TRADITIONAL KNOWLEDGE RELATING TO MEDICAL USES OF PLANTS AND THE PATENT REGIME IN SOUTH AFRICA: WHITHER THE TRADITIONAL HEALERS?

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I INTRODUCTION

South Africa as a biologically resource-rich and mega-diverse country boasts of a unique biodiversity that has been described as an asset of international, national and local value and significance.[1] For instance, its Cape floral region, a United Nations Educational, Scientific and Cultural Organisation (UNESCO) world heritage site and a global biodiversity hotspot, is reputedly one of only six in the whole world to boast of an entire plant kingdom. Known as the Cape floral kingdom, this area has the highest recorded species diversity for any similarly sized temperate or tropical region in the world.[2] The Table Mountain National Park within the floral kingdom, reportedly has more plant species within its 22 000 hectares than the whole British Isles or New Zealand.[3] Presently, South Africa ranks third amongst the world's most biologically diverse countries with over 24 000 plant species.[4] The richness in biological resources naturally translates to abundance of customary knowledge,

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[1] See 'White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity' (DEAT, May 1997) 12. Available at http://www.info.gov.za/view/DownloadFileAction?id= 195656.

[2] See 'White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity' (DEAT, May 1997).

[3] See 'The Cape Floral Region' *South African Government Online* 13 October 2013, available at *http://www.southafrica. info/about/animals/capefloralregion.htm#.Ul-iCtKBmJs*, accessed on 20 September 2013.

[4] See 'White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity' (DEAT, May 1997) 12. See also 'Bioprospecting to Aid N Cape Community', *South African Government Online* 30 July 2012, available at *http://www.southafrica.info/business/economy/development/bioprospecting–300712.htm#.Ul-hX9KBmJs*, accessed on 20 September 2013.

innovations, and practices towards the conservation and sustainable utilisation of such resources including for medicinal purposes, developed and nurtured over many generations by indigenous communities,[5] who traditionally are custodians of biological resources.[6]

These customary conservation and sustainable utilisation knowledge, innovations and practices which arguably account for the present richness and unique diversity of South Africa's biological resources,[7] fall presently under what is commonly referred to as 'traditional knowledge (TK)'. There is no generally accepted standard definition of TK due to the diversity not only of traditional knowledge holders but also, traditional knowledge system.[8] Despite this, what is apparent from the various characterisations of the term,[9] is that TK is neither old nor static as it evolves in response to changing physical or cultural environments. Furthermore, it does not lack a scientific or technological basis.[10] It is

[5] The term 'indigenous communities in South Africa' has been used to describe all descendants of the pre-European African invasion of South Africa. This includes the San (reputed the first people to inhabit the subcontinent), the Khoi-Khoi (including the Nama, Damara and other Khoi speakers), the Nguni groups (Swazi, Ndebele, Zulu, Xhosa), and the Tswana and Sotho group. See Chennells, 'Traditional Knowledge and Benefit Sharing After the Nagoya Protocol: Three Cases from South Africa' (2013) 9(2) *Law, Environment and Development Journal* 163 at 167–168.

[6] See Ongugo, Mutta, Pakia & Munyi, *Protecting Traditional Health Knowledge in Kenya: The Role of Customary Laws and Practices* (IIED 2012) 18.

[7] Ongugo, Mutta, Pakia & Munyi, at 13–18. See also Amechi, 'Enhancing Environmental Protection and Socio-Economic Development in Africa: A Fresh Look at the Right to a General Satisfactory Environment under the African Charter on Human and Peoples' Rights' (2009) 5(1) *Law, Environment and Development Journal* 58 at 63.

[8] See Dutfield, 'TRIPS-Related Aspects of Traditional Knowledge' (2001) 33 *Case. W. Res. J. Int'l L.* 233 at 246; and World Intellectual Property Organization (WIPO) *Intellectual Property and Traditional Knowledge, Booklet No. 2* (Geneva, Switzerland) 4, Erstling, 'Using Patents to protect Traditional Knowledge' (2009) 15 *Texas Wesleyan Law Review* 295, and Carvalho, 'From the Shaman's Hut to the Patent Office: In Search of Effective Protection for Traditional Knowledge' Paper presented at the conference: 'Biodiversity and Biotechnology and the Protection of Traditional Knowledge' April 4–6, 2003, at 5, available at http://law.wustl.edu/centeris/Papers/Biodiversity/PDFWordDoc/ Fromshaman2.pdf, accessed on 20 September 2013.

[9] For some of the characterisations, see art 8*(j)*, Convention on Biological Diversity, 5 June 1992, 30 *I.L.M.* 818; WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore *Traditional Knowledge — Operational Terms and Definitions*, WIPO/GRTKF/IC/3/9 (20 May 2002) para 25, (hereinafter WIPO Operational Terms and definitions); and WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore *Recommendations on the Recognition of Traditional Knowledge in the Patent System*, Consultation Paper, WIPO/GRTKF/IC/13/7, Annex (18 September 2008) para 15. (Hereinafter WIPO Recognition of TK).

[10] WIPO Recognition of TK, paras 7 & 9–10; Munzer & Raustiala, 'The Uneasy case for Intellectual Property Rights in Traditional Knowledge' (2009) 27 *Cardozo Arts & Entertainment Law Journal* 37 at 48; and Hansen & VanFleet, *Traditional Knowledge and Intellectual Property: A Handbook on Issues and Options for Traditional Knowledge Holders in Protecting*

only traditional in the sense that it is part of the customs and cultural traditions of the community that developed, and maintains it.[11] It is also transmitted from one generation to the other mostly in oral form or recorded in ways different from accepted Western scientific methodology, terminology or modes of expression.[12] TK is usually communally held although the use of the knowledge may be restricted to certain community members.[13] In addition, TK can be understood either in a general sense (*lato sensu*),[14] or in a narrow sense (*stricto sensu*). The latter refers to knowledge as such and includes know-how, practices, skills, and innovations resulting from intellectual activity in a traditional context.[15] Such knowledge which can be found in a variety of contexts including agriculture, ecology, medicinal knowledge, and biodiversity.[16] This article uses the term 'traditional knowledge' or 'TK' in this narrow sense.

Biological resources and associated TK held by indigenous communities have historically been an important component of many technological innovations including medicinal drugs, which are considered part of the scientific or technical mainstream.[17] One illustrative example is the discovery of the popular malarial drug, quinine by French scientists in 1820. It should be noted that prior to this, the cinchona bark from which the active ingredient, an alkaloid called quinine was isolated, has been used for centuries by the Amazonian Indians to treat malaria and other fevers.[18] Presently, TK is increasingly providing some multi-billion dollar industries, including pharmaceuticals, biotechnology, cosmetics,

their Intellectual Property and Maintaining Biological Diversity (AAAS 2003) Science and Human Rights Program, Washington DC, July 2003 at 3.

[11] Hansen & VanFleet, (AAAS 2003) Science and Human Rights Program, Washington DC, July 2003, para 2. See also Gervais, 'Traditional Knowledge and Intellectual Property: A TRIPS-Compatible Approach' (2005) *Michigan State Law Review* 137 at 140.

[12] See Erstling, (2009) 15 *Texas Wesleyan Law Review* 295; and WIPO Operational Terms and Definitions.

[13] See Gervais, (2005) *Michigan State Law Review* 137 at 140–141.

[14] In a general sense, TK embraces the content of knowledge itself as well as traditional cultural expressions, including distinctive signs and symbols associated with traditional knowledge. See WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore *Glossary of Key Terms Related to Intellectual Property and Genetic Resources, Traditional Knowledge and Traditional Cultural Expressions* WIPO/GRTKF/IC/25/INF/7, Annex (7 May 2013) 40, (hereinafter WIPO Glossary of Key terms).

[15] WIPO Glossary of Key terms.

[16] WIPO Glossary of Key terms.

[17] See Beattie et al, 'New Products and Industries from Biodiversity' in Hassan, Scholes & Ash (eds), *Ecosystems and Human Well-being: Current State and Trends*, *Volume 1* (Island Press 2005) 273.

[18] See Achan et al, 'Quinine, an old anti-malarial drug in a modern world: role in the treatment of malaria' (2011) 10 *Malaria Journal* 144; and WIPO Recognition of TK, para 9.

and agriculture, with useful leads for product discovery and development.[19] It has been estimated that out of the 119 drugs developed from higher plants and on the world market today, 74% were discovered from a pool of traditional herbal medicine.[20] In addition, the annual world market for medicines derived from medicinal plants discovered from indigenous peoples is estimated to have amounted to US$ 43 billion in 1985.[21] Cumulatively, it is estimated that the annual global markets for products in the healthcare, agriculture, horticulture, and biotechnology sectors, derived from these resources, lie between US$500 and US$800 billion.[22]

However, this increase in the scope of exploitation of TK and propertisation of same including patenting, has not led to any corresponding benefits either in the form of attribution or compensation to indigenous communities and particularly their traditional healers who are principally responsible for generating and nurturing such knowledge.[23] In response to this seeming inequity coupled with several instances of outright misappropriation of their TK,[24] indigenous communities, their advocates, and developing country governments have,

The drug in its natural form is still effective in treating malaria especially in areas of the world where malaria parasites have developed a resistance to synthetic drugs.

[19] See Mugabe, *Intellectual Property Protection and Traditional Knowledge: An Exploration in International Policy Discourse* (ACTS Press 1999) 7–9, available at http://www.wipo.int/tk/en/hr/paneldiscussion/papers/pdf/mugabe.pdf; and Hansen & VanFleet, (AAAS 2003) Science and Human Rights Program, Washington DC, July 2003 at 4. For commercially important medicinal plants in South Africa, see Street & Prinsloo, 'Commercially Important Medicinal Plants of South Africa: A Review' (2013) *Journal of Chemistry* 1.

[20] See Laird, 'Natural Products and the Commercialization of Traditional Knowledge' in Greaves (ed), *Intellectual Property Rights for Indigenous Peoples: A Sourcebook* (Society for Applied Anthropology 1994) 145–149.

[21] Posey & Dutfield, *Beyond Intellectual Property* (IDRC 1996) 34. See also Juma & Ojwang, *In Land We Trust: Environment, Private Property and Constitutional Change*, (ACTS Press 1996) 282–283. (estimated that plant-derived prescription drugs in the U.S. originate from 40 species of which 50% are from the tropics).

[22] See Ten Kate & Laird, 'Bioprospecting Agreements and Benefit Sharing with Local Communities' in Michael Finger & Schuler (eds), *Poor People's Knowledge: Promoting Intellectual Property In Developing Countries* (Oxford University Press 2004) 133 at 134.

[23] Mugabe, at 8; Hansen & VanFleet, (AAAS 2003) Science and Human Rights Program, Washington DC, July 2003 at 5; and Okediji, 'The International Relations of Intellectual Property: Narratives of Developing Country Participation in the Global Intellectual Property System' (2003) 7 *Singapore Journal of International & Comparative Law* 315 at 355.

