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PATENTS AND THE TRADITIONAL BIO-INNOVATION PREDICAMENT: CRITICAL PERSPECTIVES

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ABSTRACT
The aim of this paper is to analyse the application of intellectual property (IP) law in agricultural innovation. Today, global agriculture and food industries are changing due to new technological development. This study evaluates the complex relationships underlying forces operating between traditional bio-innovations and modern technologies. It is important to note that society is currently faced with both technology and knowledge transfer, while the market-driven intellectual property law operates on an individualistic and permission-based platform aimed at protecting the individual’s right of ownership in his or her knowledge. The application of patent law in agriculture is expanding apace and beyond all expectation. This notwithstanding, or possibly for this very reason, the courts across the world are by and large struggling to establish an appropriate legal framework for agricultural innovation. This is significant because agriculture plays a key role in the economic development of society.

KEYWORDS: patents; law; bio-innovation; traditional; intellectual property

1. INTRODUCTION
This paper aims to analyse the application of intellectual property (IP) law in agricultural innovation. The study evaluates the complex relationships underlying forces operating between traditional bio-innovations and modern technologies with particular reference to developing countries. This paper selected two countries for their challenge and experience in this regard: South Africa and India. It is important to note that society is currently faced with both technology and knowledge transfer, while the market-driven intellectual property law operates on an individualistic and permission-based platform aimed at protecting the individual’s right of ownership in his or her knowledge.

The application of patent law in agriculture is expanding apace and beyond all expectation. This notwithstanding, or possibly for this very reason, the courts across the world are by and large struggling to establish an appropriate legal framework for agricultural innovation. Studies suggesting solutions to

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the difficult questions arising from patentable agricultural innovations are few and far between. Appropriate legal parameters for aspects such as the techniques used in plant breeding or genetic manipulation, which arise from developments in patentable agricultural technology and new plant varieties, need to be established.

Furthermore, the current economic framework has its roots in the agriculture of the developed world. Currently, 90% of the genetically modified food products found in retail stores are owned by eight companies from the developed world: Kraft (USA); Nestle (Switzerland); Coca-Cola (USA); PepsiCo (UK); Kellogg’s (USA); Mars (UK); General Mills (USA); and Unilever (Dutch-UK).\(^1\)

The market concentration and monopoly by large-scale farmers and industrial processing in the developed world, has had the result that ordinary farmers in developing countries fail to benefit from the law. The technological divide between developed and developing countries in the agricultural sector has further depleted living resources (which also drives out the traditional farmer and his/her knowledge) while the multi-nationals rake in the profits. For example, an American agrochemical and agricultural biotechnology corporation ‘Monsanto’ controls 80% of the genetically modified (GM) corn market and 93% of the soy market globally.\(^2\)

This is done under the pretext of creating beneficial trade between countries and alleviating poverty/food shortages in the developing world. In reality, however, rather than being a benefit or increasing the availability of food to the developing world as claimed, the resulting patented seed is sold to low-income farmers who must pay a higher price, reducing their choice and control of the natural orderliness of farming.\(^3\) This is because countries will continue depending on the multinational companies who market GM seeds and relevant fertilisers rather than traditional seed, and in the process, the capacity of farmers will diminish together with their traditional and sustainable farming practices.

This creates an economic imbalance and disturbs the economic structure of society which, in turn, influences human political processes and discourse and affects people’s lives fundamentally.

Today, many regions in the world suffer from severe shortages of food and medicine. While science is striving to find solutions to these problems, multinational corporations, regrettably, by and large, appear to see these shortages only as opportunities for profit neglecting their social responsibilities.

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\(^1\) J Wilton ‘The eight companies which stock 90 per cent of grocery foods, all use genetically modified ingredients’, available at http://www.twitter.com/i_am_jessicah/status/645424616672923648 (accessed on 23 August 2017).


In this regard, governments should play a crucial role to ensure that while reaping their profits, corporations take their social responsibilities seriously. The problem with biotechnology vesting solely in the hands of corporations is that efforts to find solutions focus solely on the need to extend the monopoly and not necessarily to address the shortage of food in creating benefit for trade between countries but rather to cushion their individual market value for international trade. Due to this, small-scale farmers are unable to participate in the global trade. Without economic activity, they will continue to be discouraged from progressing in their farming on the basis of imbalanced trade. For example, in 1980, Africa was a net exporter of agricultural products, and in 2007 alone Africa’s import of agriculture product reached a record of $47 billion yielding a deficit of around $22 billion. Whereas the European Union and the US each export almost €121 billion. This trade imbalance and lack of economic activity in agriculture aggravates local food insecurity.

