Indigenous traditional knowledge protection: prospects in South Africa's intellectual property framework?

Charles A. Masango[1]
Department of Research and Innovation, University of Cape Town
Charles.masango@uct.ac.za

Received: 16 February, 2010
Accepted: 17 June 2010

This article examines indigenous traditional knowledge and intellectual property rights. It examines whether it is possible for South Africa's intellectual property framework to protect all types of indigenous traditional knowledge against exploitation since financial considerations are the basis for the protection of indigenous traditional knowledge. The rationale for the examination stems from a draft policy and bill for public comment published by the South African Minister of Trade and Industry on 'policy framework for the protection of indigenous traditional knowledge through the intellectual property system and the intellectual property laws amendment bill, 2008'. The article attempts to propose elements within indigenous traditional knowledge that may and may not possibly be protected against exploitation within intellectual property rights. Finally, the article attempts to propose possible measures that could be implemented for indigenous traditional knowledge to be protected within South Africa's intellectual property framework.

Key words: Indigenous traditional knowledge; intellectual property

1 Introduction

According to Mugabe (1998), indigenous knowledge (IK) 'is that knowledge that is held and used by a people who identify themselves as indigenous of a place based on a combination of cultural distinctiveness and prior territorial occupancy relative to a more recently-arrived population with its own distinct and subsequently dominant culture'. Traditional knowledge (TK) is 'the totality of all knowledge and practices, whether explicit or implicit. This knowledge is established on past experiences and observation' (Mugabe 1998). Following the definitions of indigenous knowledge and traditional knowledge, one can state that indigenous traditional knowledge is the totality of all knowledge and practices established on past experiences and observation that is held and used by a people. Intellectual property (IP) is 'generally synonymous with Intellectual work, but carrying a clear emphasis on the value of the work as an asset in a financial sense' (Prytherch 2000: 383). The purpose of this paper is to examine indigenous traditional knowledge and intellectual property. It examines whether it is possible for the South African intellectual property framework to protect all types of indigenous traditional knowledge against exploitation since financial considerations are the basis for the protection of indigenous traditional knowledge. The rationale for the examination stems from a draft policy and bill for public comment published by the South African Minister of Trade and Industry on 'policy framework for the protection of indigenous traditional knowledge through the intellectual property system and the intellectual property laws amendment bill, 2008' (Traditional Knowledge Bill 2009).

In order to examine whether it is possible for the South African intellectual property framework to protect all types of indigenous traditional knowledge, this paper first examines why intellectual property is an issue in terms of indigenous traditional knowledge. The possible reasons why indigenous traditional knowledge is a cause for concern are considered. Secondly, the paper examines different types of indigenous traditional knowledge. Thirdly, the paper examines the various facets of intellectual property and explores how financial considerations form the basis for the protection of indigenous traditional knowledge. Fourthly, the paper discusses the intellectual property laws amendment Bill, 2008 and examines how certain indigenous traditional knowledge may and may not possibly be protected by the Bill because they do and do not embody financial considerations. Finally, the paper attempts to propose possible measures that could be implemented for indigenous traditional knowledge to be protected within the South African intellectual property framework.

2 Rationale for indigenous traditional knowledge protection

One of the possible reasons for the protection of indigenous traditional knowledge is to prevent the knowledge from being exploited by appropriation for financial gains 'by third parties' (World Intellectual Property Organization ([n.d. (a)]). Supporting this view, Hountondji (2002: 35) is of the opinion that 'Western society … accumulates data about non-

1. Charles A. Masango (PhD) is a Research Development Co-ordinator at the Emerging Researchers' Programme, Department of Research and Innovation, University of Cape Town, South Africa

Western societies and appropriates their knowledge systems'. According to IFLANET (2004), indigenous traditional knowledge is 'vulnerable both because it is exploitable and has been exploited' financially by global drug industries. The drug industries, for example, derive prescription drugs from indigenous traditional knowledge plant species by appropriation. This is supported by Mugabe (1998), who says that 'plant-derived prescription drugs in the U.S. originate from 40 species of which 50% are from the tropics … The search for these plants has been accompanied by appropriation of traditional knowledge'.