[24] Such misappropriation has been referred as 'biopiracy'. For instances of biopiracy in Africa, see McGowan, *Out of Africa: Mysteries of Access and Benefit Sharing* (The Edmonds Institute, Washington, 2006), available at http://www.news castmedia.com/4investors_africa.pdf, accessed on 24 September 2013; and Ong'wen, 'Biopiracy, the intellectual property regime and livelihoods in Africa' *Pambazuka News*, 6 October 2010, available at http://pambazuka.org/en/ category/features/67523, accessed on 22 September 2013. For other instances of biopiracy, see Blakeney, 'The Protection of Traditional Knowledge Under Intellectual Property Law' (2000) *EIPR* 251 at 253 (commenting on the patenting of natural

for over a decade, pressed for TK protection in the form of internationally recognised intellectual property rights (IPR). While no tangible progress has been made towards fashioning such Intellectual Property (IP) protection at the international level, despite the public sympathy, most developing countries have adopted IP measures at national and regional levels to protect their TK from misappropriation.[25] South Africa was one of developing nations that amended its IP regime in response to several instances of misappropriation involving its biological resources and associated TK,[26] through the adoption of the Patents Amendment Act.[27]

This paper explores the extent to which the South African patent regime protects against the misappropriation of TK held by traditional healers. The focus is specifically on TK relating to the medicinal uses of plants (TKMUP). This enquiry became necessary in view of the many complaints by traditional healers and their indigenous communities concerning the misappropriation of their TKMUP within and outside South Africa.[28] It starts with examining the emerging role of traditional healers as custodians and repositories of all forms of TKMUP in a multicultural nation like South Africa. This will be followed by a discussion of the importance of the patent regime towards the protection of TKMUP held by traditional healers in South Africa. The discussion will show that despite the imperfections of the patent system,

products such as neem, turmeric, Basmati rice, Hoodia cactus, African potato, ayahuasca, May Apple, Australian smokebush, periwinkle).

[25] For example, India amended its Patent Act. See the Patent (Amendment) Act 38 of 2002. At the regional level, the Andean Community (Bolivia, Colombia, Ecuador and Peru) adopted several decisions to that effect. These include Decision 391 establishing a Common Regime on Access to Genetic Resources; and Decision 486 establishing a Common Intellectual Property Regime.

[26] For recent biopiracy cases involving South Africa biological resources and associated TK, see Subroyen, 'Will the Nagoya Protocol keep the biopirates at bay in South Africa?' available at http://www.iod.wowinteractive3.co.za/ PUBLICATIONS/eMag/IoDSAeZineIssue34January 2011/Biopiracycanitbecurbed.asx, accessed on 22 September 2013; 'Nestle accused of SA bio-piracy', *Times Live*, 27 May 2010, available at http://www.timeslive.co.za/business/ article473765.ece /Nestle-accused-of-SA-bio-piracy, accessed on 22 September 2013; Groenewald, 'Town Like Alice takes on German "Biopirate"' *Mail & Guardian*, 22 Jan 2010; and Fakir, 'South Africa Biopiracy David versus corporate Goliath' available at http:// www.sacsis.org.za/site/article/507.1, accessed on 22 September 2013.

[27] Act 20 of 2005. Adopted on 9 December 2005.

[28] See Groenewald, *Mail & Guardian*, 22 Jan 2010; Traditional Healers Organisation of Southern Africa 'Biodiversity and Intellectual property Rights Implication for Indigenous People of South Africa', available at http://www.traditionalhealth.org.za/t/ documents/ biodiversity_and_intellectual_property_rights_02.html, accessed on 25 September 2013; and Jordan, 'Drug companies looting SA's bounty of medicinal plants: State to protect shrubs, and traditional healers' rights' *The Times* (Johannesburg), 7 October 2007, available at http:// www.grain.org/article/entries/2229-drug-companies-looting-sa-s-bounty-of-medicinal-plants, accessed on 25 September 2013.

as the internationally most homogenous and clearly best structured IP system, the patent system can be used to guard against misappropriation and promote the interest of traditional healers particularly during the commercialisation of inventions derived or otherwise based on TKMUP. The paper will also examine the extant provisions of the Patent Act relevant to the protection of TKMUP held by traditional healers in South Africa. Finally, the paper is concluded with the finding that the patent system in South Africa to a large extent caters to the interest of traditional healers in the commercialisation of inventions based or derived from TKMUP.

II TKMUP IN SOUTH AFRICA: WHY THE FOCUS ON TRADITIONAL HEALERS

Due to the fact that TK is often central to a community's cultural value system, it is generally believed that the community holds the knowledge collectively although the use of certain traditional medicinal knowledge may be restricted to certain community members.[29] Thus, regarding the use of TKMUP, there are usually two categories of TKMUP existing in any given indigenous community vis-a-vis common and specialised TKMUP. The common TKMUP which is held at the community-level refers to knowledge used for every day healthcare needs.[30] On the other hand, the use of specialised TKMUP which is usually not widely held, is restricted to specific or designated clans or families that produce the diviners and spiritual/traditional healers.[31] However, the family or individuals holding such TKMUP recognise that as individuals, they were entrusted with the knowledge by the ancestors for the benefit of

[29] See *Republic of South Africa: Indigenous Knowledge System* (DST, 2004) at 10 & 15, available at http://www.dst.gov.za/images/pdfs/IKS_Policy %20PDF.pdf, accessed on 20 October 2013; Gervais, (2005) *Michigan State Law Review* 137 at 140–141; and Sackey & Kasilo, 'Intellectual Property Approaches to the Protection of Traditional Knowledge in the African Region', available at http://www.aho.afro.who.int/sites/default/files/ahm/reports/43/ahm–13-special-issue-pages–89to102.pdf.

[30] For example, the use of the succulent plant, *Hoodia gordonii* as a hunger suppressant by the San tribes of the Kalahari basin in Southern Africa. See Van Wyk & Gericke, *People's Plants: A Guide to Useful Plants of Southern Africa* (Briza Publications 2000) 70.

[31] See Roht-Arriaza, 'Of Seeds and Shamans: The Appropriation of the Scientific and Technical Knowledge of Indigenous and Local Communities' (1996) 17 *Michigan Journal of International Law* 919 at 936–937; Ongugo, Mutta, Pakia & Munyi, at 14; and Mgbeoji, 'Beyond Patents: The Cultural Life of Native Healing and the Limitations of the Patent System as a Protective Mechanism for Indigenous Knowledge on the Medicinal Uses of Plants' (2006) 5(1) *Canadian Journal Of Learning & Technology* 1 at 5–9; and Khalil, 'Biodiversity and Conservation of Medicinal Plants: Issues from the Perspectives of the Developing World' in Swanson (ed), *Intellectual Property Rights and Biodiversity Conservation: An Interdisciplinary Analysis of the Values of Medicinal Plants* (Cambridge University Press 1995) 242.

their community.[32] Generally, the access, use and transmission of all forms of TKMUP are usually regulated by the communal governance system administered by the village elders or chief priest. Such governance system is backed by prescribed rules and protocols as well as sanctions for infringements in order to ensure that that healing knowledge is used properly for the benefit of the community.[33] In certain rare instances where the TKMUP was perceived as being held exclusively by an individual healer,[34] community control and management thereof may be limited to divinely rule, which is the admonition by the chief priest or elders that any misuse would be severely punished by spiritual powers such as the gods or ancestors.[35] Normally, traditional healers holding the customary right of usage over specialised TKMUP transfers such knowledge through rituals, initiations, oaths and secrets, and a final

[32] See Mukuka, *Reap what you have not sown: Indigenous Knowledge Systems and Intellectual Property Laws in South Africa* (PULP 2010) 101; and Parliamentary Monitoring Group, from translation of indigenous knowledge to innovation for the bio economy: briefing by the International Centre for Innovation Partnership in Science Phytomedicines, 6 September 2011, available at http://www.pmg.org.za/report/20110907-prof-quinton-johnson-international-centre-innovation-partnerships-sci.

[33] See Ongugo, Mutta, Pakia & Munyi, at 3 & 13–17. See also Nnadozie, 'Old Wine in New Skin: Traditional Knowledge and Customary law Under the Evolving Normative Environment in Kenya' in Bubela & Gold (eds), *Genetic Resources and Traditional Knowledge: Case Studies and Conflicting Interests* (Edward Elgar Publishing 2012) 183 at 187–190; and WIPO Recognition of TK, para 17.

[34] Individual holding of TKMUP is recognised by the South African Biodiversity Act which governs access to biological resources and associated TK in South Africa. Under the Act, traditional healers are recognised as stakeholders whose interest must be protected before a bioprospecting permit could be issued by the Minister. (See s 82(1)*(b)* and (3) National Environmental Management: Biodiversity Act 10 of 2004). However, this cannot be construed to mean that they hold such knowledge to the exclusion of their communities. Indeed, any applicant seeking to have access to the TKMUP which they are holding must also obtain 'the prior consent of affected indigenous communities, and benefit-sharing agreements have been entered into with such communities'. This is because TK is defined under the Bioprospecting, Access, and Benefit-Sharing (BABS) Regulations made pursuant to the Act as 'the customary utilisation or knowledge of indigenous biological resources by an indigenous community, in accordance with written or unwritten rules, usages, customs or practices traditionally observed, accepted and recognised by them, and includes discoveries about the relevant indigenous biological resources by that community'. (See Reg 8 of National Environmental Management: Biodiversity Act, 2004: Regulations on Bio-Prospecting, Access and Benefit-Sharing, No. R. 138, 8 February 2008; and Department of Environmental Affairs and Tourism, *South Africa's Bioprospecting, Access and Benefit-Sharing Regulatory Framework: Guidelines for Providers, Users and Regulators* (DEAT 2012) 11–12). The communal ownership of TK in South Africa is also evident in the provisions of the Indigenous Knowledge System Policy document, although it is recognised there are sub-groups within communities, such as traditional healers and crafts people who mediate and develop IK among themselves. (See *Republic of South Africa: Indigenous Knowledge System* (DST, 2004) at 10 & 15). Further support is given by the provisions of the South African Patent Act dealing with TKMUP which provides that TK is knowledge that an indigenous community has regarding the use of an indigenous biological resource or a genetic resource .

[35] See Ongugo, Mutta, Pakia & Munyi, at 15.

rite of graduation for the apprentice who is introduced to other qualified healers.[36] However, the efficacy of the communal governance system in regulating such access is dependent on the community existing as a close knit or homogenous unit.[37]

Presently, like in many African countries, the homogenous nature of most indigenous and local communities in South Africa has been adversely affected by a combination of socio-economic and political factors such as changes in governance system from communal to central governance encouraged and driven by colonial and apartheid government policies; [38] the introduction of modern religions that demonised and denigrated many aspects of African cultural practices including native medicine and healing methods; urbanisation of hitherto rural areas; and increase in rural-urban migration in search of better income and standard of living.[39] The negative effect of these factors is the rapid erosion of the communal governance system in South Africa with adverse consequences for the sustainable use and management of communal biological resources and associated TK. This is evident from the fact that the erosion of the system encourages unsustainable exploitation by community members and even outsiders, and consequent depletion of biological resources including medicinal plants. Such depletion when coupled with general apathy towards the traditional healing system negatively affected the generational communal transmission of TK.[40] Thus, the net effect of such collapse is that while the notion

[36] See also Semenya & Potgieter, 'Bapedi traditional healers in the Limpopo Province, South Africa: Their socio-cultural profile and traditional healing practice' (2014) 10 *Journal of Ethnobiology and Ethnomedicine* 4; Truter, 'African Traditional Healers: Cultural and religious beliefs intertwined in a holistic way' (September 2007) 74(8) *SA Pharmaceutical Journal* 56 at 57–58 and Mgbeoji, (2006) 5(1) *Canadian Journal Of Learning & Technology* 1 at 6–7.

[37] See Amechi, *The Millennium Development Goals (MDGs) and Policy Reform: Realising the Right to Environment in Africa* (VDM Verlag Dr. Müller 2010) 42.