Agricultural technology is advancing to the point at which the law will no longer be able to answer the technical questions which arise. This is because of the lack of political will by the leaders. In this regard, it is vital to formulate policy to address the issue and identify an appropriate legal framework to close the gap in the legal system. The manifestation of technology as a profit scheme without an effective legal framework is not in the interests of society. Today, the problems facing the world are not based on a lack of technology, but rather lack fairness. The legal framework governing agricultural innovation must be adapted to provide moral guidance that will ensure an equitable distribution of economic benefits and promote social and political stability in society.

The current patent-law structure partially fails in the distribution of economic benefits and burdens among global communities in different social strata – both rich and poor. The law must be equitable without regard to culture, economics, and political status. To address the technical question of the differences between modern and traditional biotechnology, the law must rely on scientific agricultural findings drawn from different cultural farming practices, both modern and traditional, if it is to reach an acceptable solution. In this process, the principles of equitable justice should be adopted. It is tragic in an era of unprecedented technological advances, to see that low-income nations spend 60–80% of their income on food, leaving few resources for other necessities such as education, medical services, etc. This is but one of the indicators pointing to the reality of exclusive systems tailored to empower wealthy nations and disregard the poor.

This paper offers readers an opportunity to engage with the dichotomy between the traditional and modern approaches to farming, and how this impacts on the application of patent law. The idea is to debate the distinction arising in different cultures and economic spheres in society, between the

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right to protection of traditional farming methods, on the one hand, and modern innovations under existing patent law, on the other.

The views presented in this paper will assist us in looking beyond the current understanding and knowledge of the factors affecting society. The importance of protection which grants exclusive commercial exploitation of traditional bio-innovation and resources encourages the retention of useful eco-friendly traditional agricultural techniques and resources for a sustainable future and the advancement of local economies. It further examines the necessity for developing countries to review existing IP law governing agriculture, and to stimulate debate and offer new ideas regarding the patenting of traditional knowledge in farming and biotechnology. It also considers whether the proposed improvement of current patent law will promote comprehensive protection for traditional knowledge in agriculture.

The term ‘traditional farming’ as used in this paper refers to the agricultural knowledge system embedded in the culture and tradition of indigenous peoples. It includes techniques used in agriculture by indigenous people in their day-to-day life. Traditional bio-innovations found among indigenous people are a crucial part of the survival of the community. Their ability to understand facts and natural events is – as with any other research and studies – acquired through interaction with their natural environment and surroundings and through the collective body of knowledge and practices developed and maintained over time by members of the community. 6

The World Intellectual Property Organisation (WIPO) is a specialised agency of the United Nations which administers aspects of intellectual property. It facilitates a focused and clear examination of the current key conditions that should be considered in order to secure patents linked to innovations. To qualify for registration as a patent, a ‘creation’ or ‘innovation’ must satisfy the following criteria as regards subject matter: 7

- It must be accepted as ‘patentable’ under the law;
- be new and non-obvious;
- be capable of industrial application; and
- it must be sufficiently clear and include complete disclosure of the invention. 8

Based on the above test, the law recognises exclusive IP rights only for technological methods of production to the exclusion of traditional production methods. In terms of the above requirement, the invention must be capable of industrial application.

There is a danger of a ‘one-size-fits-all’ system failing to address countries’ priorities such as food security and the right to medicine. This is a fundamental

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8 Ibid.
concern for most developing countries where the present intellectual property systems have failed to meet their needs.

This lack of protection and promotion of traditional bio-innovation has not only resulted in a loss of material benefits for traditional agriculturalists but has also led to the loss of useful traditional knowledge. It is submitted that without economic activity, the agricultural sector can’t encourage the skill and knowledge necessary to promote value-added production. The deafening silence in current patent law as regards the protection of traditional or cultural knowledge undermines and limits the integrity of cultural practices and economic development of the developing world. According to the World Food and Agriculture Organisation (FAO), one of the leading causes of genetic erosion of the world’s plant genetic resources (GRs) for food and agriculture is the replacement of traditional crops with modern varieties.9

Over the past decade, several studies have shown that the rule-making process of the existing patent law is not clear on whether or not it provides a positive incentive.10 For example, South Africa ‘Fix the Patent Laws’ campaign group expressed their dissatisfaction over the existing South African patent laws that help corporations to extend their monopoly and keep the price of medicine high.11 The calls by the developing world for the review of current patent law consequently arises from their legitimate concerns and priorities such as medicine and food security and poverty alleviation.