Another reason for the protection of indigenous traditional knowledge is that drug industries financially benefit and exploit the medicinal properties in plants used by indigenous traditional people to treat certain illness such as cancer without the recognition of the indigenous traditional peoples' knowledge of the plant and its medicinal properties. It can be argued that the drug industries are exploiting the collective knowledge of indigenous traditional people 'for the profit of a few' (Hoppers 2002:3). According to Mugabe (1998):

> In the 1970's, the National Cancer Institute (NCI) of the U.S.A. invested in extensive collections of *Maytenus buchananii* from Simba Hills of Kenya. NCI was generally led by the knowledge of the Digo communities – indigenous to the Simba Hills area – who have used the plant to treat cancerous conditions for many years. More than 27.2 tons of the shrubs were collected by the NCI from a game reserve in the Simba Hills for testing under a major screening program. The plant yields maytansine which was considered a potential treatment for pancreatic cancer. All the material collected was traded without the consent of the Digo, neither was there any recognition of their knowledge of the plant and its medicinal properties.

Also, the fact that 'western science has recently begun looking at indigenous knowledge as a source of new drugs … yet refusing to acknowledge its economic value and ownership' (Sahai 2002), is another reason indigenous traditional knowledge needs to be protected. According to Sahai (2002), 'diverse forms of indigenous knowledge have been appropriated … by researchers and commercial enterprises, without any compensation to the knowledge's creators or possessors'. It can be said that indigenous traditional knowledge needs to be protected because the creators or possessors have the 'right to receive a fair return on what the communities have developed' (Simeone 2004).

One can argue that indigenous traditional knowledge needs to be protected against financial exploitation by third parties because traditional medicine (TM) 'plays an important role in developed countries, where the demand for "herbal medicines" is growing' (Sahai 2002). According to Sahai (2002):

> ... the global market for herbal products is exploding. It is estimated to touch 5 trillion $ by 2020. Four out of ten people in the US are using what they call 'alternative medicine', even when all the cost is not covered by medical insurance. Sale of herbal products was in the vicinity of 21 billion US $. The increase for pharma products in Japan, in recent years has tripled whereas for herbal products the growth in demand is over 15 fold. Similarly in the European Union, sales of herbal products rose from US 1.6 billion to 3.3 billion in 1998 … China and India are major sources of medicinal plants. Whereas China's sale of herbal products is in the range of Rs. 25000 crore, India holds only 1% of the global market, selling roughly Rs. 500 crore worth of products.

Confirming this view, Mugabe (1998), is of the opinion that the past decade has 'witnessed a resurgence of interest in traditional knowledge and medicine'. In Chile, for example, 'women have been complementing their western medicine treatments with Mapuche products, made using 47 native plants harvested in the Araucania region, some 700 km south of the capital and where the Mapuche population is concentrated' (Estrada 2010). Also, that 'medical doctors operating in the best equipped hospitals, top-level experts [for example] in surgery or paediatrics would tell their patients to go back to the village and consult traditional healers, in some cases which seem to them difficult' (Hountondji 2002: 23), illustrates that an interest has been witnessed in traditional knowledge and medicine. Furthermore,

> biotechnology, pharmaceutical and human health care industries have increased their interest in natural products as sources of new biochemical compounds for drug, chemical and agro-products development … Of the 119 drugs developed from higher plants and on the world market today, it is estimated that 74% were discovered from a pool of traditional herbal medicine (Mugabe 1998).