[38] For instance, the colonial and apartheid governments in South Africa adopted various pieces of legislation such as the Witchcraft Suppression Act of 1957 and the Witchcraft Suppression Amendment Act of 1970 which explicitly prohibited traditional healers particularly diviners from practicing their trade. A similar legislation was enacted as early as 1891 in colonial Natal.

[39] See Amechi (VDM Verlag Dr. Müller 2010) at 42–43; World Intellectual Property Organisation (WIPO), 'Intellectual Property Needs and Expectations of Traditional Knowledge Holders: WIPO Report on Fact-Finding Missions on Intellectual Property and Traditional Knowledge (1998–1999)' (Geneva, April 2001) 95. (hereinafter WIPO FFM); Ongugo, Mutta, Pakia & Munyi, at 9 & 17–19; *Republic of South Africa: Indigenous Knowledge System* (DST, 2004) at 10; and Mposhi, Manyeruke & Hamauswa, 'The Importance of Patenting Traditional Medicines in Africa: the case of Zimbabwe' (2013) (3)2 *International Journal of Humanities and Social Science* 236 at 239.

[40] See Ongugo, Mutta, Pakia & Munyi, at 17–18; and Gupta, 'WIPO-UNEP Study on the Role of Intellectual Property Rights in the Sharing of Benefits Arising from the Use of Biological Resources and Traditional Knowledge' (2004) 39–40, available at http://

of the collective or communal ownership of biological resources still exist in certain parts of South Africa, [41] it is doubtful if the access, use and transmission of the TK associated with these resources particularly those relating to medicinal uses of plants are still being controlled and managed by traditional communities.[42] In fact, it can be argued that the notion of the communal control and management of TKMUP and other biodiversity-related TK is now alien or impractical to most indigenous communities in Africa. Thus, although indigenous communities are still widely regarded as holders of TKMUP, what is mostly applicable is the increasing emergence of traditional healers as the principal repositories and custodians of all forms of TKMUP including general plants medicinal knowledge which has long been abandoned by their larger communities.[43]

As the principal custodians of TKMUP, traditional healers basically self-regulate on the issue of the access, usage and transmission of such knowledge. The only semblance of communal regulation is the belief that any misuse will be frowned upon by their communities and severely punished by their ancestors and gods usually in the form of loss of healing powers.[44] Ongugo et al aptly described the negative effects of the collapse of the communal governance system on communal control and management of TKMUP with regard to Mijikenda people, a Bantu-speaking ethnic group in Kenya, as follows:

> 'Among the Mijikenda, the absence of the ngambi [communal] rule has freed traditional knowledge ownership and transmission modes, including restricted knowledge on medicinal plants. The traditional restrictions of specialised healing knowledge to clan, community or super-community are less observed. Individual knowledge holders, at their discretion, can impart the traditional

siteresources.worldbank.org/EXTINDKNOWLEDGE/Resources/WIPO_Unep.pdf, accessed on 20 October 2013.

[41] There is still evidence of collective or communal management of natural resources including biological resources in Africa. In some parts of Africa, due to the failure of the centralised natural resources governance system, there has been a shift towards more devolved models known very broadly as Community-Based Natural Resource Management (CBNRM). For an in-depth discussion of CBNRM, see Roe, Nelson & Sandbrook (eds) *Community Management of Natural Resources in Africa: Impacts, Experiences and Future Directions* (IIED 2009), UK.

[42] In a study conducted in South Africa, most of the respondents (traditional healers) said that there are no rules governing access, usage and transmission of TKMUP in their communities. Only a few said that the knowledge was protected by the ancestors. See Mukuka, at 86.

[43] Mukuka, at 86. See also WIPO FFM at 220 (Citing Prof. Penny Bernard of the Anthropology Department, Rhodes University, Grahamstown, South Africa).

[44] Mukuka, at 86 & 93. See also Ongugo, Mutta, Pakia & Munyi, at 12.

> knowledge to whoever they want. Most medicinal knowledge is now perceived by all Mijikenda to be individually held. Consequently, even people from other tribes can be exposed to this knowledge. Simultaneously, healer training for which formerly predetermined instructions upheld the knowledge as a service to the community has changed to commercial endeavour. Most healers now must have government licenses to operate and are holders of certificates of attendance to seminars, an indication that they are nationally recognized.'[45]

The above scenario is not very different from what is currently happening in South Africa.[46] The eminent status of traditional healers as the repositories of TKMUP when coupled with the rapid erosion of communal biological resources governance system, raises two fundamental issues with regard to the patenting of inventions based on or derive from TKMUP in South Africa. In the first instance, traditional healers have not only emerged as a vital cog in the realisation of the objectives of the recently launched South African Bio-economy Strategy,[47] but also, they have become the 'darlings' of national and global biotechnological and pharmaceutical corporations involved in ethnobotanical bio-prospecting activities in South Africa.[48] While such focus has improved the hitherto denigrated profile of traditional healers in South Africa, it has also made them more susceptible to undue exploitation for information relating medicinal uses of plants owned by their various indigenous communities.[49] The furore generated by the initial attempt by a German homeopathic giant, Schwabe Pharmaceuticals to patent a process for producing extracts from the root of two

[45] Ongugo, Mutta, Pakia & Munyi, at 20.

[46] See Mukuka, at 75–100.

[47] The strategy seeks inter alia to utilise such biodiversity and associated TK base in establishing South Africa as a world leader in research, development and manufacture of pharmaceutical products such as active pharmaceutical ingredients, vaccines, African traditional medicines and herbal medicines. See Department of Science and Technology (DST), *The Bio-economy Strategy* (Pretoria, 2013).

[48] See Mgbeoji, (2006) 5(1) *Canadian Journal Of Learning & Technology* 1 at 7; Roht-Arriaza, (1996) 17 *Michigan Journal of International Law* 919 at 928–929; and Department of Science and Technology (DST)/National Science and Technology Forum (NSTF), Proceedings of Workshop on Indigenous Knowledge System and Intellectual Property Rights on 14 & 15 July 2011, at 13–16, available at http://www.nstf.org.za/ShowProperty?nodePath=/NSTF%20Repository/NSTF/files/Workshops/2011/IKSminutes2011.pdf, accessed on 23 May 2014.

[49] See Mgbeoji, (2006) 5(1) *Canadian Journal Of Learning & Technology* 1 at 7; Roht-Arriaza, (1996) 17 *Michigan Journal of International Law* 919 at 928–929; and Department of Science and Technology (DST)/National Science and Technology Forum (NSTF), Proceedings of Workshop on Indigenous Knowledge System and Intellectual Property Rights on 14 & 15 July 2011, at 13–16.

sub-species of Pelargonium plant, is illustrative of such exploitation.[50] The affected community in the Eastern Cape with help from some non-governmental organisations was able to oppose the application by proving that the extraction process has been used for many centuries by their successive generations of traditional healers.[51] It should be noted that the knowledge of medicinal properties of the plants was reportedly 'discovered' in 1897 by a mechanic from Birmingham, England who sought medical advice from a Basotho healer. The plants were later tested in Europe and, after studies at the University of Munich, some of their biological properties were patented by ISO Arzneimittel, a company linked to Schwabe Pharmaceuticals in 2002.[52]

Furthermore, traditional healers either alone or in conjunction with corporate bodies may seek to exploit the TKMUP which they are holding for commercial benefits using the patent system.[53] It should be noted that the probable quest by traditional healers to commercially exploit such TKMUP is motivated by the changing socio-economic status of traditional healers as a result of the national and global resurgence of interest in traditional medicines as an alternative to orthodox medicines, or at least for primary healthcare.[54] Traditional healers should no more be conceptualised as only uneducated men sitting in their village hut chanting incantations and offering communal healing services for a pittance or a token.[55] Most traditional healers are well-educated or have achieved some level of formal education, and some have gone to the extent of incorporating modern methods of diagnosis into their prac-

[50] The company subsequently entered into a benefit-sharing arrangement with the affected community. See Van Niekerk & Wynberg, 'The Trade in Pelargonium Sidoides — Rural Livelihood Relief or Bounty for the Bio-bucaneers' (2012) 29(4) *Development Southern Africa* 530.

[51] See Groenewald, *Mail & Guardian*, 22 Jan 2010.

[52] See Jordan, *The Times* (Johannesburg), 7 October 2007.

[53] For example, the Medical Research Council (MRC) which manages the African traditional medicines flagship of the Department of Science and Technology (DST) Bioprospecting and Product development Platform reported an increasing number of TK holders (traditional healers) approaching the SARChI Chair at University of KwaZulu-Natal and requesting that their products be tested for verification of their healing properties as a preclude to commercialisation. See Department of Science and Technology (DST)/National Science and Technology Forum (NSTF), Proceedings of Workshop on Indigenous Knowledge System and Intellectual Property Rights on 14 & 15 July 2011, at 13.

[54] See Oguamanam, 'Patents and Traditional Medicine: Digital Capture, Creative Legal Interventions, and the Dialectics of Knowledge Transformation' (2008) 15(2) *Indiana Journal of Global Legal Studies* 489 at 508–510; Thornton, 'The Transmission Of Knowledge In South African Traditional Healing' (2009) 79(1) *Africa* 17 at 20; and 'Draft Policy on African Traditional Medicine for South Africa', Notice 908 of 2008 (Dept of Health, Pretoria, 2008) 8–9, available at http://tradmed.ukzn.ac.za/Libraries/Traditional_ Medicine_Documents/Draft_Policy_on_African_Traditional_Healers. sflb.ashx, accessed on 20 October 2013.

[55] See Gupta, (2004) 39–40, at 39.

tice.[56] Presently, some traditional healers compare themselves with medical and other health professionals, and believe that they should be treated in the same way and accorded similar respect, as well as appropriate remuneration.[57] However, such quest to exploit TKMUP raises a further issue particularly as it relates to the relationship between traditional healers and their respective communities in view of the communal nature of TKMUP in South Africa.[58] Resolving this issue involves a determination of whether the innovation is TKMUP, use TKMUP or is otherwise based on TKMUP. Equally important is a determination of whether the innovation is an incremental improvement on existing TKMUP held by traditional healers, or resulted from the traditional healer deriving inspiration from pre-existing TKMUP to invent something 'reflecting great skill and originality'.[59] These issues will be addressed in the next section of this article.

III TRADITIONAL HEALERS AND THE PROTECTION OF TKMUP THROUGH THE PATENT REGIME

The clamour for TKMUP protection in the form of internationally recognised IPRs is based on the fact that in the global economy, the conventional IP system is the primary and formal mechanism for the protection of rights over knowledge.[60] Hence, it is believed that entrenching such rights will provide an important means for strengthening the range of incentives that indigenous communities need for conserving biological resources and associated TK.[61] The patent regime

[56] See Abd B-ghgi, 'Sudanese Female Traditional Healer Attains 14 Patents on Treatment of Intractable Diseases' *SudaNow Magazine*, 11 March 2013, available at http://suda now.info/new/news-stories/sudanese-female-traditional-healer-attains–14-patents-on-treatment-of-intractable-diseases, accessed on 30 September 2013, (where the interviewee, a prominent traditional healer admitted to using modern diagnosis equipment in her practice).

[57] See Ongugo, Mutta, Pakia & Munyi, at 20; Thornton, at 17–18; and the 'Draft Policy on African Traditional Medicine for South Africa', Notice 908 of 2008 (Dept of Health, Pretoria, 2008) 8–9 (which aims at the development and enrichment of African Traditional Medicine in South Africa as a distinct system within the formal health care sector in South Africa, equal in status to allopathic medicine as is the case in countries such as China and India).

