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Protecting traditional ethno-botanical knowledge in South Africa through the intellectual property regime

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Abstract

Traditional knowledge has been used, and is increasingly being used, in a wide range of industries for the development of new products. Increasing awareness of the economic value of biological diversity has resulted in industries seeking to exploit traditional knowledge and biodiversity through opportunistic behaviour (biopiracy). This is also happening in South Africa, where numerous industries are developing new products. Recent advances in the field of biotechnology have created the need for greater intellectual property rights protection. The protection of traditional knowledge has however long been ignored as developed nations and large industries have sought to promote self-serving systems of protection. In this paper the example of an indigenous medicinal plant is used to analyse and describe the extent to which patent and trademark protection is able to protect traditional ethno-botanical knowledge in South Africa. The study therefore aims to contribute to an understanding of the value that traditional knowledge holds for the sustainable development and economic growth of communities, and how such knowledge can be protected.

1. Introduction

The need to protect traditional knowledge is increasingly being realised as traditional knowledge and associated practices are recognised as having an essential role to play in environmental management and the promotion of sustainable development. This is evidenced by the priority the protection and promotion of traditional practices has received from the United Nations in the Convention of Biological Diversity, and the Rio and Johannesburg Declarations of the World Summit on Sustainable Development. Traditional knowledge is essential to both food security and the health needs of millions of people in the developing world. The Commission on Intellectual Property Rights (CIPR, 2002) estimates that up to 80% of the populations in developing countries rely on traditional medicines as they provide the only affordable treatment available to poor people to help them meet their healthcare needs.

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In an African context the rich and largely unexplored biodiversity of the continent has resulted in an explosion of interest from the pharmaceutical industry, which seeks to develop commercial products based on this biodiversity and traditional knowledge. Biological resources are rapidly becoming as valuable a resource for African development as mining and agriculture have traditionally been. In a Southern African context, characterised by erratic rainfall, with the majority of people living in rural areas and the main source of income generated by rain-fed arable and livestock production with low- input/low-output technology, biological opportunities present a real opportunity for these communities to supplement their income and drive development (Le Breton, 2001).

The increased use of, and search for, commercially profitable substances among the ecosystems of indigenous communities underlines the value of traditional knowledge and resources. As technological progress continues to drive the process of globalisation, resulting in an increasingly integrated global economy, traditional knowledge has come under increasing threat from bioprospectors. This is also happening in South Africa, where a wide range of industries are developing products based on traditional knowledge. This is especially true of the food and beverage, pharmaceutical, agriculture, personal care and cosmetic sectors (Downes and Laird, 1999; Toffel, 2002).

Recognising the value of traditional knowledge brings to the fore the issue of protecting it and ensuring that knowledge holders are compensated for their contribution to the development of commercially traded products. This paper examines the current intellectual property rights (IPRs) regime in order to determine the extent to which existing South African patent and trademark legislation is able to protect, and is suited to the protection of, traditional knowledge. The study is also limited to the manner in which traditional knowledge may be protected, whilst remaining committed to obligations incurred under multilateral agreements. The most important of these are the United Nations Convention on Biological Diversity (CBD) and the World Trade Organization's (WTO) Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs).

2. Methodology

In order to understand and investigate the legal-economic nexus between traditional knowledge and IPRs the study is divided into components. These were analysed using several approaches, the most important being institutional economics and legal philosophy. The choice of institutional economics as a framework for analysis lies in the nature of its application

across subject fields. This framework also allows for incorporating a legal analysis into the study by recognising that prices do not act as the only economic incentives and evaluating the role of other incentives (e.g. property rights) as well as extending the investigation to governance structures (e.g. legislation).

The first section of this paper introduces the concept of traditional knowledge and the manner in which intellectual property rights relates to it. The economic value that such knowledge holds and the threats facing traditional knowledge holders are also discussed. Thereafter, existing intellectual property legislation is tested. This was achieved by applying South African intellectual property (IP) legislation to the traditional knowledge of an indigenous medicinal plant, the *Sutherlandia Frutescens*. The absence of an IP dispute around the plant and the unlikelihood of a dispute arising makes the plant a valuable subject for analysis since it allows for developing arguments along theoretical lines and positing a number of hypothesis that were used to test the extent of protection afforded by IP legislation. A conclusion is presented.