Recently, the South African government reformed its laws to ensure that traditional forms of creativity, innovations, indigenous art and music are recognised as protectable intellectual property. The law seeks to confer ownership of traditional knowledge and cultural expressions on indigenous communities and to protect them against misappropriation and enable communities with the right to exclusive commercial exploitation. The Act signed by the president on the 19 August 2019, title ‘Protection, Promotion, Development and Management of Indigenous Knowledge Act 6 of 2019’ will only be effective on a future date yet to be determined.12 But the rest of Southern Africa is still a long road behind in this regard.

2. Patents and Economics

Patents inspired by economic benefit for the holders of the rights cannot survive without material benefits. Patent law focuses principally on the commercial exploitation of innovation from the developed world and has little regard for

traditional bio-innovation works in low technology settings. Experience in developing countries with patents usually cannot ramp up production for the market due to lack of resources and lack of clear patent ownership. Traditional farming innovators, as a rule, receive little or no return on their investment. Without economic incentives, innovation cannot sustain itself and this discourages creativity. In the current knowledge-economy, free access to knowledge could cripple the economy of a country, and an appropriate strategy to manage and protect knowledge is vital. Digital business and the resulting ‘global village’ environment in which we operate today, should enable a continent such as Africa to be able to manage the users’ available knowledge to grow African economies, but this has not been the case.

The problem identified in this study is the dilemma of the application of patents to the field of agriculture, and more specifically whether the patent regime balances economic growth, on the one hand, and the burdens in the agricultural sector, on the other, fairly across society. The relationship between modern technological knowledge and traditional knowledge in agriculture is complex and involves fundamental questions for which the law has, to date, no clear answers. Few institutions in Africa offer agricultural law as a field of study, and, as is to be expected, courts in most African countries are poorly equipped to deal with the patentability of agricultural products and processes. This is because the majority of judges are not equipped to understand patent law application on agriculture, and the gap created in patent law in answering the difficult question of balance between traditional knowledge and the corporate interest in the knowledge increasingly threatens the viability of a traditional knowledge system that should be answered by the legislature, not by the judges. Furthermore, in the absence of appropriate laws relating to the protection of traditional knowledge, African courts in the main have only limited expertise to distinguish between traditional and modern technological innovation.

The application of existing patent laws to agriculture creates uncertainty and confusion by not distinguishing between traditional and modern innovation. Traditional agricultural methods are unprotected, while access to modern technology is limited to exclusive commercial exploitation. Consequently, the law presumes that traditional knowledge is free to access, which renders it vulnerable to misappropriation. Therefore, the exclusive allocation of patent rights to modern technological innovations results in a material loss to the traditional peoples who are consequently unable to protect their traditional agricultural innovations and hence harness their creativity to serve their economic benefit. In short, the law has failed significantly to address the issue concerning knowledge that does not fall under the modern

technological orientation. In the absence of comprehensive national laws protecting traditional knowledge, international laws governing knowledge are presumed to be a general practice accepted as the law in member states.\textsuperscript{15} For example, the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) has brought about harmonisation of intellectual property rights worldwide.\textsuperscript{16} In this regard, traditional knowledge falls under the WTO rule in art 27(3) of the TRIPS agreement. However, there is no explicit provision to promote or protect traditional knowledge.\textsuperscript{17}

Although patents are among the oldest instruments by which to promote and protect innovation, there is very little information on their economic value. While it may be relatively straightforward to identify the economic benefits and burdens of patents for society by examining the impact of innovation, competition, and resources on the implementation and the enforcement processes available under patent law, in practice, there is no clear evidence that existing patent law benefits low-income countries.\textsuperscript{18} Although there is no denying the contribution of modern technology to society and patent incentives to innovators, the problem stems from the complete silence of patent law when it comes to traditional knowledge.

Furthermore, the study does not suggest that the application of patent law to agriculture should be scrapped. Rather, the current system should be revised to accommodate traditional knowledge and challenge any misallocation of economic benefit falling to traditional communities. In short, the law must include traditional knowledge in the ‘basket’ of exclusive economic exploitation.