[58] See (n 34).

[59] See *Milpurrurru v Indofurn (Pty) Ltd* (1995) 30 IPR 209 at 216 (per Justice Von Doussa). Although the case was about artistic works and hence, dealt with copyright issues and not patents, the requirement of originality applies to both categories of intellectual property rights.

[60] See Oguamanam, 'Localising Intellectual Property in the Globalisation Epoch: The Integration of Indigenous Knowledge' (2004) 11(2) *Indiana Journal of Global Legal Studies* 135 at 136.

[61] Gervais, at 138. But see Mgbeoji, (2006) 5(1) *Canadian Journal Of Learning & Technology* 1 at 3–4 (arguing to the contrary).

which has been described as 'internationally the most homogenous, and systematically the most clearly structured field of IPRs',[62] offers the most effective avenue for protecting TKMUP and other biodiversity-based TK within the current IP system. Presently, due to the fact that a significant number of patent applications concern inventions which are in some way related to TKMUP,[63] a widespread debate is raging around the relationship between patents and TKMUP as well as other biodiversity-based TK.[64]

One of the issues being debated is that since most of the misappropriation or bio-pirating of TKMUP occurs through the use of patent, whether the same patent regime can provide an effective bulwark against the activities of the pirating commercial interests. Critics questioning the compatibility of using the patent system in the protection of TKMUP based their argument on the grounds of inter alia the collective ownership structure of TKMUP and other biodiversity-based TK as against patent law treatment of inventiveness as an achievement of individuals; difficulty of providing evidence of a single act of discovery (novelty and non-obviousness); compliance with technical patent specifications; and prohibitive cost of the application and enforcement of patent.[65] At the other side of the spectrum are those who oppose patentability of TKMUP on the ground that it is already 'state of the art' and hence, patenting TKMUP and other biodiversity-based TK would amount to removing what is now in the public domain from that domain.[66]

A detailed examination of the validity or otherwise of the above arguments is beyond the scope of this article. Suffice it to note that the most of the arguments fall within the general concerns raised mostly in indigenous and scholarly circles about the suitability of conventional IPRs to the nature of TKMUP and other biodiversity-based TK.[67] Such general concerns overemphasise the cultural difference between the

[62] See Ullrich, 'Traditional Knowledge, Biodiversity, Benefit-Sharing and the patent System: Romantics v. Economics?' EUI Working Paper, Law No. 2005/07 at 4. Available at http://cadmus.eui.eu/bitstream/handle/1814/3327/law05–07.pdf? sequence=1, accessed on 20 February 2014.

[63] See WIPO Recognition of TK para 11.

[64] See WIPO Recognition of TK para 12.

[65] See Dutfield, (2001) 33 *Case. W. Res. J. Int'l L.* 233 at 259–263; and Oguamanam, (2004) 11(2) *Indiana Journal of Global Legal Studies* 135 at 142–146.

[66] Dutfield, (2001) 33 *Case. W. Res. J. Int'l L.* 233 at 262. See also Munzer & Raustiala, (2009) 27 *Cardozo Arts & Entertainment Law Journal* 37 at 41 & 53–55.

[67] See Brush & Stabinsky (eds), *Valuing Local Knowledge: Indigenous Peoples and Intellectual Property Rights* (Island Press 1996); and Kuruk, 'Protecting Folklore Under Modern Intellectual Property Regimes: A Reappraisal of the Tensions Between individual Rights and Communal Rights in Africa' (1999) 48 *American Law Review* 768.

Western and the indigenous or other non-Western manners of acquiring, protecting, transmitting, legitimising and evaluating knowledge, as well as the fact that the Western IP system was not designed to account for or accommodate epistemic narratives other than Western science. Such concerns were ultimately used to justify the need for an entirely separate system of protection.[68] A scenario which as aptly summed up by Okediji, not only:

> 'overemphasise the cultural differences between intellectual property and indigenous knowledge and under-emphasise the cultural relevance of intellectual property rights to all societies . . . but also, . . . implicitly accept the artificial standards of what constitutes patentable . . . subject matter in order to make the argument for why intellectual property rights will not or cannot appropriately address the interests of peoples in developing countries.'[69]

While noting these cultural differences, it is argued that because of the eminent status of the conventional IP system in the global economy and also because TKMUP despite its uniqueness is still a 'knowledge', and must be considered in terms of existing framework on the protection of knowledge, the efforts of TKMUP holders and their advocates should be focussed not only on exploiting the current patent system despite the imperfections, but also, on exploring further avenues within the system for the protection of TKMUP.[70] Such exploration is vital as the criteria for determining entitlement to patent protection has shown by their dynamism in changing with time and advances in technology.[71] Such

[68] See Okediji, (2003) 7 *Singapore Journal of International & Comparative Law* 315 at 354–356; Oguamanam, (2004) 11(2) *Indiana Journal of Global Legal Studies* 135 at 137, 141 & 148–151; and Mgbeoji, 'Patents and Traditional Knowledge of the Uses of Plants: Is a Communal Patent Regime Part of the Solution to the Scourge of Bio Piracy?' (2001) 9 *Indiana Journal Global of Legal Studies* 163.

[69] Okediji, (2003) 7 *Singapore Journal of International & Comparative Law* 315 at 356.

[70] Okediji, (2003) 7 *Singapore Journal of International & Comparative Law* 315 at 356–357. See also Gervais, (2005) *Michigan State Law Review* 137 at 138; Daya & Vink, 'Protecting Traditional Ethno-Botanical knowledge in South Africa Through the Intellectual property Regime' (2006) 45(3) *Agrekon* 319 at 325–326; and Oguamanam, (2008) 15(2) *Indiana Journal of Global Legal Studies* 489 (highlighting some important trends in the dialectics of developing countries' engagement with intellectual property systems). For further avenues that may be explored within the formal IP system, see Andanda, 'Striking a balance between Intellectual Property Protection of Traditional Knowledge, Cultural Preservation and Access to Knowledge' Working Paper Series 2/2012, SECO/WTI Academic Cooperation Project', at 9 & 12–18, available at http://www.wti.org/file admin/user_upload/wti.org/7_SECO-WTI_Project/Publications/WTI%20-%20Mandela%20Institute%20-%20Protecting% 20TK%20through%20IP%20 and%20 preserving% 20culture,%20Pamela%20 Andanda.pdf, accessed on 20 September 2013.

[71] For example, the grant of patents to methods, isolated genes and cell-lines, and genetically modified organisms.

inherent elasticity is responsible for sustaining the institution of patent throughout the centuries.[72] This raises the issues of how the patent system can be used to protect TKMUP as well as promote the interests of traditional healers who primarily are responsible for generating and nurturing the knowledge over many generations.

The patent system can be used affirmatively or positively to protect TKMUP through the grant of patent rights to new and innovative advancements in such knowledge systems.[73] However, the ability of traditional healers to affirmatively exploit the patent system to protect their innovations is dependent to a large extent on the nature of ownership of TKMUP applicable in any given country. In instances where the ownership of the TKMUP is regarded as communal which appears to be the norm in most developing countries including South Africa,[74] any invention that is regarded as TKMUP cannot be patented by traditional healers. This is because such patenting would amount to not only improperly vesting rights in individuals in view of the accretive and intergenerational nature of TKMUP, but also, marginalising the interests and contributions of their respective indigenous communities in developing and nurturing such knowledge.[75] This position applies to existing TKMUP as well as new TKMUP created within the TK system of an indigenous community.[76] The latter is an acknowledgement that while individuals such as traditional healers in South Africa may, themselves, innovate what makes their innovations 'traditional' is

[72] See Okediji, (2003) 7 *Singapore Journal of International & Comparative Law* 315 at 357.

[73] See WIPO Recognition of TK para 14.

[74] It should be noted that in countries where individual ownership of TK is recognised, positive protection of such knowledge is usually done through sui generis regimes that purportedly are better adapted to the special characteristics of TK, in particular their holistic nature. For example, the Thai law on the Protection and Promotion of traditional medicine, a sui generis regime largely inspired in the patent law, provides for the protection of individually created, improved or held traditional medicinal formulae. Thus, the inventor, improver or inheritor of a personal formulae (not 'national' or 'general' formulae) on Traditional Thai drugs, may register intellectual property rights over that formula. The duration of the protection is usually the life time of the owner plus 50 years after his/her death. See ss 20, 21 & 22, the Act on Protection and Promotion of Traditional Thai Medicinal Knowledge, B.E. 2542. Available at http://www.wipo.int/ edocs/lexdocs/laws/en/th/ th019en.pdf, accessed on 24 May 2014.

[75] See Roht-Arriaza, (1996) 17 *Michigan Journal of International Law* 919 at 936-937 & 948; and Chennells, (2013) 9(2) *Law, Environment and Development Journal* 163 at 178.

[76] Indigenous communities usually possess their own locally-specific systems of jurisprudence with respect to the classification of different types of knowledge, proper procedures for acquiring and sharing knowledge, and the nature of the rights and responsibilities which attach to possessing knowledge. See Barsh, 'Indigenous Knowledge and Biodiversity' in Posey (ed), *Cultural and Spiritual Values of Biodiversity* (Kluwer Academic Publishers 1999) 73 at 74–75; and Drahos, 'Indigenous Knowledge and Duties of Intellectual Property Owners' (1997) 11 *IPJ* 179 at 186–187.

because it is created in a manner that reflects the traditions of their indigenous communities and hence, regarded as community-held.[77] In essence, the innovation is developed according to the rules, protocols and customs of a certain community.[78]

This does not mean such innovative TKMUP cannot be the subject of a patent as it is generally accepted that new and innovative advancements in TKMUP may meet the requirements to qualify as patentable inventions under the patent system.[79] Instead, the communal nature of such innovative TKMUP implies that the innovating traditional healer claims no ownership rights over the 'new' knowledge as his achievement is primarily regarded as a community service.[80] Hence, he cannot patent his TK invention except with the permission or consent of his community. This makes innovations within the TK system to be distinct from innovations within the western knowledge system as in the latter, any incremental improvement to existing knowledge can simply be patented by the inventor provided that it is new, involves an inventive step and is capable of industrial application.[81] However, the communal service nature of his achievement does not mean that an innovating traditional healer is not rewarded under the TK system. This is because the innovative traditional healer not only receives symbolic recognition mostly in the form of chieftaincy title and other honours and/or

[77] See WIPO Recognition of TK paras 10 & 17; World Intellectual Property Organisation (WIPO) 'Intellectual Property and Traditional Medical Knowledge' Background Brief N°6, available at file:///H:/NRS,%20South%20 Africa/tk_brief6(WIPO).pdf, accessed on 20 May 2014; and Elements of a Sui Generis System for the Protection of Traditional Knowledge (WIPO/GRTKF/IC/4/8), para. 27.

[78] See Carvalho, Paper presented at the conference: 'Biodiversity and Biotechnology and the Protection of Traditional Knowledge' April 4–6, 2003, at 7.

[79] See WIPO Recognition of TK para 10; Dutfield, (2001) 33 *Case. W. Res. J. Int'l L.* 233 at 260, 297; and Liu, 'IPR Protection for New Traditional Knowledge: With a case Study of Traditional Chinese Medicine' (2003) *E.I.P.R* 194.

[80] It has been argued by some experts that TKMUP should not be treated as community property in isolation as in some cases individuals can distinguish themselves and are recognised as informal creators or inventors separate from the community. (See WIPO FFMat 219). However, despite the recognition as informal creators or inventors, the innovating traditional healers are expected to use the knowledge for the benefit of their communities. This effectively put the innovating healer in the same category with warriors and sometimes, great hunters, whose skills are also employed in the service of their communities. See Khalil in Swanson (ed) 242.

