tribe's interests.

When the interests of the nation and the community conflict, which interests take priority? Taiwan currently has no related regulations concerning this matter. If the "sovereign rights of states" theory prevails, where the nation has power to make decisions, in cases of conflict of interests between the state and the local community, the interests of the state will prevail, and the interests of the local community will fail. On the other hand, if "the interests of the local community" theory prevails, this position may affect, or even harm, the interests of the majority. This is a problem which Taiwan's government must consider.

The above are the difficulties that Taiwan may face in protecting TK. Therefore, considering whether current legislation adequately protects TK, and ways to solve related problems, is important to providing more effective protection of TK.

IV. Future Directions (Conclusion)

TK is often historical, as it is knowledge through man's interaction with the environment. Compared to scientific knowledge, TK focuses on connections between entire systems, and modifications over time. Different forms of TK require different kinds of protection. This is to say, TK related to natural resources or technology requires a different type of protection from TK related to cultural arts.

Nevertheless, the protection of traditional knowledge, regardless of whether the TK relates to natural resources or technology or cultural arts, protection should be both holistic and individual. Holistic protection focuses on ecological conservation and natural resource rights. Individual protection focuses on cultural rights. In this way, one can avoid placing traditional knowledge into the intellectual property rights scheme, thereby providing TK only fragmentary protection. As for individual protection, one has to determine whether to provide TK holders IP protection, to avoid situations where TK owners have no rights to claim damages in cases of

misappropriation or infringement. In summary, holistic protection is to ensure that the subject of the TK does not suffer damage, while individual protection is to ensure that the owner has a way to receive compensation in cases of misappropriation or infringement. Still, the purpose and use of these protection methods (holistic protection and individual protection) are quite different.

Actually, countries can consider protecting TK with such a system as the above (preventing access), in addition to the IP system (allowing rights and remedies). When these two systems (IP, plus local communities' consent to conduct bio-prospecting) work together, protection of TK is more thorough.

Moreover, TK is not static, but dynamic, constantly changing with the times. While protecting TK is important, so too is protecting the innovations of indigenous peoples. For example, if inventions based on TK meet the requirements of novelty, inventive step, and industrially applicability, patent protection for these inventions is appropriate. If the protection is not individual, it emphasizes protect ion of national or local resources, while ignoring the fruits of individuals' labor.[46] Holistic protection alone is inadequate.

Database protection is an important way to protect TK. Still, it is important for the database operator to allow the TK holder to control access to such TK. Providing indigenous peoples and societies more opportunities to control access to TK through database protection is important, as this helps in further developing: the concept of trust through practical initiatives with a view to providing indigenous and local communities with increased opportunities to exercise control over their TK held in databases may warrant further consideration. Collaborative efforts with research institutions, national authorities, NGOs, etc., as well the establishment of database trusts by local communities, and indigenous peoples, may offer innovative means for both promoting and protecting TK[47].

As for defensive protection of TK, when needing to disclose confidential information, one must make every effort to protect TK under the IP system from misappropriation or from unauthorized use. In the long term, a

[46] Gupta, A.K. 2004 Rewarding Traditional Knowledge and Contemporary Grassroots Creativity: The Role of Intellectual Property Protection. http://sustsci.harvard.edu/ists/TWAS_0202/gupta_0500.pdf

[47] Tobin, B. 2004 The Role of Registers and Databases in the Protection of Traditional Knowledge: A Comparative Analysis. United Nations University / Institute of Advanced Studies (UNU/IAS), Tokyo. p. 39, http://www.ias.unu.edu/publications/details.cfm/articleID/459.

defensive protection system may prove to be a more cost-effective system of protection of TK, avoiding the frequent question of patent infringement and the excessive costs of patent examination[48].

As for IP protection of TK, IP Protection of TK almost invariably results in fragmentary protection of TK, but without more comprehensive rights for the protection of TK, IP protection still remains an important method of protection of TK.

In summary, TK protection still has many areas that require investigation. Currently, this investigation is very preliminary. More research toward finding the best way to provide TK more thorough protection is needed.

[48] Id., p. 30.