Although traditional knowledge may not enjoy the prominence accorded modern technology, traditional bio-innovation continues to develop in its own space and time, and it is incorrect to presume that there is no progress in traditional society. Small-scale farmers in most parts of the world face daunting challenges in securing patent protection for their plants, GRs, and associated knowledge. In the main, this may be ascribed to the cost and complexity of patent applications.\textsuperscript{19} It is particularly problematic for small-scale farmers to interpret and articulate their valuable knowledge within the paradigm required by the current rules which are designed for a specific form of tradition and culture rather than being all-inclusive. Surely, if the world is indeed becoming a global village, the system should include all sectors of society.

\textsuperscript{16} Hu Weinian International patent rights Harmonisation: The case of China (2017).
\textsuperscript{17} MJ Andersen ‘Claiming the glass slipper: The protection of folklore as traditional knowledge’ (2010) 1(2) Western Reserve Journal of Law Technology and the Internet 155.
In general, present-day agriculture faces its greatest challenge in its 13,000 years of history. This is because of the increasing demand for food, environmental degradation, erosion of genetic resources and the changing landscape of global food governance are part of the challenge. The existing patent application system, particularly as regards agriculture, has failed to dispense justice to the small-scale farmers. It is because once their knowledge or information is disseminated, control over their knowledge is lost as a consequence, because patent law doesn’t recognise something already known by others. This disturbs the equal and fair distribution of the economic benefits and burdens in society. In reality, traditional and small-scale farmers are unable to challenge the patent right holders or granting authorities on the prior existence of patenting invention derived from traditional knowledge. It is, therefore, probably true that existing patent law applications in agriculture act as a negative incentive to small-scale farmers who are the principal providers of local food supplies and a vehicle for economic advancement in developing societies.

In 2016, the Food and Agriculture Organisation (FAO) reported an estimated 800 million people to remain undernourished, while there are more than two billion ‘over-nourished’ individuals worldwide. The problem lies in the accessibility of food. It is often not possible for the low-income population – including poor small farmers – to secure food. The number of farmers in low-income countries is decreasing as farmers join the unemployed urban population due to falling economic activity and unfair trade competition in the agricultural sector. Traditionally, agriculture in the developed world has been favoured with immunities, subsidies and special rules that reflect the uniqueness and the political power of the industry. This study argues that the increased production of food through technology supported by patents alone, will not guarantee the availability of food; it may indeed exacerbate the hardships already facing the farming communities of the developing world.

The exclusive nature of current patent law designed exclusively for wealthy high-tech farmers empowers corporations and under-rewards traditional bio-innovation among small-scale farmers. Therefore, corporations march on, gaining ever more power and dominating de facto (although not necessarily de iure) control over the world’s food industry and, by implication, the power to manipulate politics and the law to their advantage.

Restructuring the law will result in the distribution of justice. Currently, corporations, particularly those in the food industry, have put in place a range


23 Ibid.

of strategies to increase their monopoly over world food.\textsuperscript{25} The defence of choice for these corporations lies in international law and they campaign vigorously for international agreements which advance their cause.\textsuperscript{26}

3. Unlocking Traditional Bio-Innovations in the Midst of Bioengineering

Controversy persists regarding the techniques used in breeding or genetic manipulation, biological information, and the patentability of plant varieties. The current application of the patent regime to agricultural inventions does not adequately address the needs and interest of low-income countries as their priorities were not sufficiently considered when the law was drawn up. For example, arts 65 and 66 of the TRIPS agreements provide transitional arrangements for the developing countries.\textsuperscript{27} This in itself is an indication of the formulation of the system, not design addressing the need and interest of the low-income countries.

The first question that arises in this context is what is bioengineering, and how does it differ from traditional bio-innovation? The Office of Technology Assessment of the United States Congress defines biotechnology as ‘any technique that uses living organisms or their products to make or modify a product, to improve plants or animals, or to develop microorganisms for specific uses.’\textsuperscript{28}

Contemporary studies suggest that bioengineering is not new; it has existed for centuries as farmers manipulate plants and GRs, and improve and select plant varieties in their farming practice.\textsuperscript{29} The modern commercial application of biotechnology involving DNA technology in agriculture has allowed the patenting of agricultural products, in the main by big multinational corporations.\textsuperscript{30}

In countries which lag in scientific and economic development, misappropriation of intellectual capital in agriculture in the form of traditional techniques is on the rise.\textsuperscript{31} The existing patentability test has failed to distinguish between the bioengineering uniqueness and traditional bio-innovations.\textsuperscript{32}