[81] Despite the differences between innovations under the TK system and the western knowledge system, anthropological literature and findings of the WIPO Fact Finding Mission (FFM) reveal that concepts such as 'ownership' and 'property rights' or at least close equivalents also exist in most, if not all, traditional societies. (see Dutfield, (2001) 33 *Case. W. Res. J. Int'l L.* 233 at 251–253; and WIPO FFM at 220). However, WIPO also agree with a comment made on the Draft Report by several persons that one should not draw too close an analogy between social and cultural systems of protecting TK and the statutory forms of IP protection. See WIPO FFM at 221–222.

communal gifts for his invention, but also, is entitled to the receipt of service payments/tokens given either during the transmission of the knowledge under some culturally sanctioned protocols or treatment of patients.[82] Such entitlements support the argument by many commentators that while TKMUP is regarded as a communal property, entitlements are not equal among all community members as they do not make equal contribution to innovation and conservation of knowledge.[83]

A peculiar situation arises in instances where a traditional healer may derive inspiration from pre-existing TKMUP to invent something reflecting great skill and originality instead of the accretive and incremental process usually associated with the TK system.[84] Such innovation will be regarded for patenting purposes as a local or contemporary knowledge that is derived or is otherwise based on TKMUP.[85] In essence, contemporary innovations in traditional medicinal products or processes developed by traditional healers are patentable.[86] Such patent does not breach the communality of TKMUP from which the traditional healer derived his inspiration as it covers only the specific invention described and nothing more. Hence, it does not prevent the continued use of the TKMUP by the relevant community or other traditional healers within the relevant community.[87] The only drawback for the

[82] See Ongugo, Mutta, Pakia & Munyi, at 16; and Mgbeoji, (2006) 5(1) *Canadian Journal Of Learning & Technology* 1 at 182.

[83] See Gupta, 'Getting Creative Individuals and Communities Their Due: Framework for Operationalizing Article 8(j) And 10(c)' Draft Paper prepared for the CBD Secretariat, available at http://citeseerx.ist.psu.edu/viewdoc/download; jsessionid=5876346DB99DEB3 FEA05BDA2792BCE9F?doi=10.1.1.13.3740&rep=rep1&type=pdf, accessed on 23 May 2014.

[84] See Carvalho, Paper presented at the conference: 'Biodiversity and Biotechnology and the Protection of Traditional Knowledge' April 4–6, 2003, at 8; and Roht-Arriaza, (1996) 17 *Michigan Journal of International Law* 919 at 936–937.

[85] It will only become traditional knowledge if the traditional healer decides to share the knowledge openly or secretly within his community out of a sense of altruism or to gain prestige and status or to extract resources from his fellow villagers. The same applies where the traditional healer dies and passes on the knowledge to his family or clan. See WIPO FFM at 222; and WIPO Recognition of TK para 8.

[86] See Policy Framework for the Protection of Indigenous Traditional knowledge through the Intellectual Property System, Notice 552 of 2008 (Department of Trade and Industry, 8 May 2008) 10–11. For example of such patenting by a traditional healer in Africa, see Abd B-ghgi, 'Sudanese Female Traditional Healer Attains 14 Patents on Treatment of Intractable Diseases' *SudaNow Magazine*, 11 March 2013, available at http://suda now.info/new/news-stories/sudanese-female-traditional-healer-attains–14-patents-on-treatment-of-intractable-diseases/.

[87] See WIPO FFM at 222; and Jordan, *The Times* (Johannesburg), 7 October 2007. (Where Parceval spokesman Ulrich Feiter said 'The patents cover only one certain preparation and not pelargonium in general. Pelargonium is used by a number of companies, in South Africa and elsewhere, and they have not been challenged by the patent holder in any way'. Parceval is the South African Partner of ISO Arzneimittel, a German company granted three drug patents granted for the use of extracts from pelargonium to treat a wide range of diseases and

innovative traditional healer is that such inventions must satisfy the disclosure requirements provided in most developing countries' patent system before they can be patented.[88]

Affirmative patent protection is important for the protection of TKMUP as it not only prevents undesirable uses of TKMUP by third parties, but also encourages communities including their traditional healers to actively exploit their plant medicinal knowledge for economic benefits.[89] With regard to the latter, it is increasingly being recognised that the commercialisation of third-world traditional products including contemporary innovations by their traditional healers is 'ultimately perhaps the most effective way to protect their traditions'.[90] This is not surprising as although TKMUP is generally threatened, when it is supported, rewarded, and encouraged, a general revitalisation does usually occur,[91] which may even encourage other traditional healers to innovate within their practices.[92] A situation that will financially benefit them as well as contribute to their national economies as evidenced by the increase in the patenting of innovative Traditional Chinese Medicinal products.[93]

In addition to the affirmative protection the patent system can be used to defensively protect against the misappropriation of TKMUP by a third party. Such protection is important as when a TKMUP is misappropriated in South Africa and other developing countries, not only is the interest of an indigenous community in such knowledge adversely affected, but also, that of their traditional healers who consistently have generated and transmitted such knowledge despite the

symptoms such as pain, fatigue, depression, insomnia and all Aids-related infections such as tuberculosis, herpes and pneumonia).

[88] For example, see Patent Act 57 of 1978, s 30(3A) and 30(3B).

[89] See WIPO Recognition of TK para 14.

[90] Dutfield, Developing and Implementing National Systems for Protecting Traditional Knowledge: A Review of Experiences in Selected Developing Countries, UNCTAD Expert Meeting on Systems and National Experiences for Protecting Traditional Knowledge, Innovations and Practices, Geneva, 30 October — 1 November 2000, at 5–7, available at http://r0.unctad.org/trade_env/docs/dutfield.pdf, accessed 20 October 2013. See also Sunder, 'The Invention of Traditional Knowledge' (spring 2007) 70 *Law and Contemporary Problems* 97 at 111–113.

[91] See Gervais, (2005) *Michigan State Law Review* 137 at 138; and Coombe, 'The Recognition of Indigenous Peoples and Community Traditional Knowledge in International Law' (2001) 14 *St. Thomas Law Review* 275 at 279.

[92] See Erstling, (2009) 15 *Texas Wesleyan Law Review* 295 at 332; and Carvalho, Paper presented at the conference: 'Biodiversity and Biotechnology and the Protection of Traditional Knowledge' April 4–6, 2003, at 14.

[93] Erstling, (2009) 15 *Texas Wesleyan Law Review* 295 at 331–332. See also Oguamanam, (2008) 15(2) *Indiana Journal of Global Legal Studies* 489 at 507–508; and Dutfield, UNCTAD Expert Meeting on Systems and Natioanal Experiences for Protecting Traditional Knowledge, Innovations and Practices at 5–7.

profound religious, socio-economic and political changes experienced within their broader indigenous communities.[94] The protection is defensive in that 'it serves to preserve the TK holders' right to use the TK they created against any third party who may later seek to patent inventions derived from it'.[95] This usually arises in scenarios whereby either the TKMUP is widely shared amongst various communities, or held by traditional healers within various indigenous communities for decades, and hence construed under patent law to be in the public domain;[96] or where ownership of new TKMUP is communal and the indigenous community are not desirous of patenting such knowledge. It can also arise in situations where despite the fact that private ownership of TKMUP is recognised, the traditional healer possessing an innovative TKMUP may not have the financial wherewithal to package an invention for patenting purposes, or he/she is not desirous of patenting such innovation probably for religious or cultural reasons.

Defensive protection entails intentionally disclosing information about TKMUP so that the information may count as prior art and defeat any third-party patent application over an invention which claims the TKMUP, and which if granted, could interfere with the TKMUP holder's right to use his/her knowledge.[97] Effective measures in this respect would entail the adoption of legislation recognising TKMUP and other biodiversity-based TK (oral or written) as 'prior art' and the creation of information database or system to make TKMUP searchable by patent offices.[98] This is exemplified by India which not only provided in its patent law that TK is in the public domain and thus, inventions based on it are unpatentable,[99] but also established the traditional knowledge digital library (TKDL). TKDL aims at addressing the niggling issue of the exploitation of Indian traditional medicinal heritage and the scourge of biopiracy.[100] The National Recordal System (NRS) recently

[94] See Jordan, *The Times* (Johannesburg), 7 October 2007.

[95] See Erstling, (2009) 15 *Texas Wesleyan Law Review* 295 at 315.

[96] See BABS Guidelines at 13; and Liu, (2003) *E.I.P.R* 194 at 195.

[97] Providers of TKMUP in South Africa include traditional healers. This can be construed as an effective recognition of their contribution to generating and nurturing such knowledge. See Biodiversity Act, 2004, s 82(1)*(b)*; and BABS Guidelines at 8 & 11.

[98] WIPO Recognition of TK para 13.

[99] See the Patent Act 39 of 1970, s 3; and Office of the Controller General of Patents, Trademarks and Design 'Guidelines for Processing of Patent Applications Relating To Traditional Knowledge and Biological Material' (IPIndia, 12 December 2012), available at http://www.ipindia.nic.in/iponew/TK_Guidelines_18December2012.pdf, accessed on 20 October 2013.

[100] For further analysis of the project, see Oguamanam, (2004) 11(2) *Indiana Journal of Global Legal Studies* 135 at 498–504; and Erstling, (2009) 15 *Texas Wesleyan Law Review* 295 at 319–322.

launched in South Africa by the Department of Science and Technology is another effective anti-appropriation mechanism. However, defensive protection generally only prevents third parties from gaining patent rights over the TK and not from using it and hence, may undermine the interest of traditional healers.[101] To that extent, it has been suggested that to ensure comprehensive protection of TKMUP, TK holders should explore the option of managing the downside of disclosure mechanism by using it sparingly or limiting disclosure to selected parties in a way that does not destroy the novelty of the disclosed knowledge.[102]

Finally, the patent system can be used to promote the disclosure of the origin of the TKMUP and evidence of prior informed consent and/or equitable sharing of benefits with the providers of the TKMUP.[103] This requirement implicates not only innovative or secret TKMUP, but also, TKMUP that would be considered as prior art under the patent regime. At the heart of this requirement which relates to the legitimacy of the access to the TKMUP, is a TK holder's right to maintain control over the use of his TKMUP.[104] It would involve the adoption of legislation requiring patent applicant to disclose in their application any TKMUP used in the course of developing the invention as well as the actual source or origin of the TKMUP, and to provide an undertaking or evidence of prior informed consent and/or of equitable benefit-sharing arrangement.[105] Such legislative provisions which have been adopted by many developing countries, apply to any body including traditional healers seeking to patent inventions derived from or based on TKMUP. The implication is that traditional healers will be effectively forced by the patent system existing in these developing countries to share the benefits of their inventions with their respective communities. Such application to innovative traditional healers may not be faulted so much as it is increasingly being recognised that TKMUP and other TK are 'valuable from a cultural, intellectual and spiritual perspective for the communities who maintain, practice and develop such knowledge and sustain knowledge systems'.[106] Hence, the reason why many developing coun-

[101] See WIPO Recognition of TK, para 14; and Munzer & Raustiala, (2009) 27 *Cardozo Arts & Entertainment Law Journal* 37 at 81–82.

[102] See WIPO Recognition of TK. See also Munzer & Raustiala, (2009) 27 *Cardozo Arts & Entertainment Law Journal* 37 at 84.