Another possible reason why indigenous traditional knowledge needs to be protected is because Western science makes a lot of money from medicinal plants 'without the consent of the possessors of the resources and knowledge' (Sahai 2002). Upholding this view, Mugabe (1998) says:

> it has been estimated that the annual world market for medicines derived from medicinal plants discovered from indigenous peoples amounted to US$ 43 billion in 1985. A report prepared by the Rural Advancement Fund International (RAFI) estimated that at the beginning of the 1990s, worldwide sales of pharmaceuticals amounted to more than US$ 130, 000 billion annually.

When the consent of possessors of the resources and knowledge is obtained, it would be possible for the state to 'encourage the equitable sharing of benefits arising from the utilization of such knowledge … and practices' (Rimmer 2003).

Also, indigenous traditional knowledge needs to be protected in order to allow developing countries to benefit from the large sums of money that the developed countries derive from herbal drugs that are made out of developing countries medicinal plants. Following the IP Quarterly Update, Second Quarter (2007), there is a 'growing recognition of the problems associated with the misappropriation and use of TK for commercial (and other) purposes'. According to Mugabe (1998):

> although trade in medicinal plants from developing countries has increased in the past few decades with more drugs developed, few if any benefits accrue to the source countries and the traditional communities. Total trade in herbal remedies and botanicals in 1995 yielded over US$ 56 billion and the only payments to the communities were for the manual labor involved…less than 0.001% of profits from drugs developed from natural products and traditional knowledge accrue to traditional people who provided technical leads for the research.

Following that 'a large number of patents has been granted on generic resources and knowledge obtained from developing countries…without further improvement' (Sahai 2002), is another reason for the protection of indigenous and traditional knowledge. According to the IP Quarterly Update (2007), such patents have 'served to enable the taking and use of traditional knowledge by trans-national corporations, with little recourse or remedies available to indigenous and other local communities'. An example of such patents that have been granted are the 'US patent No. 5,304,718 on quinoa granted to researchers of the Colorado State University; US Plant patent No. 5,751 on ayahuasca, a secret and medicinal plant of the Amazonia'(Sahai, 2002). Although some of the patents have been revoked by the competent national authorities, in order to avoid the occurrence of such practices in future, indigenous traditional knowledge should be protected. This is to allow some recourse or remedies to indigenous and local communities. For example, The Indian Council of Scientific and Industrial Research (CSIR) requested a 'reexamination of the US patent No. 5, 401, 5041 granted for the wound healing properties of turmeric. The US Patent and Trademark Office (USPTO) revoked this patent after ascertaining that there was no novelty; the innovation having been used in India for centuries' (Sahai 2002).

3 Types of indigenous traditional knowledge

In order to establish the different facets of indigenous traditional knowledge, it is germane to distinguish between traditional knowledge and indigenous knowledge. Traditional knowledge is 'a broad term referring to knowledge systems, encompassing a wide variety of areas, held by traditional groups or communities or to knowledge acquired in a non-systemic way' (Derr [n. d.].). This knowledge 'is drawn from global experience and combines western scientific discoveries, economic preferences and philosophies with those of other widespread cultures' (Mugabe Kameri-Mbote & Mutta 2001-5). Following Mugabe (1998), 'examples of traditional knowledge include knowledge about the use of specific plants and/or parts thereof, identification of medicinal properties in plants, and harvesting practices'. For example, 'the weeping wattle tree used for cleansing bad spells in a village or yard; Aloe which can be used for blood cleansing and for the treatment of burns; and the use of Buffalo-thorn tree – *Ziziphus mucronata* – to heal abscesses having mixed the leaves in hot water' (Makwaeba [n.d.]).

According to Fien (2006), indigenous knowledge (IK) is:

> the local knowledge that is unique to a culture or society. Other names for it include: local knowledge, folk knowledge, people's knowledge, traditional wisdom or traditional science. This knowledge is passed from generation to generation, usually by word of mouth and cultural rituals, and has been the basis for agriculture, food preparation, health care, education, conservation and the wide range of other activities that sustain societies in many parts of the world.