\textsuperscript{25} Ibid.
\textsuperscript{26} Ibid.
\textsuperscript{27} S Biber-Klemm and T Cottier Right to Plant, Genetic Resources and Traditional Knowledge: Basic Issues and Perspectives (2008) 121.
\textsuperscript{29} Ibid.
\textsuperscript{31} Bibber-Klemm and Cottier (n27) 118.
\textsuperscript{32} ‘NapHal’ which is indigenous to Indian traditional farmers and has special characteristics for baking was misappropriated by Unilever which filed a patent but later withdrew its application. In 1998, genetic stock of peavine and lentil obtained from a gene bank at the CGIAR base, showed that the GRs originated from Aleppo, Syria, but that the application had been made by Australia. The application for the PBRs was thus withdrawn.
Plant and animal agricultural practices, unlike the discovery of mineral resources, have often involved human intervention in the selection and manipulation of biological resources — although not always, given that sometimes a rare variant that occurs naturally is selected and multiplied through breeding due to having traits desirable to the breeder. The processes of selection and manipulation of GRs including plant and animal species are not purely those that occur naturally but form part of the conventional farming processes used over the years.\textsuperscript{33} In this regard, experts have often suggested that granting a patent for certain bioengineering processes blurs the distinction between discovery and invention.\textsuperscript{34}

The inventiveness criteria in patent law set out to examine whether the proposed solution to the technical problem meets the requirement or if there is evidence that shows the technical effect resulting from any difference between what protection is sought from that of the closest prior art.\textsuperscript{35} It is suggested that the test used to establish ‘inventiveness’ in genetically modified plants is inadequate given that a substantial amount of the knowledge used to develop genetically modified plants originates in traditional farming practices to which bioengineering adds only minor changes.\textsuperscript{36} This raises the question of whether the law is justified in granting patents on the basis of contributions of little additional intellectual value\textsuperscript{37} — which results in the misallocation of rights.

Current patent law has failed to balance economic benefit and burden across different sectors of society. It is argued that to avoid the further erosion of traditional bio-innovation, the law should be amended to address the sincere concerns of developing countries. Therefore, a meaningful commitment from policymakers and international institutions such as the WIPO and the World Trade Organisation (WTO) driving changes in existing patent law in agriculture is necessary.

Technology and science are derived one way or another from traditional knowledge applied in different settings, and informed by a fundamentally different world views, and with distinct values and normative rules.\textsuperscript{38} Traditional bio-innovation is not a collection of unusable information but is the source of all scientific data presented by today’s science and technology.\textsuperscript{39} The study suggests that traditional knowledge of indigenous peoples in most parts of the world has been collected and used by researchers and scientists.\textsuperscript{40} Although this contribution is to be encouraged, at the same time measures

\begin{itemize}
\item 33 Biber-Klemm and Cottier (n27) 124–125.
\item 34 Biber-Klemm and Cottier (n27) 128.
\item 36 Biber-Klemm and Cottier (n27) 128.
\item 37 Ibid.
\item 39 Ibid.
\item 40 Casimirri (n39).
\end{itemize}
must be put in place both to ensure the welfare of the traditional communities by protecting their material interests in their farming practices, and to facilitate their inventiveness in contributing to the greater good.

4. Characteristics of Patent Law in Relation to Traditional Agricultural Innovation

Patent law has not been notably amended to address emerging trends and technology in agriculture. However, since its conclusion in 1883, the Paris Convention has been revised several times – at Brussels in 1990, Washington in 1911, The Hague in 1925, London in 1934, Lisbon in 1958, and Stockholm in 1967 and 1979.\(^41\)

Patent law was originally tailored for standardised and tailor-made industrial products such as machinery, motor vehicles, and similar products.\(^42\) Before the adoption of the TRIPS Agreement in 1994, countries were generally free to tailor their IP laws to suit their level of growth. But this has changed.\(^43\)

The minimum protection for agricultural innovation resides under the TRIPS Agreement.\(^44\) Countries are bound by the provisions of the TRIPS Agreement by virtue of their membership of the WTO, irrespective of the benefit or harm the provisions may hold for their national interest.\(^45\) Developing countries’ participation in the drafting and adoption of TRIPS was negligible, with the result that attention to their needs and interests was minimal.\(^46\)

There is no clear or logical classification in place to distinguish between biotechnology and traditional bio-innovation prescribed in the law on the basis of the principle of the patentable invention. To the disadvantage of traditional people, the law does not recognise the traditional intellectual property and resources in the same measure as patentable inventions. The interaction between patent law and innovation is not that of a mere legal issue but also highly technical.