[103] See WIPO Recognition of TK, para 61.

[104] See Oguamanam, (2008) 15(2) *Indiana Journal of Global Legal Studies* 489 at 517–518; and Girsberger, 'Transparency Measures under Patent Law Regarding Genetic resources and Traditional Knowledge' (July 2004) 7(4) *The Journal of World Intellectual Property* 451.

[105] See WIPO Recognition of TK, para 63.

[106] See The World Intellectual Property Organisation (WIPO), 'The Protection of Traditional Knowledge: Revised Objectives and Principles' WIPO/GRTKF/IC/9/5, para 12.

tries promote the protection of TK as an integral part of broader initiatives to restore and protect traditional cultures and heritage.[107]

Perhaps, the major issue with the use of disclosure requirements under the patent law for traditional healers is the fact that the undertaking with regard to prior informed consent and/or of equitable benefit-sharing arrangement is usually between the inventor and the indigenous community that are widely regarded as the holder of the TKMUP.[108] This effectively subsumed the interest of traditional healers who are responsible for generating and nurturing the TKMUP used in the invention with that of their communities in instances where there is no legislative recognition of their contributions to the preservation of TKMUP. This would not present a problem where the indigenous community has a culturally sanctioned protocol providing for the beneficial interest of traditional healers which can be incorporated into the benefit-sharing arrangements. However, this may not always be the case because as aptly observed by Gupta:

> 'It is unlikely that the communities which kept most of the local healers poor by not valuing their knowledge systems adequately will pass on the externally generated incentives to such individual experts who have reproduced this knowledge (if not produced in all cases). The assumed homogeneity of local communities and supposed convergence between the interest of local community leaders and that of local experts in every case is difficult to accept'.[109]

IV EXAMINING EXTANT PROVISIONS OF THE SOUTH AFRICAN PATENT ACT RELEVANT TO TKMUP

(a) Absolute Novelty Requirement (Defensive Protection)

Generally, under the Patent Act, a patent is granted for any new invention involving an inventive step and which is capable of being used or applied in trade or industry or agriculture.[110] An invention is new under the Act if it does not form part of the 'state of the art' immediately before the priority date of that invention.[111] The Act describes the 'state

[107] See Policy Framework for the Protection of Indigenous Traditional knowledge through the Intellectual Property System, Notice 552 of 2008 (Department of Trade and Industry, 8 May 2008) at 11–13; and see *Republic of South Africa: Indigenous Knowledge System* (DST, 2004) at 10–11, & 14–16.

[108] For example, see BABS Regulations.

[109] See Gupta, Draft Paper prepared for the CBD Secretariat at 4.

[110] See Patents Act 57 of 1978, s 25(1).

[111] S 25(5).

of art' to comprise 'all matter (whether a product, a process, information about either, or anything else) which has been made available to the public (whether in the Republic or elsewhere) by written or oral description, by use or in any other way'.[112] By this description, TKMUP once disclosed whether written or orally, is regarded to be in the public domain and hence, any invention based or derived from it does not qualify for patenting under the Act. The absolute novelty requirement adopted by the Patent Act just like the European Patent Convention,[113] by including oral TK as prior art, is important for the defensive protection of TKMUP held by traditional healers in South Africa, as it will reduce the incidences of fraudulent patenting by individuals and companies who allegedly 'discovered' such knowledge.[114] This requirement also has extraterritorial application as it effectively precludes from patenting any invention that involves the use of TKMUP disclosed elsewhere other than in South Africa whether oral or written.[115] In essence, any invention based or derived from TKMUP disclosed in any country cannot be patented in South Africa.

However, the absolute novelty principle under the Act is only triggered when information about an invention, knowledge or technology has been disclosed to the public or the invention has been used secretly and on a commercial scale in South Africa. This raises a peculiar problem for TKMUP that may be held confidentially within a community, a smaller group such as amongst traditional healers, or even by individual traditional healers in South Africa. This is because in such instances of undisclosed confidential TKMUP which are not regarded as prior art under the Act, any invention based on such knowledge is

[112] S 25(6). See also *Ensign Bickford (South Africa) (Proprietary) Limited & Ors v AECI Explosives and Chemicals Limited*, Case No. 4/95 (SCA), 21 September 1998 at 22–23, available at http://www.saflii.org.za/za/cases/ZASCA/1998/73.pdf; and *Schlumberger Logelco Incorporated v COFLIXIP SA 15*, Case No. 256/01, 6 September 2002 at 15–16, paras 20–21, available at http://www.justice.gov.za/sca/ judgments/sca_2002/2001_256.pdf. For other inventions considered state of the art, see s 25(7) & (8). For qualification to the absolute novelty criteria, see ss 25(9) & 26.

[113] See Art 54(4), Convention on the Grant of European Patents, 5 October 1973, available at http://documents.epo.org/ projects/babylon/eponet.nsf/0/00E0CD7FD461C0D5C1257C060050C376/$File/EPC_15th_edition_2013.pdf. See also Art 29(1) Patent Act 121 of 1959 (Japan).

[114] See Erstling, (2009) 15 *Texas Wesleyan Law Review* 295 at 316 and Mukuka, at 68–72 (detailing the western exploitation of the African potato whose medicinal properties were allegedly discovered by RW Liebenberg, a South African businessman. He is the founder of a pharmaceutical company that now holds the patent rights to a product derived from the potato which is sold under the name 'Moducare Sterinols').

[115] But see s 102*(a)*, U.S. Patent Act 35 U.S.C. 2006 (Oral disclosure other than in United States not allowed).

patentable.[116] To avoid fraudulent misappropriation of TKMUP, it is suggested that traditional healers and their communities in South Africa should employ effective disclosure strategies that should ensure that information relating to their TKMUP can easily be found by researchers and patent examiners.[117] Such strategies include ensuring that their disclosure is publicly available before the filing date or priority date of the patent application and contain an unambiguous publication date. The latter is very important in the instances of internet-based prior art disclosures.[118] In addition, the publication should as much as possible contain a complete and comprehensive description of the innovative or technological concept behind the TKMUP.[119] The publication should therefore include descriptions of the uses of the technological concept, both the uses which have been shown within TK systems and other more speculative uses, and also should aim at sufficiently describing the TKMUP in a manner that it would meet the patent law requirement of enabling a person skilled in the art to perform it in practice.[120] However, the disclosure should avoid statements about the TKMUP's limitations as such statements may result in strengthening the adverse patent applications of inventions that claim to overcome the TKMUP's shortcomings.[121]

[116] See Daya & Vink, (2006) 45(3) *Agrekon* 319 at 329.

[117] In such instances, because of the disadvantages associated with disclosure, positive protection in form of patenting such TK is more desirable. (See WIPO Recognition of TK para 14; and Erstling, (2009) 15 *Texas Wesleyan Law Review* 295 at 318). Other options other the patent system includes the use of trade secrets. Although it has some advantages, the trade secret approach has an inherent weakness as if a trade secret is discovered legitimately, for example through reverse engineering or independent research and development activities, the trade secret would become known and would be unenforceable against such parties using the trade secret's subject matter. (See generally, L.A. Tong 'Protecting Traditional Knowledge — Does Secrecy Offer A Solution? (2010) 13(4) *PER/PELJ* 159; and Varadarajan 'A Trade Secret Approach to Protecting Traditional Knowledge' (2011) 36 *Yale Journal of International Law* 371). It should also be noted that once an invention is used in South Africa, secretly and on a commercial scale, the Patents Act regards such invention as prior art. Hence, once used, albeit in secret, the possibility of later obtaining a patent for the invention would be destroyed as the novelty requirement would no longer be met. See s 25(8) Patent Act 57 of 1978.

[118] See WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore 'Practical Mechanisms for the Defensive Protection of Traditional Knowledge and Genetic Resources Within the Patent System', WIPO/GRTKF/IC/5/6 (14 May 2003) para 24(b) & (c), available at www.wipo.int/edocs/mdocs/tk/en/wipo . . .ic. . ./ wipo_grtkf_ic_5_6.doc., accessed on 20 October 2013. (hereinafter WIPO Practical Mechanism).

[119] WIPO Practical Mechanism, para 24(d).

[120] WIPO Practical Mechanism.

[121] WIPO Practical Mechanism.

(b) Patenting of Inventive TKMUP (Affirmative Protection)

Although TKMUP may generally fall under prior act and hence, non-patentable, if traditional healers innovate within their TK system and invent new herbal formula or new processes for extracting herbal medicines from plants, such inventions may meet the requirements of patentability under the Act.[122] In essence, new and innovative TKMUP developed by traditional healers are patentable under the Act either alone or jointly provided the novelty, non-obviousness and utility requirements are fulfilled.[123] The novelty requirement can easily be met by traditional healers because of the oral and confidential nature of TKMUP, provided it has not been used on a commercial scale.[124] Traditional healers can also overcome the inventiveness or non-obviousness requirement by proving that their inventions are different from what has been publicly disclosed, and thus, non-obvious to a person 'skilled in the art'.[125] A person 'skilled in art' would mean a person possessing ordinary knowledge and skill in the technical area of the invention, which logically in instances of inventions based or derived from TKMUP refers to a traditional healer or any other person with ordinary skill in the relevant TK system.[126] However, the problem lies in determining what quantum of innovation by a traditional healer can amount to an inventive step as there is a theoretical difference between mere improvements which is obvious to the hypothetical unimaginative person 'skilled in the art', and changes that rise to the level of invention.[127] There is no generally accepted threshold in determining inventive step in South Africa as there is always a continuum between inventions and improvements. This has led to a situation where the ultimate test of inventive step is a judgment as to value based on the facts of each particular case.[128] As aptly stated by Burrel:

> 'The ground for obviousness . . . is a ground in which, more than in any other, the circumstances and facts surrounding the particular

[122] See Erstling, (2009) 15 *Texas Wesleyan Law Review* 295 at 297; and Daya & Vink, (2006) 45(3) *Agrekon* 319 at 327–328.

[123] See Patent Act 57 of 1978 , s 27.

[124] See Ullrich, EUI Working Paper, Law No. 2005/07 at 8.

[125] S 25(10). For the steps that the courts used in determining obviousness, see *Ensign Bickford (South Africa) (Proprietary) Limited & Ors v AECI Explosives and Chemicals Limited*, Case No. 4/95 (SCA) at 23–24.

[126] *WIPO Recognition of TK*, paras 39–40.

[127] See Ullrich, EUI Working Paper, Law No. 2005/07 at 9.

[128] *See Mgbeoji,* (2001) 9 *Indiana Journal of Global Legal Studies* 163 at 180–182. See also *Ensign Bickford (South Africa) (Proprietary) Limited & Ors v AECI Explosives and Chemicals Limited*, Case No. 4/95 (SCA) at 34–35; and *Schlumberger Logelco Incorporated v COFLIXIP SA 15*, Case No. 256/01 at 31–32, para 41.