Supporting this view Kearns, Du Toit & Mukuka (2006: 25), state that 'the term indigenous knowledge … refers to the knowledge held by the indigenous peoples'. Following Arnold (2008), indigenous peoples are

> peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonization or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their social, economic, cultural and political institutions.

According to Von Lewinski (2004: 2), indigenous knowledge encompasses indigenous names and designations, and folklore. Corroborating this view, Makwaeba [n.d.], is of the opinion that indigenous knowledge includes intangible African heritage that are 'natural resources and cultural practices'. Some of these cultural practices are folklore that encompasses myths, beliefs, superstition, oral history, totem, 'taboos and rituals related to species' (Makwaeba [n.d.]).

4 Intellectual property protection of indigenous traditional knowledge: financial consideration a prerequisite?

Following Hester and Litowitz [n. d.], intellectual property (IP) 'encompass four separate and distinct types of intangible property – namely, patents, trademarks, copyrights, and trade secrets'. One can argue that for these various facets to be used to protect IP there has to be some sort of financial consideration underlining the protection. For example, the rationale for patent protection is to enable the 'patent holder (patentee) to exclude all others from making, selling, or using the subject matter of a valid patent' (Besen & Raskind 1991). The raison d'être for copyright protection is to uphold the economic and moral rights of authors. With regard to upholding the economic rights of authors, it is to 'allow the rights owner to deprive financial reward from the use of his works by others' (World Intellectual Property Organization [n. d(b)]), or to allow the rights owner to monopolise 'the copying or commercial use of a work or their use' (Correa 2000: 7-8). The basis for trademark protection is to 'prevent a second entrant from unfairly appropriating the value of a successful trademark, service mark, or trade dress' (Besen & Raskind 1991). The ground for trade secret protection rests 'on the commercial value of the matter to the claimant' (Besen & Raskind 1991).

Since indigenous traditional knowledge includes use of specific plants, identification of medicinal properties in plants, and harvesting practices, myths, traditional beliefs, superstition, stories and customs, there are some of these knowledges that can be protected within IP. This is because they embrace financial considerations while others cannot be protected within IP because they do not embrace financial incentives. The types of knowledge that cannot be protected within IP are myths, traditional beliefs, superstition, stories and customs while the knowledge that can be protected are those that deal with the use of specific plants, identification of medicinal properties in plants, and harvesting practices.

For example, indigenous traditional knowledge can be protected within the IP facet of trademark if it deals with a brand name of a specific plant or product that 'provides an economic incentive …' (Besen & Raskind 1991). This is the case for example, with the Rooibos brand name. It is reported that because the US-owned the trademark name Rooibos 'the export potential of South African Rooibos in the American market is in jeopardy owing to the enforcement of a US-owned trademark on the name Rooibos' (Ismail & Fakir 2004: 174). This is because the name 'serve as marks of assurance' (Ismail & Fakir 2004: 176), and embrace financial considerations. Also, indigenous traditional knowledge can be protected within the IP facet of patents when it deals with exploiting for financial gains the medicinal properties in plants. An example is where indigenous people claim that 'bio-prospectors had used their knowledge of local flora and fauna to develop new drugs, which yielded high profits' (Ismail & Fakir 2004: 177), through the patents that they took on the new drugs. In South Africa, the San peoples had long recognized the appetite suppressant qualities of the *Hoodia cactus* that is being developed into an anti-obesity drug. The South African Council for Scientific and Industrial Research (CSIR)

> recognizing the enormous potential market for the Hoodia outside South Africa … placed a patent P57 and sold the licensing rights to an English biopharmaceutical firm, Phytopharm, in 1997. Phytopharm then sold the license to American pharmaceutical giant Pfizer for 25 million dollars'. Throughout the whole process …the San peoples were completely unaware of what was occurring. In fact, they became aware of it only after the excessive media coverage of Phyopharm's case sale of licensing rights to Pfizer (Case Study: Hoodia Cactus (South Africa) 2006).