3. Traditional knowledge

3.1 Nature

Characterising traditional knowledge is a particularly difficult task given that such knowledge is inextricably linked to the communities who possess it. The nature and use of traditional knowledge within different cultures also varies. Different communities each possess unique cultural traits and as a result manage their knowledge resources in different ways. Communities each possess their own locally-specific systems of jurisprudence with respect to the classification of different types of knowledge, the procedures for acquiring and sharing knowledge, and the rights and responsibilities that are attached to possessing knowledge. These systems are embedded in the culture and language of a community and are thus unique to a community. Although no generic form of customary regulations governing traditional knowledge exists, several generally applicable principles and characteristics can be identified. These characteristics are not exhaustive and ignore many of the intricacies of traditional systems and, as such, are not intended to be representative of the totality of characteristics of traditional cultures as they relate to traditional knowledge. They merely provide a workable framework that could be considered to be generally applicable within and across a majority of traditional communities, and are particularly relevant to the application of intellectual property rights.

(a) *Ownership*

Traditional knowledge is collectively derived and held (Halewood, 1999). This implies that knowledge belongs to the community as a group, with no one individual possessing the knowledge to the exclusion of the others, even though specific individuals or groups within the community may hold certain types of knowledge (e.g. witchdoctors, sangomas or shamans). Knowledge is also collectively derived, which implies that all contributions to knowledge could be considered a communal contribution, with no one individual merited for the advancement of knowledge. This in turn implies that no one individual can claim ownership over such knowledge.

(b) *Access and use*

As with ownership, no generic system of proprietary rights exists across all communities. However, most traditional communities share the belief that products of nature are the common heritage of mankind and as a result should be available to all. This does not imply that communities do not claim rights over such knowledge but, unlike the Western conception of property rights that have an axiomatic link to ownership, the rights of communities to traditional knowledge are often rights and responsibilities associated with their role as custodians and stewards of such knowledge (Toffel, 2002).

(c) *Relationship to the environment*

Traditional knowledge is closely related to the environment (Halewood, 1999). This close connection stems from the communities' reliance on the environment for their survival, given that most traditional communities are agrarian and practice subsistence farming. In addition, this reliance on the land and the environment as a source of food and medicine results in these communities viewing the land as sacred, and vital to the preservation of their cultures and lifestyles.

(d) *Evolution and duration*

Traditional knowledge is not time-limited. Communities do not consider knowledge as being created at a specific point in time and being valuable for only a limited duration. Traditional knowledge evolves as communities respond to new challenges and needs. Knowledge is passed from generation to generation, and adapted and improved upon with the passing of time. Knowledge is therefore not held for a specific period of time but is held in perpetuity by the communities who acquire and inherit the knowledge.

(e) *Transmission*

Although some traditional knowledge is documented and transmitted in written form, the transmission of traditional knowledge generally tends to take place orally.

3.2 Value of traditional knowledge

The absence of a universally accepted definition together with a lack of defined parameters for protecting traditional knowledge continues to represent a significant obstacle to the protection of traditional knowledge. For the purposes of this paper, ethno-botanical knowledge is isolated, and refers to the know-how required to identify, locate and use wild plants for medicinal, industrial and other practical purposes. In Africa the rich and largely unexplored biodiversity of the continent has resulted in an explosion in interest from the pharmaceutical industry as the previously untapped biological resources hold enormous potential for the development of new medicinal products. Informal trade in medicinal plants in the Southern African region alone is estimated at 19,500 tonnes per year, worth an estimated value of \$35 million. The secondary users associated with this trade generate an estimated \$280 million from the re-sale of these plant materials (Le Breton, 2001). It is therefore evident that in a Southern African context traditional knowledge of biological opportunities presents a very real opportunity for traditional communities to supplement their income and drive sustainable development.

With global trade in pharmaceutical products estimated at \$400 billion a year, pharmaceutical companies invest vast sums of capital in research and development activities aimed at identifying compounds with potential commercial value. The existence of millions of compounds in plant varieties makes the potential to determine beneficial drugs phenomenal, but also raises the costs of searching for and identifying plants with potentially beneficial compounds. Researchers are required to identify viable targets, prioritise those targets and develop information-rich screens. Compounds with a better chance of being biologically active, either as a drug or as agro compounds, then have to be recognised (hit) and the nature of their useful application determined (lead). In addition, a large variety of tests and toxicity evaluations need to be conducted before any compound can be developed further.

The value of traditional knowledge to the screening process thus becomes evident. Knowledge of medicinal plants, their uses and applications, allows researchers to narrow their search base and increase the probability of

successful “hits and leads”. Using traditional knowledge provides researchers with a head start in determining the plants to isolate for screening and further research. This was evidenced in the Hoodia dispute, where the traditional knowledge and use of the cactus as an appetite suppressant by the San community led to pharmaceutical research on developing a diet tablet based on compounds found in the Hoodia (Barnett, 2001). Access to the resources of traditional communities and their knowledge has the potential to provide substantial benefits to companies and scientific researchers in both developing and developed countries (Wynberg and Jardine, 2000).