> invention at times far outweigh abstract principles and definitions enunciated by courts of law under different sets of facts . . . it is difficult, if not well-nigh impossible, to formulate a satisfactory general principle as to how a court is to arrive at an eventual decision on whether or not an invention is obvious, for everything must depend on the facts of the particular case.'[129]

Despite the subjective nature of what amounts to an inventive step, it can be argued that with respect to the patenting of TKMUP in South Africa that although a traditional healer may generally derive inspiration from pre-existing knowledge, for his invention to be considered non-obvious and worthy of patentability, it must be structured in such a manner that it is non-obvious to a person ordinarily skilled in the art. In essence, the improvement to an existing TKMUP must not be so minute or superficial that any person involved in the field could easily have thought of it. This is evident from the judgment of the Supreme Court of Appeal in *Ensign-Bickford (South Africa) (Proprietary) Limited & Others v. AECI Explosives & Chemicals Limited*, to wit:

> 'The step forward was simply the provision of a more resistant outer coat. The manner of ''integration'' of that feature with the other features of the tube is not a part of the invention. The fact is that it was known that resistance to external damage could be improved by the provision of an outer wrapping or by strengthening the outer coat by thickening the tube. It was known how to over-extrude plastic tubes and also to use over-extrusion to provide protection for example in the manufacture of detonator cords. In what respect then did the ''step'' go beyond or differ from that state of the art? It would seem to me not at all. But even if it did, the further question arises namely, was such a step obvious? Once one is limited to a step which met the need for protection of the outer surface of the tube of plastic material, the answer seems to me to be that the solution must have been obvious to persons who would, in terms of the claim, in any event, be required to choose and combine the plastic tube or tubes to be used to his satisfaction.'[130]

[129] See Burrell, *Burell's South African Patent and Design Law*, 3 ed. (LexisNexis South Africa 1999) 549.

[130] *Ensign Bickford (South Africa) (Proprietary) Limited & Ors v AECI Explosives and Chemicals Limited*, Case No. 4/95 (SCA) at 34–35; and *Schlumberger Logelco Incorporated v COFLIXIP SA 15*, Case No. 256/01 at 34–35. See also *Northpark Trading (Pty) Ltd v Ausplow (Pty) Ltd*, Case No. 278/07, 31 March 2008, at 8 para 17, available at http://www.justice.gov.za/sca/judgments/sca_2008/sca08–046.pdf.

Finally, the traditional healer must show that his invention must be capable of being used or applied in trade or industry or agriculture. This requirement simply means that the invention must be capable of repetition, that is, it should not be a fluke.[131] It is doubtful if an innovative traditional healer would not be able to overcome this hurdle considering the growing world-wide popularity of TK-based medicinal drugs or herbal products. However, this requirement is largely an expansion of the crucial requirement of specification in reasonable detail and writing of the invention in question.[132] This may present a problem for traditional healers as incomplete or illegible description or illustration in a complete specification is a ground for revocation under the Act.[133] This is not surprising as this requirement is a crucial aspect of the patent system.[134] To avoid such revocation, traditional healers instead of using traditional descriptions of chemical formulations, should incorporate the scientific terminologies that patent examiners or judges are trained to assess or can easily comprehend.[135] Using such scientific terminologies invariably involves employing sophisticated techniques to bioengineer the plants ingredients in order to identify the active compounds or substances. Such technologies are usually out of reach for most traditional healers.[136] It should be noted that although a specification may be written in any of the official languages of South Africa,[137] the Patent Regulations requires that 'for chemical formulae, the symbols, atomic weights and molecular formulae in general use, shall be employed'.[138] This position is not surprising because as aptly stated by Gervais, '[i]n the current patent law environment, the scientific method itself may seem culturally discriminatory to some holders of traditional medicinal knowledge for example, but there is scant hope of avoiding the filter of accepted scientific canons to gauge the actual utility of an invention, . . .'[139]

Perhaps, the major obstacle to the patenting of innovative TKMUP in South Africa as opposed to contemporary plant medicinal knowledge or process developed by a traditional healer is the fact that the Patent Act

[131] See Mgbeoji, (2001) 9 *Indiana Journal of Global Legal Studies* 163 at 182.
[132] Mgbeoji, (2001) 9 *Indiana Journal of Global Legal Studies* 163.
[133] See Patent Act 57 of 1978 at s 61(1)*(d)-(f)*.
[134] It has even been described as the heart of the patent system. See Mgbeoji, (2001) 9 *Indiana Journal of Global Legal Studies* 163 at 182 (Citing Takach, *Patents: A Canadian Compendium of Law and Practice* (1993).
[135] See Erstling, (2009) 15 *Texas Wesleyan Law Review* 295 at 330.
[136] See Daya & Vink, (2006) 45(3) *Agrekon* 319 at 328.
[137] See Patent Act 57 of 1978 at 30(6)*(a)*(iii); and Patent Regulations 1978, reg. 12.
[138] Patent Regulations 1978, reg. 20.
[139] Gervais, (2005) *Michigan State Law Review* 137 at 140.

does not recognise individual ownership of TKMUP. TK is defined under the Act as 'the knowledge that an indigenous community has regarding the use of an indigenous biological resource or a genetic resource'.[140] The definition accords with the whole philosophy of TK protection in South Africa which revolves around the communal ownership of TK and the benefits that a community can derive from the utilisation of their TK.[141] Hence, although the traditional healers are now emerging as custodians of their TKMUP, they are required to act on behalf of and in the best interest of their respective communities, who are regarded as owners of such knowledge under the Act. The same applies to innovative TKMUP developed by an individual healer which as earlier noted is basically regarded as a community service with ownership reposing in his community. Thus, a traditional healer cannot patent his innovative TKMUP in South Africa except with the consent or permission of his community. Such permission might be refused by a community generally opposed to the commodification of their TKMUP on cultural or religious grounds.[142] However, the possibility of such permission being refused is remote as most indigenous communities are not only desirous of being recognised for their creativity and contributions to science, but also, interested in reaping the financial benefits arising from the utilisation of their TK particularly those relating to the medicinal uses of plants.[143]

Once the requirements for the patenting of innovative TKMUP are met by a traditional healer, a patent will be granted. The duration of the grant is usually 20 years after which the invention will fall into the public domain.[144] During this period, the patent owner is allowed the right to exclude other persons from making, using, exercising, disposing or offering to dispose of, or importing the invention.[145] In view of the fact that TKMUP is developed over a long period of time, such patenting raises the issue of whether traditional communities in South Africa would be willing to sanction the divulging of an innovative TKMUP in

[140] Patents Act 57 of 1978, s 2.

[141] See generally, *Republic of South Africa: Indigenous Knowledge System* (DST, 2004); and BABS Regulations.

[142] Particularly as it relates to the importance of co-operation and open-sharing among all the members within a community or within specific select groups of practitioners subject to the knowledge-protection protocols within the indigenous community. See Chennells, (2013) 9(2) *Law, Environment and Development Journal* 163 at 174–176 & 180; and WIPO Recognition of TK, para 10; and Milius, 'Justifying Intellectual Property in Traditional Knowledge' (2009) 2 *I.P.Q* 187 at 194.

[143] See Sunder, (spring 2007) 70 *Law and Contemporary Problems* 97 at 111–113.

[144] Patents Act 57 of 1978, s 46.

[145] S 45.

exchange for only 20 years' protection. Apart from the financial and social benefits derivable by the concerned community as noted above, it should be further noted that in most cases, what is claimed by a traditional healer as a patentable invention (innovative TKMUP) is an incremental improvement on existing TKMUP. In such instances, the patent covers only the invention described and nothing more.[146] The implication is that the community still retains confidential knowledge of the original TKMUP, while enjoying the benefits from the incremental improvement (invention) derived from the original medicinal knowledge.[147] In other instances where what is being patented is not an incremental improvement but the original TKMUP unique to only a given community, it has been suggested that before sanctioning it, the community should carefully weigh the benefits accruable during the period of protection against the potential drawbacks of permanently divulging the knowledge.[148]

(c) Disclosure Requirements for TKMUP

Perhaps, the provisions of the Patent Act most relevant to traditional healers in the protection of TKMUP against misappropriation in South Africa particularly in instances where they are unable to patent the innovative or original TKMUP which they are holding, are that of subsections 30(3A) and 30(3B) requiring mandatory disclosure of origin of TK and evidence of benefit sharing for an invention that is based on or derived from TK.[149] These provisions require any patent applicant in South Africa to disclose any TK actually used in the course of developing the invention, and the actual source or origin of the TK; as well as provide an undertaking or evidence of prior informed consent and/or of

[146] See WIPO FFM at 222.

[147] See Gupta, (2004) 39–40, at 161 (observing that while the basic 'recipes' for traditional Indian health system such as Ayurvedic, Unani, or Sidhdha are not appropriate for patenting, modification of these recipes should be permissible for patenting under certain circumstances).

[148] See Erstling, (2009) 15 *Texas Wesleyan Law Review* 295 at 331.

[149] '(3A) Every applicant who lodges an application for a patent accompanied by a complete specification shall, before acceptance of the application, lodge with the registrar a statement in the prescribed manner stating whether or not the invention for which protection is claimed is based on or derived from an indigenous biological resource, genetic resource, or traditional knowledge or use.
(3B) The registrar shall call upon the applicant to furnish proof in the prescribed manner as to his or her title or authority to make use of the indigenous biological resource, genetic resource, or of the traditional knowledge or use if an applicant lodges a statement that acknowledges that the invention for which protection is claimed is based on or derived from an indigenous biological resource, genetic resource, or traditional knowledge or use.'

equitable benefit-sharing with the TK holders.[150] The provisions which were inserted into the Act by virtue of the Patent Amendment Act 2005,[151] seek to prevent further incidences of misappropriation of South Africa's biological resources and associated TK as well as ensuring that traditional healers and their communities benefit from the utilisation of their TK.[152] Such intention is explicit from the Memorandum on the Objects of the Patent Amendment Bill, 2005 which states that 'the Bill will benefit and empower mainly the holders and practitioners of genetic or biological resources and indigenous knowledge systems'.[153]

These mandatory disclosure requirements under the Act have many benefits for traditional healers in South Africa. For instance, they ensure that in appropriate cases, traditional healers whose innovative TKMUP contributed substantially to an invention can obtain co-ownership rights in the resulting patent.[154] This is because the Act requires any applicant for a patent over an invention in which the TKMUP forms a substantive part of the invention must in addition to furnishing the registrar with a copy of bioprospecting permit,[155] also provide '. . . proof of co-ownership of the invention for which the protection is claimed'.[156] Failure to provide this information in the patent application which in essence acknowledges the substantive inventive contribution of the traditional healer to the invention is a violation of the Patent Act.[157] Requiring this mandatory proof is a mechanism aimed at minimising misappropriation of TKMUP by ensuring that the rights of inventorship and ownership of any resulting invention accrue only to those who deserve them.[158] As aptly stated by Carvalho 'when traditional knowledge holders inform bioprospectors of the result of their own inventive activity and those results are later claimed in a patent application, there

[150] See WIPO Recognition of TK para 64.

[151] Act 20 of 2005. Adopted on 9 December 2005.

[152] See Memorandum on the Objects of the Patents Amendment Bill, 2005, B 17B — 2005, para 4, available at http://www.pmg.org.za/docs/2005/051108[b17b–2005].pdf, accessed on 20 October 2013.

[153] See Memorandum on the Objects of the Patents Amendment Bill, 2005, B 17B — 2005, para 4.2.

[154] Ss 29 & 49 of the Patent Act recognise co-ownership or joint ownerships in patent.

[155] Issued in terms of Chapter 7 of the Biodiversity Act 10 of 2004.

[156] See Reg 33A(2)*(e)*, Patent Regulations 1978. (As amended by Patent Regulations Amendment, 2007, R. 1226, 14 December 2007).

[157] See Patent Act 57 of 1978, s 61(1). See also Carvalho, 'From the Shaman's Hut to the Patent Office: In Search of a TRIPS-Consistent Requirement to Disclose the Origin of Genetic Resources and Prior Informed Consent' (2005) 17 *Journal of Law & Policy* 111 at 148.