According to Ismail & Fakir (2004: 178), 'after lengthy legal negotiations, the San will receive royalties from Pfizer, the developer of the new drug derived from Hoodia'. Similarly, the Rosy Periwinkle of Madagascar, which is the 'primary ingredient of Vincristine, a potent leuhaemia drug … earns annual revenue of US$180 million for Eli Lilly & Co' (Ismail & Fakir 2004: 178).

Furthermore, indigenous traditional knowledge can be protected within the IP facet of copyright if it deals for example, with literary knowledge of harvesting certain medicinal plants for financial gains. In Cameroon, the National Cancer Institute (NCI) 'benefited from traditional knowledge of local communities living around Korup Forest Reserve…. The Institute has collected *Ancistrocladus korrupensis* from the reserve to screen for an anti-HIV …, Michellamine B.' (Mugabe 1998). Also, indigenous traditional knowledge can, for example, be protected within the IP facet of trade secrets if it has to safeguard certain secrets from competitors in the treatment or harvesting of certain plants.

5 South Africa Intellectual Property Laws Amendment Bill, 2008: Possible protected Knowledge?

Following the 2008 Bill, there are certain areas that explicitly indicate that financial consideration is core to the protection of indigenous traditional knowledge. For example, in an effort to recognize and protect traditional performances, the Bill states that it provides 'for the recognition and protection of traditional performances having an indigenous origin and a traditional character; to provide for the payment of royalty in respect of such performances' (Traditional Knowledge Bill 2009). The inclusion of 'the payment of royalty', qualifies that the Bill considers that financial consideration is core to the protection of traditional performances. This is germane because in instances 'that communities receive fair and sustained

recognition' (Department: Trade and Industry Republic of South Africa [n.d].) of traditional performances through the payment of royalty, it would benefit the communities. The royalty would ensure the sustainable development of the communities (Comments on the list of issues from Japan Traditional Knowledge [n. d.].).

Similarly, the Bill implicitly recognizes that financial consideration is germane to the protection of indigenous traditional knowledge when it states that it is 'to provide for the recognition of terms and expressions of indigenous origin and for the registration of such terms and expressions as trade marks' (Traditional Knowledge Bill 2009). When terms and expressions are registered as trade marks, it would benefit the community if any third person wants to use such terms and expressions for commercial purposes. According to Wood [n.d.], 'trademarks are an important business asset'. Trademark protection is to 'prevent a second entrant from unfairly appropriating the value of a successful trademark' (Besen & Raskind 1991). Hence, where terms and expressions have been marked, any use of such terms and expression would have to be paid for because it is a brand name protected by law that is suppose to 'provide economic incentive' (Besen & Raskind 1991) to a particular community.

Notwithstanding that the 2008 Bill explicitly and implicitly recognizes that financial consideration is relevant to the protection of indigenous traditional knowledge, there are areas in the Bill that may be difficult to bestow financial consideration. For example, the Bill states that it is 'to provide for the recognition and protection of copyright works of a traditional character' (Traditional Knowledge Bill 2009). Also, the Bill is 'to provide for a national database for the recordal of traditional intellectual property' (Traditional Knowledge Bill 2009). These raise some concern as folklore, that is works of traditional character and are considered traditional intellectual property may not command financial consideration. One can say that it may be difficult for example, to attach financial considerations to traditional myths, beliefs and superstition. These are regarded as 'a widely held but false belief' (Soanes 2001: 595). According to (Von Lewinski (2004: 2), indigenous knowledge encompass folklore which are myths, traditional beliefs, superstition, stories and customs. Also, it can be said that the recognition and protection of these types of folklore may be difficult because they do not benefit the community as it has no financial consideration. Furthermore, it is questionable as to how a community would benefit financially with a database recordal of myths, traditional beliefs, superstition, stories and customs. The criterion for the protection of indigenous traditional knowledge 'is inextricably linked with the criteria for judging what benefits society can enjoy' (Comments on the list of issues from Japan Traditional Knowledge [n. d.].).