In short, as an initial step, governments in developing countries should equip local communities by educating them on how to create wealth from their knowledge. This needs to be supported by government action in providing an effective legal framework within which to protect and promote community-based knowledge and resources. In addition, developing nations should offer institutional support to their agricultural communities to promote traditional bio-innovation.

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43 Rimmer (n21) 24.
45 Ibid.
4.1 Patents on conventional seeds: India as a case study

India is a major victim of the misappropriation of traditional bio-innovation by others resulting from the absence of multilateral protection for certain of its traditional bio-innovations. One example of such misappropriation of traditional bio-innovation is the grant of US Patent No 5,401,504 to Das., for the use of turmeric as a medicine by the United States Patent and Trade Mark Office. The use of turmeric as medicine had long been the traditional knowledge of Indian communities. The grant of the patent was challenged during re-examination proceedings and all claims were eventually cancelled,\(^{47}\) since it was proved that this use of turmeric was known and clearly recorded in a traditional Sanskrit text, which uses had been misappropriated by the patentee.\(^{48}\) Often lacunae in the law are not the only problem, but also whether countries have sufficient legal and scientific analytical ability or the political will to pursue their objections in the face of multinational corporations.

In 1974, the FAO Technical Group for International Agricultural Research was formed to create a global network of gene banks to store ex situ the principal food varieties for conservation.\(^{49}\) Subsequently, in 1994, the FAO took ownership of the various gene varieties harvested internationally.\(^{50}\) Nations of the world accessed and benefited from the international gene bank collection for the conservation of GRs to satisfy their national need for food.\(^{51}\) This international gene bank allows free access to the collected seed and crops from different parts of the world to anyone who wishes to acquire them. As a result, in 1991, Unilever filed a patent for a wheat variety bred by traditional Indian farmers, which has special characteristics for baking.\(^{52}\) This crop is known in India as ‘Nap Hal’. Using traditional knowledge, India’s indigenous farmers had developed and refined the specific suitability of the seed for baking. However, over the years this quality was lost, only later to be rediscovered and patented as ‘WO 91/11905’ by Unilever for its exclusive use.\(^{53}\) In 1998, Monsanto purchased the wheat from the research department at Unilever and managed to patent this particular seed in 1999 in the USA, and in 2003 under European Union patent law, as EP445929.\(^{54}\)

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48 Ibid.
50 Ibid.
52 T Christoph ‘No patent on seeds – Biopiracy and seeds’, available at http://www.alt.no-patents-on-seeds.org (accessed 10 May 2019).
53 Greenstation ‘Biopiracy and Transgescis’ (25 October 2011) available at https://sites.google.com/site/greenestation/home/agricultura/biopirateria-y-transgenicos (accessed on 16 October 2019) and see also a similar story on Grain ‘Global appeal against patents on seeds and farm animals’ (27 March 2007) available at https://www.grain.org/article/entries/2219-global-appeal-against-patents-on-conventional-seeds-and-farm-animals (accessed on 16 October 2019). This information was contributed by a Global Appeal against Patents on Conventional Seeds and Farm Animal Groups, such as farmers’ organisations and NGOs.
54 Ibid.
From this practical case study, it is clear that traditional knowledge and resources are poorly understood and on the whole, badly managed. In this regard, the law has failed to consider how the ability or inability to document or formalise traditional knowledge influences the patent eligibility of what is, in fact, traditional knowledge.

4.2 The case of Southern Africa: The San communities

For the case study below, I have selected the oldest inhabitants of southern Africa, the San people, to illustrate the effect of patent law on the economic interests of a community. I also consider whether, before there was a question of intellectual property rights, and more specifically patents, for food and agriculture, the situation was different.

The San peoples comprise hunter-gatherers living mostly in the arid zones of Angola, Botswana, Namibia, South Africa, Zambia, and Zimbabwe. Today the San community is estimated to be approximately 100 000 strong, spread out across these countries. Over the years, these communities have been severely affected by global trends and have been unable to uphold their traditional way of life. The communities were self-reliant and produced their own food by hunting and gathering before high population growth and displacement by Bantu and white settlers across the region.