[158] See WIPO Recognition of TK, para 44; and Erstling, (2009) 15 *Texas Wesleyan Law Review* 295 at 324.

is no doubt that the original inventors are entitled to be recognised as co-owners of the resulting patents. . . .'[159]

Such a co-ownership right can be negotiated by a traditional healer independent of his community as a condition for provision of his innovative TKMUP,[160] provided the community's interest is catered for in the sharing of benefits accruing from the patented invention.[161] Co-ownership rights which can be construed as just compensation for their direct inventive contribution towards the invention sought to be patented arguably can be justified under the Patent Act which seeks to empower not only TK holders but also practitioners of TK system.[162] In addition, since the provisions of the Biodiversity Act recognise that a traditional healer can be the provider of TKMUP,[163] the right can be justified as part of the benefit-sharing arrangements which the inventor has with the traditional healer independent of any subsequent arrangement with his indigenous community.[164] Finally, the grant of such right may not infringe the culturally-sanctioned protocols governing the use of TKMUP which as earlier noted recognise that entitlement to usage and benefits from such knowledge is not equal amongst the members of their respective communities.

The entitlement of a traditional healer to co-ownership of any invention derived directly or based on his innovative TKMUP under the Patent Act is not unique to South Africa as it is in accordance with internationally accepted principles of patent law.[165] For instance, joint inventorship is recognised under the United States Patent Act even in

[159] See Carvalho, (2005) 17 *Journal of Law & Policy* 111 at 146.

[160] It can also be negotiated where what the innovative traditional healer is providing as an inventive contribution to the invention is not TKMUP, but contemporary knowledge based on or derived from pre-existing TKMUP.

[161] For other TKMUP, because of their accretive and intergenerational character, it may be unethical for a traditional healer or groups of traditional healers within a community to negotiate for a co-ownership right. In such situations, such right should go to the community providing the knowledge.

[162] See Policy Framework for the Protection of Indigenous Traditional knowledge through the Intellectual Property System, Notice 552 of 2008 (Department of Trade and Industry, 8 May 2008), para 10–11 & 14. Note that the Biodiversity Act also specifies that an individual can be the provider of TKMUP. See BABS Guidelines at 11.

[163] S 82(1)*(B)* and (3) of the National Environmental Management: Biodiversity Act 10 of 2004]. See also BABS Guidelines at 11–12.

[164] Since the individual ownership of TKMUP is not recognised in South Africa, the inventor is still required to furnish further evidence of prior informed consent and equitable benefit-sharing arrangement with the community of the traditional healer. See BABS Regulations, reg 8.

[165] Carvalho, (2005) 17 *Journal of Law & Policy* 111 at 148. See also Erstling, (2009) 15 *Texas Wesleyan Law Review* 295 at 324; and Eisenberg, 'Inventorship vs. Ownership of a Patent' (2000) 1, available at http://www.yale.edu/ocr/pfg/guidelines/docs/inventor_owner.pdf, accessed on 20 October 2013.

instances 'where the inventors did not physically work together or at the same time, make the same type or amount of contribution, or make a contribution to the subject matter of every claim of the patent'.[166] What is required is that each of the inventors must have worked on the same subject matter and must make some contribution to the conception of the invention as it is claimed in the patent.[167] Similarly, in the United Kingdom, it has been held in *Re Staeng Ltd's Patents* that a person who generated the idea for an invention (new method of securing electric cables) had made a substantive inventive contribution to be treated as a co-inventor as it was unlikely that the main inventor would have turned his mind to the question without being prompted by the initial idea.[168] A famous example where an innovative traditional healer was acknowledged as a joint inventor albeit in Africa involves the patenting of the anti-sickle cell drug 'NIPRISAN' in Nigeria.[169]

Furthermore, the disclosure requirements under the Act ensure compliance with the provisions of the Biodiversity Act relating to prior informed consent of TK holders including traditional healers, and the fair and equitable sharing obligation with such holders. Hence, applicants for patent in respect of inventions derived or otherwise based on TKMUP are required in addition to the bioprospecting permit, to provide evidence that prior informed consent of the TK holders had been obtain as contemplated in s 82(2)*(a)* or 82(3)*(a)* of the Biodiversity Act; and evidence of a benefit-sharing agreement between the applicants and TK holders as contemplated in s 82(2)*(b)*(ii) or 82(3)*(b)* of the Biodiversity Act.[170] These provisions which reinforce the mandatory provisions of the Biodiversity Act seek to ensure that traditional healers give their informed consent to the exploitation by bioprospectors of any specialised TKMUP which they are holding, as well as derive benefits

[166] U.S. Patent Act 35 U.S.C. 2006, s 116.

[167] See *Ethicon v. United States Surgical Corp.*, 135 F.3d 1456, 45 U.S.P.Q.2d 1545 (Fed. Cir. 1998). (Holding that a contribution to one claim is enough).

[168] (1996) R.P.C 183. See also 116 U.S. Patent Act 35 U.S.C. 2006. (Providing that it is not necessary for a co-inventor to make a contribution to the subject matter of every claim of the patent).

[169] However, the traditional healer's local community was not involved as a stakeholder in the patenting of the product derived from the TKMUP, which he claimed was a family secret. The non-involvement of the community was highlighted as one of the problems associated with the project and it was recommended that 'community . . . should also have benefited from the commercialization . . .'. See Wambebe, 'NIPRISAN Case, Nigeria. A Report for GenBenefit' (2007) 7 & 13, available at www.uclan.ac.uk/gen benefit, accessed on 22 October 2013. Such scenario as evident from the above analysis would not be allowed in South Africa as both the traditional healer and his community are regarded as stakeholders under the South African Biodiversity Act.

[170] See Patent Regulations 1978, reg 33A(2)*(b)* & *(d)*.

from any invention resulting from the bioprospecting activities.[171] This is very important to traditional healers in instances where they are not considered inventors or co-inventors for the purpose of the patent law such as when the TKMUP which they are holding are not part of the inventive processes as such, but in fairness may be the originators of the experience and data that allowed a patentable medicine to be developed.[172]

The disclosure requirements under the Act which relate to the title or authority of the applicant to make use of the TKMUP, are mandatory as the applicant for a patent based or derived from a TK is required to furnish the proof of such title or authority 'before acceptance of the application' by the registrar.[173] In essence, failure to furnish the required information constitutes a ground for the registrar to refuse acceptance of the patent application.[174] This power of refusal is important for the protection of traditional healers as unlike the Indian Patent Act which also incorporated disclosure requirements,[175] there is no scope for pre-grant opposition in South Africa as the patent system is structured as a formal or a depository patent registration system. This means that the Registrar examines in the prescribed manner, every application for a patent and every complete specification accompanying such application, and if it complies with the requirements of patentability under the Act, the Registrar is obliged to accept the patent application for registration.[176] Thus, in instances where applicants make false statements under the provisions of s 30(3A) and hence, fraudulently obviate the needs to comply with disclosure requirements, the only option left to aggrieved TK holders including traditional healers is to approach the

[171] A good example in South Africa involves the patenting of a novel mosquito repellent from a medicinal plant. Traditional healers provided the TKMUP that stimulated the research by the Council for Scientific and Industrial Research (CSIR). As part of the benefit-sharing arrangement, the traditional healers were paid royalties from the commercialisation of the invention were paid to traditional healers, while the technology for the cultivation and processing of the medicinal plant to an essential oil was transferred to community-owned businesses in the Limpopo, Mpumalanga, Eastern and Western Cape provinces. See Maharaj, Fouche, Senabe, Nthambeleni & Kotze, *Agro-processing Opportunities Identified Through a Novel Mosquito Repellent from a Medicinal Plant* (CSIR 2008).

[172] See Gervais, (2005) *Michigan State Law Review* 137 at 155.

[173] See Patent Regulations 1978, reg 33A(2).

[174] See Patent Regulations 1978, regs 42–43. Cf the Indian Patent Act which does not oblige the patent applicant to obtain the prior informed consent of the TK holder or to enter into a benefit-sharing agreement regarding the use of the TK. However, the applicant is required to disclose the source and geographical origin of any TK used in the invention. See Indian Patent Act, s 10(4)*(d)*.

[175] Indian Patent Act.

[176] See Patent Act 57 of 1978, s 34; and Patent Regulations 1978, regs. 40–14. Cf Indian Patent Act, s 25(1)*(d)*; *(f)*; *(j)* & *(k)*.

high court to seek a revocation of the resulting bad patent under s 61(1)*(g)* of the patent Act. A prospect that generally may not appeal to traditional healers as the South African Legal system is quite expensive.[177]

V CONCLUSION

The patent system despite its imperfections can be used to offer some measures of protection to traditional healers against the misappropriation of the TKMUP which they are holding. The emphasis on traditional healers is a recognition of their increasing emergence as main custodians of all forms of TKMUP despite the communal nature of such knowledge. Hence, in instances of misappropriation of TKMUP by third parties, the interest of traditional healers, who are primarily responsible for generating and nurturing the knowledge are more adversely affected than that of any person within their indigenous communities. The protective measures associated with the patent system include affirmative protection in the form of patenting of inventive TKMUPs to prevent misappropriation by third parties as well as encourage innovation amongst traditional healers; defensive protection to ensure that such TKMUPs are not patented by third parties; and disclosure measures that ensure that traditional healers benefited from any invention resulting from the exploitation of such TKMUPs. Such measures as evident from the analysis in this article are provided to a large extent under the South African Patent Act. Perhaps, the only issue with regard to protection of TKMUP under the Patent Act is the non-recognition of individual ownership of innovative TKMUP thereby leading to a situation whereby innovating traditional healers can only be able to patent such knowledge with the consent of their local communities. Such non-recognition which invariably reward indigenous communities for TKMUP developed or held by their traditional healers may constitute a bar to innovation amongst traditional healers especially in situations where the

[177] See Kaplan, 'Intellectual Property Rights and Innovation in South Africa: A Framework' in World Intellectual Property Organisation (WIPO), *The Economics Of Intellectual Property in South Africa* (WIPO, June 2009) 1 at 3; and Wen & Matsaneng, 'Patents, Pharmaceuticals and Competition: Benefiting from an effective patent examination system', Seventh Annual Conference on Competition Law, Economics & Policy, 5- 6 September 2013, Sandton Sun, Sandton, at 3–4, available at http://www.compcom.co.za/assets/Uploads/events/Seventh-Annual-Conference-on-Competition-Law-Economics-Policy/Parallel–3B/Patents-Pharmaceuticals-and-Competition-Yu-Fang-Wen-and-Thapi-Matsa neng-Annual-Competition-Conference–2013.pdf, accessed on 22 October 2013.

required consent is unreasonably withheld.[178] The protection measures offered by the Act are boosted by a highly advanced and relatively inexpensive patent system.[179]

[178] It is doubtful if such recognition would further the interest of innovative traditional healers as they would still be required to comply with the provisions of the Patent Act relating to disclosure of origin. Fulfilling this condition would require them obtaining the informed consent of the indigenous communities from which the biological resources and associated TK used in their invention was obtained. Such requirement may not be waived for traditional healers to avoid South Africa falling foul of the 'same treatment principle' enunciated in article 2 of the Paris Convention for the Protection of Industrial Property. Available at http://www.wipo.int/treaties/en/text.jsp?file_id=288514, accessed on 20 February 2014.

[179] See Kaplan in World Intellectual Property Organisation (WIPO), *The Economics Of Intellectual Property in South Africa* (WIPO, June 2009) 1 at 1–3.