However, the concern does exist that traditional knowledge is at risk of being unfairly appropriated, adapted and patented by industries, with no compensation to and without the consent (biopiracy) of the traditional communities. This study focuses on two specific aspects of misappropriation and protection; these relate to:

- *Ownership*: this includes the right to maintain the secrecy of knowledge, use the knowledge to develop the community and, most importantly, the right to benefit from the commercialisation of their traditional knowledge; and
- *Control*: this includes the right to approve or reject the commercial use of their traditional knowledge.

Two international agreements are of particular importance in discussing the protection of traditional knowledge. Although these are separate agreements, concluded under two distinct multilateral forums, they are interrelated in terms of the mechanisms of protection proposed. The agreements are the CBD and TRIPs agreements.

3.3 Protecting traditional knowledge

The CBD remains the only legally binding instrument that explicitly refers to the protection of traditional knowledge. Article 8(j) of the CBD calls for the protection and promotion of traditional knowledge. In contrast to the CBD, the TRIPs agreement makes no explicit mention of the protection of traditional knowledge and also makes no mention of the CBD. The relevance of the TRIPs agreement to traditional knowledge arises from the provisions of Article 27 of the agreement. Article 27(1) of the TRIPs requires members to make patents available for all inventions in all fields of technology, without discrimination. This is qualified by the exceptions clause of Article 27(3)(b), in terms of which plants and animals are excluded from patentability requirements but some

manner of protection for plant varieties is required. The importance of this provision for traditional knowledge stems from the requirement that members need to introduce protection for micro-organisms, microbiological processes and plant varieties. The terms used in Article 27(3)(b) are not defined in the agreement and are therefore open to interpretation, which can and often does lead to legal arguments over their precise meaning.

However, the greatest value of discussing traditional knowledge within the framework of the WTO stems from the practical and political strengths of the WTO agreements. This political strength is reflected in the ability of the WTO to infringe on national sovereignty. Unlike the CBD, which encourages national sovereignty over bio resources, the TRIPs agreement, and in particular the provisions of Article 27(3)(b), restricts national sovereignty by requiring members to provide for a stipulated level of protection as set out in the agreement. In addition, the credible and authoritative Dispute Settlement Unit (DSU) creates a binding dispute settlement mechanism. Non-compliance with WTO provisions carries with it the threat of other members lodging a complaint against the transgressing member at the WTO dispute settlement body (WTO, 1999) and the threat of possible trade sanctions. Finally, the importance of the TRIPs agreement as a mechanism for furthering the objectives of the CBD lies in its potential to address substantive issues relating to ethical questions about patenting life forms, prior informed consent and benefit sharing, and traditional knowledge, in terms of Article 71(1), which makes provision for reviewing the agreement. The inclusion of these issues for discussion is therefore possible in terms of this article.

The relationship between IPRs and traditional knowledge is the subject of ongoing debate. Some (Gupta, undated and Brush, 1996) argue in favour of IPRs for protecting traditional knowledge whilst others (Patel, 1996; Wynberg, 1998) argue that IPRs are not suited for protecting traditional knowledge since traditional knowledge generally falls outside the scope of protection offered by current Western IPRs regimes, which is based on a different set of cultural norms.

However, as Gupta (undated) points out, even though traditional knowledge is unique it still remains “knowledge” and, as such, has to be considered in terms of existing discussions on protecting knowledge, with the prevalent mechanism for protecting knowledge being IPRs. Irrespective of the approach or argument one adopts the inescapable reality is that a Western system of IPRs prevails and dominates global trade. IPRs remain the principal mechanism for protecting and enforcing control over information, and no discussion on protecting knowledge, traditional or scientific, can disregard

their significance. This is also reflected within the CBD agreement that promotes protecting traditional knowledge. The provisions of the CBD relate to many aspects of biodiversity conservation where IPRs prove particularly relevant. These provisions include those that govern the interrelated areas of preservation of and respect for the knowledge, innovations, and practices of indigenous and local communities (Article 8), access to fair and equitable sharing of benefits arising from the utilisation of genetic resources (Article 15), the conservation and sustainable use of biological diversity (Article 16) and the transfer of technology (Article 19). In addition, Article 16 (2) recognises that the development and transfer of technology will be affected by IPRs.