6 Possible measures for Indigenous Traditional Knowledge protection?

In order to protect indigenous traditional knowledge, the South African Ministry of Trade and Industry through the Department of Trade and Industry should set up missions to various indigenous traditional communities to investigate the type of knowledge that the communities would prefer to be protected. According to Hunter (2002), 'it is essential that traditional owners are able to define … the rights and access to their resources …'. Confirming this view, Loomis (2000) says, 'more attention should be paid to indigenous initiatives'. This is because:

> indigenous peoples possess their own locally-specific systems of jurisprudence with respect to the classification of different types of knowledge, proper procedures for acquiring and sharing knowledge, and the rights and responsibilities which attach to possessing knowledge, all of which are embedded uniquely in each culture and its languages (IK Notes 2003).

Where for example the communities identify possible indigenous traditional knowledge to be protected, the communities would then be sensitized or educated through workshops, colloquiums, seminars, or conferences – preferably in their mother tongue – as to how the communities would benefit financially from the protection of the identified indigenous traditional knowledge.

In educating the communities, the Department of Trade and Industry should set up lectures in the communities on indigenous traditional knowledge issues raised by the communities. The lectures should be administered by those who are versed with indigenous traditional knowledge. The people versed with indigenous traditional knowledge should not necessarily be sourced from the Ministry of Trade and Industry or Department of Trade and Industry. Tertiary and other potential institutions in South Africa should be consulted. During the process of educating the communities, those responsible for the lecture should lobby and convince members of the communities that knowledge of how indigenous traditional knowledge would benefit the community is important because it may curb third parties from exploiting their knowledge. This is supported by the World Intellectual Property Organization ([n. d(a)]), whose views are that the protection of indigenous traditional knowledge is to prevent third parties from exploiting the knowledge for financial gains. One can argue that where this is explained to the communities, lectures on indigenous traditional knowledge would receive serious attention from the communities. However, the lectures should also concentrate on potential areas such as myths, traditional beliefs, superstition, stories and customs that cannot possibly be protected. It may be difficult to

attach financial benefits to myths, traditional beliefs, superstition, stories and customs. According to Makwaeba ([n.d.]), myths, traditional beliefs, superstition, stories and customs form part of indigenous traditional knowledge.

7 Conclusion

Generally, it can be said that financial incentive is the core factor underpinning the protection of indigenous traditional knowledge. This is because financial considerations benefit both individuals and the community. In instances where financial considerations are not part of the cause or may be difficult to form the basis for the protection of indigenous traditional knowledge, as is the case with myths, traditional beliefs, superstition, stories and customs, there may not be any cause for protection. These beliefs are 'not a permanent entity that can be captured' (Warah 2009), within indigenous traditional knowledge. Furthermore, these beliefs have no 'facility to attract revenue for its use', and do 'not lead to any material benefit to any community in South Africa' (Intellectual Bill 'An Abomination' 2009). However, in order to promulgate a bill that would protect indigenous traditional knowledge in South Africa, the communities have to be consulted. In instances that the communities are not consulted, the communities may not attain sustainable development. According to Loomis (2000), indigenous peoples' concept, principles, models and efforts to explore alternative development paths have largely been overlooked in efforts to conceptualize and operationalize sustainable development'. Hence, it can be said that until financial aspects cease to be the cardinal point for the protection of indigenous knowledge, the South African intellectual property laws will not be able to protect all types of indigenous traditional knowledge. These include knowledge that is identified and not identified by the communities.

References

Arnold, B. 2008. *Intellectual property guide: indigenous cultural expression, knowledge and copyright*. [Online]. Available: http://www.caslon.com.au/ipguide14.htm. Accessed 19 November 2008.