The case of hoodia is one of the benchmark reported cases involving South Africa and dealing with the misappropriation of an indigenous biological resource and associated traditional knowledge narratives. In 1998, the South African Council for Scientific and Industrial Research (the CSIR) filed an international patent application under the Patent Cooperation Treaty (PCT) with Publication No WO98/46243 entitled Pharmaceutical Compositions Having Appetite Suppressant Activity relating to compounds extracted from hoodia. Over 40 patents based on the PCT application were subsequently granted. The PCT application was filed without prior consent or a benefit-sharing agreement in terms of the Convention Biological Diversity with the indigenous San community. The CSIR later licensed its intellectual property relating to this patent application to Phyto Pharma, a United Kingdom-based company, to develop and commercialise this new patented product. In 2002 a dispute arose and a subsequent memorandum of understanding, followed

56 Ibid.
57 Ibid.
60 Case study: Hoodia plant (n58).
61 Ibid.
by a benefit-sharing agreement, was signed between the CSIR and the representative of the San communities of South Africa.62

Use of the hoodia plant is traditional to the San communities as an appetite suppressant used mostly by shepherds and hunters to curb their hunger while working.63 In 2004, Phyto Pharma licensed the patented ‘molecule p57’ (the scientific name for part of the hoodia plant extracted and patented) to Unilever as a marketing partner and Unilever filed several further patent applications related to the use of this compound.64 In 2010, Phyto Pharma terminated its agreement with the CSIR and the development and commercialisation rights relating to PCT patent publication no WO98/46243 reverted to the patentee, the CSIR.65

As indicated previously, traditional communities lack the means, knowledge, or technical know-how to protect their traditional bio-innovations by way of patents with the result that their vulnerability can be easily exploited and manipulated without repercussion. Although patent law alone cannot be blamed for widening the gap between rich and poor nations, it arguably aggravates the situation. The patent system contributes to communities losing their livelihoods, erosion of their traditional knowledge resources, and loss of traditional knowledge with the result that many farmers have become labourers or are unemployed and have little or no food. This forces them to rely on food aid, where it is available.66

Traditional communities have a vast store of ecological knowledge of their surroundings and often produce their own food using traditional practices. However, these traditional practices are increasingly lost through displacement, war, deforestation, competition for limited resources, and the shift from traditional to modern methods of food production.67 This has meant that they are no longer able to nurture sustainable practices by which to acquire their food.68 Oxfam International has reported that the world’s biggest and most influential food and beverage companies are so powerful that their policies can have a significant impact on the diets and working conditions of people worldwide, as well as on the environment.69

Although there is an argument that supports modern innovation in agriculture to help to decrease the occurrence of drought and create pesticide-resistant crops that could curve food insecurity, the food available in the market is often unaffordable for traditional communities, thus food availability doesn’t

62 Ibid.
63 Ibid.
64 Ibid.
66 Ibid.
67 WIPO (n65).
68 Ibid.
guarantee affordability. Contemporary studies suggest that eight companies, from the developed world, own 90% of the genetically modified food products on the shelves of our retail stores. This prevents low-income communities either from participating in the economics of food or from gaining access to food at affordable prices. Today these communities are invisible, and the global economic expansion has left them vulnerable. They are the poorest of the communities across the southern African region and rely, in the main, on welfare services (if available) or work as casual labourers.

The governments of the region do not provide either adequate recognition or sufficient resources on which these communities can draw. Furthermore, one study shows that global food insecurity is often aggravated by multinational corporations taking ‘ownership’ of indigenous knowledge and resources such as grains, crops, and plants and legitimising their actions by means of patents and plant breeders’ rights. In its current form, patent law must be seen to have failed to narrow the gap between rich and poor nations and to have avoided addressing the real issues facing the low-income communities.

In support of my hypothesis, the following case study offers a better understanding of the characteristics of the existing law and the behaviour of society in practice. The case is that of Devil’s Claw, a plant used for traditional medicinal purposes by the San communities of southern Africa, and specifically by the San communities of Botswana, Namibia, and South Africa. Since 1962, dried tubers (Devil Claws) have been exported to European counties for the production of herbal medicines following the practices of the San community and benefitting the European patent holder. Unfortunately, there is no additional evidence that shows this particular plant has been patented other than to show commercialisation of the traditional plant has not benefited the communities in question. However, the recent development of a new bill signed by the president ‘Protection, Promotion, Development and Management of Indigenous Knowledge Act 6 of 2019’, gives a gleam of hope in this regard.

In this scenario, as it is presented, traditional knowledge developed over time by the San communities has been appropriated by wealthy entrepreneurs, so excluding the poor from the right to protect and benefit from their traditional knowledge. Consequently, the misappropriation of their knowledge and
resources has had a direct effect on their local economies and has been a major contributor to their ongoing poverty and food insecurity.