4. The South African intellectual property framework

The South African intellectual property framework is well established. Historic ties with Britain and Europe have influenced the South African IP system, with the bulk of IP statutes guided primarily by British and European legislation (Wolson, 2001). These statutes were amended by the *Intellectual Property Amendment Act* to bring the legislation into compliance with the TRIPs agreement, but as Wolson (2001:2) notes “few changes of substance were involved.” This reflects the relatively developed nature and Western ideological influence that permeated the South African IP system prior to the existence of the TRIPs agreement. As a developing nation, South Africa was in the rare position of adopting the TRIPs agreement, which underpinned an economic justification that was largely consistent with the already prevailing justification for IPRs in the country. Patents and trademarks are regulated and enforced by the Company and Intellectual Property Registrations Office (CIPRO), which falls under the auspices of the South African Department of Trade and Industry (DTI). IP disputes are litigated in the Court of the Commissioner of Patents, which is a part of the South African High Court. IPRs apply to a broad range of activities and the types of rights vary considerably, depending on the types of industries involved, the intensity of their research and development and the nature of the innovations. For the purposes of this study, attention is focused on plant breeders’ rights, patents, trademarks and geographical indications, as these categories of rights provide the greatest opportunity for protecting traditional knowledge within the existing IP regime.

4.1 Patent protection and plant breeder’s rights

The South African patent system is regulated by statute as contained in the *South African Patents Act 57 of 1978* and its amendments. In order to determine whether ethno-botanical knowledge is patentable subject matter it is necessary

to determine what exactly is being patented. With regard to the *Sutherlandia Frutescens*, a plant with potential applicability in the treatment of Aids (Campbell, 2001), and which contains four key compounds that contribute to its efficacy in medicinal applications, the plant cannot be patented in South Africa and, given the extensively documented use of the plant in the treatment of a variety of illnesses as reflected in Table 1, is unlikely to be patented elsewhere. However, active compounds, ingredients and processes of extracting compounds of the plant may still be patented.

Table 1: Evidence of traditional knowledge and application of *Sutherlandia*

Community	Name	Traditional application
Setswana	Phetola - (it changes)	Gonorrhoea and Syphilis
Sotho	Lerumo-lamadi - (spear of the blood)	Blood purifier and all-purpose tonic
Zulu	Insiswa - (the one that dispels darkness)	Anti-depressant and calming tea
Afrikaans	Kankerbossie - (cancer bush)	Cancer and anti-diabetic treatment

The traditional use of the plant as an antiviral and anticancer treatment may be useful to bioprospectors seeking to develop modern pharmaceuticals but the plant itself is not patentable. Section 25(4)(b) of the Patents Act denies patentability for plants. The *South African Plant Breeders Rights Act 15 of 1976* provides for the registration of plant breeders' rights in respect of new varieties only. This registration provides plant breeders with an alternative system of protection given that plants are not patentable.

The effect of these regulations can be summarised as follows. In terms of the Plant Breeders Act new plant varieties may be registered subject to certain conditions. In terms of the Patents Act plants and essentially biological processes for the production of plants are not patentable whilst microbiological processes and their products are. The *Sutherlandia* does not fall into either category and is thus not patentable in terms of the Patent Act nor can it be registered in terms of the Plant Breeders Rights Act (it is not a new variety). Traditional knowledge cannot be protected through plant breeders' rights because the plants that the knowledge relates to are generally not new and cannot be registered.

Although plants are not patentable, traditional communities are not excluded from using the patent system as a means of securing rights over their traditional knowledge given that identifying and developing active compounds in a plant is considered a microbiological process (Ducor, 1998) and therefore constitutes patentable subject matter. Section 25(1) of the Patents Act stipulates that a patent may be "granted for any new invention which involves

an inventive step and which is capable of being used or applied in trade or industry or agriculture". Identifying a medicinal compound in a plant would appear to easily satisfy the requirement of an invention being applicable in trade, industry or agriculture, but whether it warrants patentability, as an invention, is not clear. It could be argued that identifying and developing a compound obtained from a naturally occurring plant does not constitute an invention and is merely a discovery. If this view is adopted then the active compounds also fall outside the scope of patent protection (Article 25(2)(a)). Both South African legislation and the TRIPs agreement appear to subscribe to the view that the isolation, identification and developing of active compounds from natural resources constitutes a microbiological process, which brings it into the ambit of patentable subject matter. In terms of the requirements listed and in terms of the interpretation of the terms contained in the Act it appears that knowledge of active compounds or substances may qualify for patent protection in South Africa.

However, in contrast to scientific knowledge that employs sophisticated techniques and bioengineering to isolate, identify and adapt compounds, traditional communities identify an entire plant or specific part of a plant that can be used, but not specific compounds or substances of the plant. An inability to identify the active compounds and substances of a plant appears to limit the potential of patents being used by traditional communities as a means of protecting their knowledge. Toffel (2002) argues that without the technology to bioengineer plants traditional communities will not be able to use patents to protect their knowledge. Even if one assumes that traditional communities are able to identify the active substances in medicinal plants, further legislative requirements need to be fulfilled before communities would be able to secure patent protection for their knowledge. These include:

(a) *Novelty*

Novelty, as the word implies, refers to something that is new. For an invention to be patentable it must be new. Section 25(5) of the Patents Act provides that *"any invention shall be deemed new if it does not form part of the state of the art...."* Section 25(6) explains that state of the art means *"all matter which has been made available to the public by written or oral description, by use or in any other way."* Gernholtz (1994) identifies the decisive words regarding novelty as being *"made available to the public"* which sets a yardstick of 'absolute novelty'. It should be noted that any person is able to destroy the novelty of an invention through disclosure. The disclosure provision does not distinguish between an outside person or the inventor or the patent applicant. These provisions

indicate that to ensure patent protection it is necessary to file a patent application prior to disclosing the invention to any persons in any way.