Besen, S.M. & Raskind, L.J. 1991. An introduction to the laws and economics of intellectual property. *The Journal of Economic Perspectives,* 5(1):3-27.

Case study: Hoodia Cactus (South Africa). 2006. [Online]. Available: *http://www.case.edu/affil/sce/authorship-spring2004/hoodia.html*. Accessed 10 September 2009.

Comments on the list of issues from Japan traditional knowledge. [n.d.]. [Online]. Available: *http://www.wipo.int/tk/en//igc/pdf/japan_tk.pdf*. 26 August 26 2009.

Correa, C.M. 2000. Methodologies for evaluating the economic importance of copyright and neighbouring rights in Latin America. *Copyright Bulletin,* 34(2):5-24.

Department: Trade and Industry, South Africa, [n.d]. *The protection of indigenous knowledge through the Intellectual Property System: a policy framework*. [Online]. Available: *http://www.thedti.gov.za/ccrd/ip/policy.pdf*. Accessed 26 August 2009.

Derr, D. [n. d.].Welcome to traditional knowledge online. *IP Mall: Pierce law, Franklin Pierce Law Center.* [Online]. Available: *http://www.traditionalknowledge.info/* Accessed 15 June 2010.

Estrada, D. 2010. *Chile: Mapuche culture an ingredient in health and cuisine.* [Online]. Available: *http://www.ipsnews.net/new_nota.asp?idnews=27588*. Accessed 15 June 2010.

Fien, J. 2006. *Curriculum Themes: indigenous knowledge and sustainability.* [Online]. Available: *http://www.unesco.org/education/tlsf/TLSF/theme_c/c_mod11.htm.* Accessed [2010, June 15].

Hefter, L.R. & Litowitz, R.D. [n.d.]. *An introduction to intellectual property rights: what is intellectual property?* [Online]. Available: *http://portal.grsu.by/portal/library/cd1/tech/intelprp/homepage.htm.* Accessed 10 September 2009.

Hountondji, P.J. 2002. Knowledge appropriation in a post-colonial context. In: Odora-Hoppers, C. A. (ed.) *Indigenous knowledge and the integration of knowledge systems: towards a philosophy of articulation*. Claremont, South Africa: New Africa Books (Pty) Ltd, pp. 23-38.

Hunter, J. 2002. *Rights markup extensions for the protection of indigenous knowledge*. [Online]. Available: *http://www.itee.uq.edu.au/~eresearch/papers/2002/www2002-irm.pdf.* Accessed 10 September [2009.

IFLANET. 2004. *IFLA statement on indigenous traditional knowledge*. [Online]. Available: *http://www.ifla.org/III/eb/sitk03.html.* Accessed 9 September 2009.

IK Notes. 2003. *Nurturing traditional knowledge systems for development*. [Online]. Available: *http://www.worldbank.org/afr/ik/iknt61.pdf.* 10 September 2009.

Intellectual Bill 'An Abomination'. 2009. [Online]. Available: *http://www.cbn.co.za/dailynews/3937.html.* Accessed 29 July 2009.

IP Quarterly Update, Second Quarter. 2007. *The proposed WIPO framework on traditional knowledge: does it meet indigenous peoples' demands?* [Online]. Available: *http://www.southcentre.org/index.php?option=com_content&task=view&id=447&Itemid=102*. Accessed 9 September 2009.

Ismail, Z. & Fakir, T. 2004. Trademarks or trade barriers? Indigenous knowledge and the flaws in the global IRP system. *International Journal of Social Economics,* Vol. 31 No.1/2, 2004, pp. 173-194.

Loomis, T. M. 2000. Indigenous population and sustainable development: building on indigenous approaches to holistic, self-determined development. *World Development,* 28(5):893-910.