5. Conclusion and Recommendation

This discussion has aimed to highlight the fundamental problem identified in practice under the current patent laws which prevent patent law from achieving its objectives, that is, to protect inventors from rapacious corporate giant misappropriation of their knowledge and rewarding economic benefit for their creation. It then goes on to consider how, if at all, it achieves its objectives. It is hoped that this information may encourage the improvement of the current legal framework of patent law to protect traditional bio-innovation and traditional resources in agriculture and lead to the design of a new carefully researched inclusive legal framework.

Furthermore, this study has investigated and evaluated the role played by current patent law in traditional agricultural innovations. It has further identified the constraints and weaknesses manifested by its application in its current form. Particular attention has been paid to the plight of the communities of southern Africa. In doing so, changes to patent law have been considered. Simply restructuring the existing law will not be sufficient to ensure fair use of traditional knowledge in agriculture to grow the economy. Therefore, Africa needs to develop a policy that considers the specific needs of its agricultural sector.

The recommendations include:

- Governments need to take the initiative in recognising the unique qualities of their traditional agricultural products and their unique characteristics for value creation based on the intellectual capital of the traditional community.
- The formal legislative recognition of appropriate traditional intellectual property protection is a prerequisite in seeking international protection.
- Further, it is important to establish an ‘expertise network’ involving agricultural scientists, sociologists, economists, and lawyers, to restructure Africa’s IP law, particularly as regards patent law in traditional agriculture, to develop clear guidelines within which to protect and exploit the wealth of the continent’s intangible assets in agriculture.

The importance of this study lies not only in its call to expand the current collective understanding of traditional knowledge and to develop a patent application applicable to traditional agriculture but also in examining the bases for the exclusion of traditional bio-innovations and the impact this has on African economies.

During this research, several studies on the application of patent law in traditional agriculture have been considered. These have reflected the complex political, economic, and historical background to the system. This study has focused on the exclusion of traditional bio-innovation from the system and the detrimental effect this has had on future knowledge-based economies.
Solving food crises and farm crises are never far apart unless the system is restructured and the traditional agricultural knowledge and resources of the low-income countries and communities worldwide, are accorded due recognition. This could benefit traditional communities by encouraging them to redefine themselves and record their knowledge so making it eligible for protection and the benefits of ownership. But to achieve this, government intervention is required.

The study also identified the insignificant participation of African countries in the restructuring of the systems to address the root cause of the crises in farming in Africa, and their objection to the exclusion of traditional bio-innovations. In examining the political and economic implications of the application of patent law in traditional agriculture, it emerges clearly that the profits generated flow to the developed world to the detriment of Africa.

The principal failings of patent law to protect traditional bio-innovations introduced by ordinary farmers, especially in Africa, has also been evaluated. Improvement is clearly necessary. If local bio-economies are to grow, it is equally important to introduce functioning local public-policy interventions to protect and promote traditional intellectual knowledge. Without fostering and safeguarding local innovations, it is impossible to compete in developing future innovations.

The existing system which excludes African knowledge-based economies aggravates poverty in many parts of the world and needs to be recognised as a serious concern in the restructuring of patent law. The drafting team of the proposed international legal framework must include a representative of the traditional peoples to ensure the future system addresses their needs and interests.

Failure to recognise this and act on it results in the serious global risk of social instability, alienation of the interests and needs of traditional communities, and denial of the right to economic participation. The traditional communities will be squeezed out of the market and faced with increasing poverty and food insecurity. Free access to African knowledge has crippled traditional economies, disempowered their members, and made it impossible to sustain future innovations. This situation must be corrected.

The changes sought to be achieved by the establishment of a truly multinational legal framework may well alter the political landscape perpetuated by the current system. This will address the disempowerment and frustration of traditional communities the world over and demands the commitment of international institutions to harmonise the efforts at achieving an international regime governing patent law and agriculture which answers the hopes and aspirations of the entire international community.

This paper recommends that each local government establish a national monitoring office in their respective countries to identify past, present, and future traditional bio-innovations. This monitoring office would enable the proposed law clearly to identify the subject matter which will be eligible for protection and to have a record of the useful skills and innovations for commercial exploitation. This would protect the economic interests of
ordinary farmers and communities who have failed to assert their rights over collectively-held knowledge and help them grow their economies. Supporting and promoting traditional economies will help to eradicate poverty and food insecurity within the communities and bring political and social stability around the globe. The local solution and precautions recommended will lead the way to the introduction of a globalised intellectual property solution.