The recording and transmitting of traditional knowledge through oral traditions appears to indicate that traditional communities would not be burdened by novelty requirements since they could easily ensure that their knowledge is not publicly disclosed prior to their patent application (Toffel, 2002). Extending this to the *Sutherlandia*, which has received extensive publicity for its medicinal properties (Campell, 2001; Dempster, 2001), it is clear that any invention based on traditional knowledge of these properties will not be patentable since traditional communities would not be able to meet the 'absolute novelty criterion' set out in the act. This highlights that research conducted on medicinal plants often results in publications that place traditional knowledge in the public domain and thus preclude communities from the possibility of using the existing IPR regime to secure patent protection for their knowledge.

Even though the oral traditions of knowledge holders could assist communities in overcoming novelty requirements this tradition can also prove costly to traditional knowledge holders. If bioprospectors wish to patent an invention based on traditional knowledge the lack of public disclosure of the knowledge could potentially prevent the traditional communities from being identified as the original inventors. This failure to identify traditional communities as original inventors could contribute to bioprospectors being able to satisfy novelty requirements (Toffel, 2002).

Applying this argument to *Sutherlandia* reveals that research and public disclosure of traditional knowledge of the plant excludes all parties, and not just traditional knowledge holders, from the possibility of obtaining patents based on medicinal applications of the plant. In this manner, although not guaranteeing rights to the original traditional knowledge holders, the patent system does provide some protection (i.e. defensive protection) against unauthorised appropriation of traditional knowledge by bioprospectors (WIPO, 2003). Protecting traditional knowledge through the IPR regime is not confined to positive protection (i.e. securing rights over an invention) but also extends to defensive protection (i.e. ensuring that others do not benefit unfairly from inventions based on traditional knowledge). Traditional communities could thus use the fact of prior publication of their knowledge (research or scientific studies) to challenge patent applications by bioprospectors, claiming that such knowledge is novel.

(b) *Inventiveness*

Assuming that, on the basis of its oral tradition and the absence of publicised research, a community was able to satisfy the requirement of novelty of invention, Gernholtz (1994) explains that when analysing patent claims inventiveness or obviousness is considered after novelty. Therefore if a community was able to satisfy novelty requirements the next question would be: is the invention obvious?

In order to obtain a patent an invention must be unobvious. Section 25(10) of the Patents Act explains that an invention will be considered unobvious or involving an inventive step if the improvement to an invention is not so small that any person involved in that field could easily have thought of the invention. The knowledge that identifies a specific plant capable of treating specific conditions appears to satisfy this inventiveness criterion. Traditional knowledge should be able to meet the inventiveness criteria.

The criteria of inventiveness could also be used by traditional communities as a defensive protection to challenge patent applications. Traditional communities could challenge a patent application by arguing that products are 'obvious' products and do not meet the requirement of inventiveness as set out in the Patents Act. In addition, it could also be argued that such products do not involve an inventive step as they are based on already existing compounds and that commercial enterprises merely discovered the compound, albeit in a different form. However, as Gernholtz (2003) explains, the term 'obviousness' is easy to use but difficult to define and, at times, its existence is impossible to prove. Given this difficulty, coupled with cost considerations, patent applications are often filed even though inventiveness may be in doubt. In addition, traditional communities wishing to challenge an application on the basis of 'obviousness' will be required to provide proof to this effect and be liable for associated litigation costs, which limits the likelihood of poor communities utilising this method as a means of protection.

(c) *Inventors and ownership*

The strongest argument against patent protection for traditional knowledge is that the Western concept of property that underpins patent legislation is not suited to the protection of traditional knowledge. A core theme of this argument is based on the disparate concept of invention and ownership of the two systems, with the Western system embedded in a culture of private invention whilst traditional ownership is embedded in a culture of communal or collective invention.

The complexity of identifying an inventor for traditional knowledge poses the greatest difficulty for using the patent mechanism to protect traditional knowledge. Toffel (2002) argues that even if a specific inventor was identified there still remains the conflict between invention and ownership. The *Sutherlandia*, with its history of use across a number of different communities, highlights this problem to some extent. Should the traditional knowledge of the plant be credited to the Zulu, Sotho, Setswana or Afrikaans communities? Further difficulties arise in identifying groups within a given community. Which group or sub-community within these larger communities should be designated as the inventor, thus entitling them to the benefits of patent protection? What should the criteria be for determining such groups?