Makwaeba, I. M. [n. d.]. *The use of traditional knowledge in the South African National Parks Imbewu Youth Programme: planting a seed of environmental awareness.* [Online]. Available: *http://www.sanparks.org/people/youth/documents/ishmael.pdf.* Accessed 10 September 2009.

Mearns, M.A., Du Toit, A.S.A. & Mukuka, G. 2006. Conservation of indigenous knowledge at cultural villages: an exploratory study. *Mousaion,* 24(1):23-50.

Mugabe, J. 1998. *Intellectual property protection and traditional knowledge: an exploration in international policy discourse*. [Online]. Available: *http://www.wipo.int/tk/en/hr/paneldiscussion/papers/pdf/mugabe.pdf*. Accessed 9 September 2009.

Mugabe, J., Kameri-Mbote, P. & Mutta, D. 2001-5. *Traditional knowledge, generic resources and intellectual property protection: Towards a new international regime*. [Online]. Available: *http://www.ielrc.org/content/w0105.pdf*. Accessed 10 October 2008.

Odora-Hoppers, C.A. 2002. Indigenous knowledge and the integration of knowledge systems: towards a conceptual and methodological framework. In: Odora-Hoppers, C. A. (ed.) *Indigenous knowledge and the integration of knowledge systems: towards a philosophy of articulation*. Claremont, South Africa: New Africa Books (Pty) Ltd, pp. 2-22.

Prytherch, R. 2000. *Harrod's librarians' glossary and reference book*. 9th ed. Aldershot: Gower.

Rimmer, M. 2003. *Legal protection of indigenous traditional knowledge and cultural expression. Blame it on Rio: biodiscovery, native title, and traditional knowledge*. [Online]. Available: *http://works.bepress.com/cgi/viewcontent.cgi?article=1024&context=matthew_rimmer*. Accessed 9 September 2009.

Sahai, S. 2002. *Protection of indigenous knowledge and possible methods of sharing benefits with local communities*. [Online]. Available: *http://www.dgroups.org/groups/OKN/docs/Indigenous%20Knowledge.pdf* Accessed 14 November 2008.

Soanes, C. 2001. (ed.) *The Oxford dictionary of current English*. 3rd ed. Oxford: Oxford University Press.

Simeone, T. 2004. *Indigenous traditional knowledge and intellectual property rights*. [Online]. Available: *http://www.parl.gc.ca/information/library/PRBpubs/prb0338-e.htm*. Accessed 10 September 2009.

Traditional Knowledge Bill. 2009. [Online]. Available: *http://www.rcips.uct.ac.za/ip/tkbill/* Accessed 9 September 2009.

Von Lewinski, S. 2004. Introduction. In: Von Lewinski, S. (ed.) I*ndigenous heritage and intellectual property: genetic resources, traditional knowledge and folklore*. The Hague: Kluwer Law International, pp. x-xi.

Warah, R. 2009. Culture can't be captured in any constitution. *Daily Nation*. Tuesday December 01. [Online]. Available: *http://www.nation.co.ke/oped/Opinion/-/440808/814376/-/5oh0e1/-/*. Accessed 1 December 2009.

Wood, G. [n. d.]. *Trademarks are important business asset*. [Online]. Available: *http://www.applebyglobal.com/uploaded/Publication/Trademarks%20are%20an%20important%20business%20asset%20(GW)%204Feb02.pdf*. Accessed 28 August 2009.

World Intellectual Property Organization. [n. d(a)]. *Revised draft provisions for the protection of traditional cultural expressions/expressions of folklore: policy objectives and core principles*. [Online]. Available: *http://www.wipo.int/export/sites/www/tk/en/consultations/draft_provisions/pdf/tce-provisions.pdf*. Accessed [2009, September 09].

World Intellectual Property Organization. ([n. d(b)]). *Understanding copyright and related rights*. [Online]. Available: *http://www.wipo.int/freepublications/en/intproperty/909/wipo_pub_909.pdf* Accessed 10 September 2009.