Although Section 29(1–4) of the Patents Act does provide for joint ownership of rights in patent applications, the nature of ownership and innovation in traditional communities still poses significant challenges. The most notable amongst these is the problem of knowledge being developed and transmitted from one generation to the next. Traditional knowledge is developed over generations through collaborative efforts, with communities using and building on the knowledge handed down to them. Traditional knowledge emerges through generations and involves many people. The inventor is thus a chain of people and not a single identifiable individual or group at a point in time. In contrast, patent protection is time limited for a period of twenty years. This is in direct conflict with the nature of traditional knowledge, which is held in perpetuity. Affording patent protection to a specific individual or group for a limited duration runs contrary to the values of traditional communities and may undermine the very nature and existence of traditional knowledge (Brush, 1996).

(d) *Costs*

The South African patent system makes provisions for three types of patent applications, namely a provisional patent application, a complete patent application and an application in terms of the Patent Cooperation Treaty (PCT). A provisional and complete application deals specifically with patents in a national context whilst a PCT application relates to patent protection in terms of the International Patent Convention (South Africa being a signatory to the convention).

Applicants in South Africa are in the fortunate position of having recourse to a range of patent applications, each at a different cost. A provisional application is the least complex and least expensive and can be filed without the aid of a patent attorney (Section 32(2)). Although relatively inexpensive, a complete

patent application has to be signed by a patent attorney (Section 96). Attorney fees are a significant additional cost that needs to be considered when filing such an application. A PCT is the most expensive application and comprises a two-phase process, each with its own costs.

Any form of patent protection, whether national or international, involves high transaction costs. Even though an application may be inexpensive there still remain costs associated with monitoring and ensuring compliance, challenging parties who infringe the patent and defending the patent against challenges and re-examinations. Costs therefore do act as a significant constraint on communities who seek to use the patent mechanism to protect their traditional knowledge.

4.2 Trademarks

The most important legislation for trademarks is the *Trademarks Act 194 of 1993* and the *Merchandise Marks Act.17 of 1941*.

Trademarks play a vital role in modern business. They serve to identify goods and to distinguish particular goods and services from other goods and services, thus making them a valuable marketing tool. Trademarks also often act as an indication of the quality of goods and services. The value of trademarks as marketing tools makes their protection important.

Downes and Laird (1999) argue that because trademarks assure consumers that a product has been produced in a certain manner, trademarks held by traditional communities can serve as a guarantee to consumers that a product based on traditional knowledge has been produced in a traditional manner on the basis of such knowledge. This, they argue, could stimulate markets for products derived from local biodiversity and based on traditional knowledge. Trademarks are also valuable to traditional knowledge holders as a means of acquiring compensation and controlling the use of their traditional resources. These benefits accrue to traditional knowledge holders because of the exclusive right of use that a trademark confers to its owner/s. Trademarks are also valuable because of the potential they have to be held in perpetuity. In terms of legislation a trademark is granted for a period of ten years but, unlike patents, trademarks can be renewed upon expiry.

Sections 42 and 43 the Trademarks Act provide for certification and collective trademarks respectively. Certification marks relate to goods with particular characteristics or qualities, and these attributes are communicated to the consumers through the certification mark. A certification mark is registered in

the name of a certification authority or body. This body is required to submit the rules that govern the use of the mark with its application. The result is that products that conform to the rules of the certifying body are eligible to be certified and thus carry the certification trademark. A certification mark does exist for Sutherlandia products developed from the subspecies *microphylla elite* (PN1™) *chemo type*. Big Tree African Ginseng™, Big Tree Sutherlandia and Phyto Nova Sutherlandia make use of this certification mark for their products. The registration of these trademarks does not pose a threat to traditional knowledge holders since traditional communities are not excluded from promoting products based on their traditional knowledge of the plant, nor are they prevented from acquiring a trademark of their own.

A collective trademark is filed in the name of an association. The application has to be accompanied by a set of rules developed by the association, which govern the use of the mark. These rules have to specify the conditions of membership of the organisation, the persons authorised to use the mark and the conditions for use of the mark. An example of this may be an association of producers of medicinal products based on traditional knowledge of *Sutherlandia*. These producers may register a collective trademark based on production methods and products that are developed from that plant. Any products developed (e.g. tablets and gels) by producers within that association could then be promoted using the mark. The distinction between collective and certification marks is that collective marks are used by members of an association who own the mark to market their product whereas certification marks are used in connection with products to certify origin, or production methods or materials. Using these marks to protect traditional knowledge can often blur this distinction because both are used as a type of guarantee to assure consumers that a product is produced in a specific manner or is of a certain quality. Communities wishing to register trademarks are also not hampered by excessive cost constraints, as costs of registration are relatively inexpensive. This does however not take attorney costs (which are often high) into consideration, and may prove to be a significant constraint. In addition, costs associated with monitoring and protecting the mark against infringements are significantly higher than the cost of acquiring a trademark, and these costs may indeed be a constraint to traditional communities seeking to acquire trademarks.

Table 2: Comparison of patent and trademark systems

	Patent system	Trademarks and geographical indications
Motivation	Incentive, reward to innovator, utilitarian considerations, encourages innovative production	Encourage maintenance of practices and quality, preserves local practices associated with reputation
Inventor	Clearly identifiable inventor or inventors	Association of producers, community of producers
Ownership	Individualistic approach, private property and exclusive rights	Communal ownership, members of association acquire right to use but not transfer
Invention	Benefits accrue to inventor and, if commercialised, society benefits	Benefits accrue to producers in association, community of associated region
Records	Invention recorded in written format	Mark recorded in written format, practices documented to ensure compliance by producers

A significant point that emerges from the analysis is that this form of protection is more suited to overcoming the problems associated with identifying ownership than patents are. This is highlighted in Table 2, which contrasts the available mechanisms of protection.

If properly managed, a community would be able to identify goods based on their traditional knowledge irrespective of geographic location or the existence of smaller groups within larger communities, provided each community or subgroup is able to meet the requirements set out by a governing body or umbrella organisation. In the instance of the *Sutherlandia* this could be depicted as follows: a governing body consisting of representatives of several traditional communities establishes a collective trademark for traditional products. In addition, they establish regulations on the production and marketing of such products and set out requirements that need to be fulfilled in order to qualify for the use of the trademark. All communities able to comply with stipulated regulations and requirements are afforded the opportunity to use the trademark as a marketing tool in promoting the products they develop (Downes and Laird, 1999). This allows the communities to maintain their knowledge in a traditional manner and receive recognition for their knowledge, and also provides a guarantee that the products carrying the mark are traditionally produced.

4.3 Geographical indications

Geographical indications (GIs) represent another category of intellectual property rights that may be able to serve traditional communities. Although recognised as a separate form of intellectual property rights in the TRIPs agreement, no specific geographical indication legislation exists in South Africa. In South Africa, legislation providing protection for GIs is found within the Trademark Act, and specifically within the sections providing for the protection of collective trademarks. Section 42 of the Trademark Act mentions geographical origin as a mark in distinguishing products. In terms of Section 43(2) "*geographical names or other indications of origin may be registered as collective trademarks*".

GIs are not newly created, but only recognised. This implies that investments are related to building a reputation for an existing product rather than creating a new product, as would be the case for a patent. GIs are held in perpetuity and exist for as long the local knowledge is sustained and the indication is prevented from becoming generic. In addition, GIs are owned by the state and do not require large investments, allowing even subsistence communities with limited access to capital and technology to promote their traditional knowledge and know-how. The GI then becomes a valuable store of information and marketing tool for traditional knowledge holders.

In contrast to the patent system, GIs are not specifically designed to reward innovation, instead they reward consistency. Downes and Laird (1999) indicate that because GIs are so dependent on the land and culture of a particular region for value, this land and culture has to be emphasised, promoted and maintained. This is consistent with the practices of traditional knowledge holders who emphasise the interconnectedness of culture, land and resources. However, the value of a GI to a traditional community remains as yet untested, as no GIs exist in South Africa.

5. Conclusion

The development of a unique system of 'protection' (*sui generis*) would certainly provide better protection than the existing IPR regime. However, in the absence of an initiative to develop such a system existing rights could be extended to address the particular concerns of traditional knowledge holders. Patent legislation could be extended to incorporate provisions relating to prior informed consent and commitments to negotiating benefit-sharing agreements when using traditional knowledge. Trademarks and GI protection requires cooperation and a collective decision-making process, which is consistent with

the traditional practice of communal decision making. The problems of assigning ownership are also largely overcome with this form of protection. Each community would be able to register its own trademarks based on their particular traditional knowledge, their practices, or geographic location. Alternatively, traditional knowledge holders from various communities in a specific geographic location could form an association and register a certification mark that could be used on products developed using the traditional knowledge of a particular plant. Each community represented in the association is entitled to use the mark when promoting the products they develop. No one community or individual is recognised as the owner of the mark and it is shared between producers in the region or producers who adopt agreed-upon production processes. A mark of this sort is thus not freely transferable, and in this way GIs or trademarks reflect an accommodation of the concept of communal ownership, not limited to private property.

However, the current tools of protection do not protect the knowledge as such but only the products resulting from the application of such knowledge. In a similar fashion to patents, trademarks and GI mechanisms only function if traditional knowledge holders have the capacity and resources with which to develop and commercialise their knowledge. In the absence of this capacity the value of these mechanisms to traditional knowledge holders is limited. The constraints facing communities seeking to use these mechanisms may not only be constrained by their suitability but also by the ability of traditional communities to access the full benefits associated with these mechanisms.

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References

Barnett A (2001). In Africa the Hoodia Cactus keeps men alive. Now its secret is stolen to make us thin. *The Observer*, June 17, 2001, London.

Brush SB (1996). *Whose knowledge, whose genes, whose rights?* In: Brush SB & Stabinsky D (eds), *Valuing local knowledge: Indigenous people and intellectual property rights*. Island Press, Washington, USA.

Campbell C (2001). Time to look to our heritage for AIDS cure. *Cape Argus* [Online], September 5, 2001, Cape Town. Available at <<http://www.sutherlandia.org/argusart.html>> [January 25, 2006].

Commission on Intellectual Property Rights (CIPR) (2002). *Integrating intellectual property rights and development policy*. Commission on Intellectual Property Rights, London, UK.

Convention on Biological Diversity (CBD) (1992). *United Nations Convention on Biological Diversity*. Available at <<http://www.biodiv.org/doc/legal/cbd-en.pdf>> [January 25, 2006].

Dempster C (2001). *Medicinal plant fights Aids*. BBC News. Available at <<http://news.bbc.co.uk/1/hi/world/africa/1683259.stm>> [January 25, 2006].

Downes D (1997). *Using intellectual property as a tool to protect traditional knowledge: Recommendations for next steps*. Discussion Paper prepared for the Convention on Biological Diversity Workshop on Traditional Knowledge, Madrid, Spain.

Downes D & Laird SA (1999). *Innovative mechanisms for sharing benefits of biodiversity and related knowledge: Case studies on geographical indications and trademarks*. Paper prepared for UNCTAD Bio-trade Initiative, Geneva.

Ducor PG (1998). *Patenting the recombitant products of biotechnology and other molecules*. Kluwer Law International, London, UK.

Gernholtz ROP (1994). *Basic guide to the law of patents*. Allegreto, Cape Town, South Africa.

Gernholtz ROP (2003). *Basic guide to Trademarks: Dr Gernholtz Patent Attorneys*. Available at <<http://gpa.co.za/english/basic/tm.htm>> [January, 25, 2006].

Gupta AK (undated). Patent on Neem: Will it deprive Indian farmers of the right to use it? <<http://csf.colorado.edu/sristi/papers/patentonneem.html>> [January 25, 2006].

Halewood M (1999). Indigenous and local knowledge in international law: A preface to *sui generis* intellectual property protection, *McGill Law Journal* 44:953–956.

Le Breton G (2001). *Trade in biological resources in Southern Africa*. Paper presented to the Multi-Stakeholder Dialogue on Trade, Intellectual Property Rights and Biological Resources in Eastern and Southern Africa, July 2001, Nairobi.

Patel SJ (1996). *Can the intellectual property rights system serve the interest of indigenous knowledge?* In: Brush SB & Stabinsky D (eds), *Indigenous people and intellectual property rights*. Island Press, Washington, USA.

Toffel MW (2002). *Intellectual property rights and traditional resources: The indigenous challenge*. Manuscript, Haas School of Business, University of California, Berkley, USA.

TRIPs (1994). *Agreement on trade related aspects of intellectual property rights*. World Trade Organisation, Geneva.

WIPO (2003). *Practical mechanisms for the defensive protection of traditional knowledge and genetic resources within the patent system*. Document prepared by the Secretariat for the Fifth Session of the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (WIPO/GRTRADITIONAL KNOWLEDGE/IC/5/6), 7–15 July 2003, Geneva.

Wolson RA (2001). *Towards TRIPs compliance: South Africa's experience and legislative reforms*. Paper prepared for Eastern and Southern Africa Multi-Stakeholder Dialogue on Trade, Intellectual Property Rights and Biological Resources in Eastern and Southern Africa, 30–31 July, Nairobi, Kenya.

World Trade Organization (WTO) (1999). *Guide to the Uruguay round agreements*. Kluwer Law International, The Hague, The Netherlands.

Wynberg R (1998). *Square pegs and round holes: Intellectual property, traditional knowledge, and WIPO's fact-finding mission in South Africa*. Biowatch, Cape Town, South Africa.

Wynberg R & Jardine C (2000). *Biotechnology and biodiversity: Key policy issues for South Africa*. Biowatch, South Africa.