

From Fable to Court: Tracing the Curation of Indigenous Knowledge in a Biopiracy Case

FABIAN S. KAPEPISO (*KPPFAB001*)

Supervisor: RICHARD HIGGS



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Department of Library and Information Studies Centre
FACULTY OF THE HUMANITIES
UNIVERSITY OF CAPE TOWN

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Abstract

This dissertation presents a constructivist grounded theory study of curation and biopiracy of medicinal knowledge about *Hoodia*. *Hoodia* is a succulent cactus used by the San people for sustenance and medicinal purposes, and a victim of biopiracy as indigenous knowledge of its properties has been patented with the aim of commercialisation. The purpose of this study was to generate a theory or framework that explores and explains the processes involved in curation and application of indigenous medicinal knowledge in the scientific, legal and commercial knowledge domains. The colonial 'discoveries' and records of the *Hoodia* species by Carl P. Thunberg, Francis Masson, as well as the recorded experience of Rudolf Marloth, in a Renaissance Humanist tradition, led to scientific experiments by the CSIR (Council for Scientific and Industrial Research) and commercial trials in an attempt to develop slimming drugs for commercialisation. A landmark royalty and benefit-sharing agreement in 2002/3 awarded intellectual property compensation to the San community for commercial exploitation of their traditional knowledge. Although there have been several Master's and Doctoral research studies about *Hoodia*, minimal or no attention have been directed toward the curation of information in a biopiracy case.

Science has sought to capitalise undocumented indigenous knowledge by applying for patents and developing pharmaceutical drugs using indigenous medicinal knowledge obtained from local people. Using a grounded theory methodology, data was collected through an unstructured interview, reviews of literature and theoretical sampling to extract relevant concepts and themes. The study then identified key players and knowledge domains that added new layers of information and knowledge to traditional knowledge in relation to *Hoodia* use. The study traces the movement of indigenous knowledge from the San to the CSIR, from CSIR to the commercial entities Phytopharm, Pfizer and Unilever, through the licencing of a patent on *Hoodia*. An emergent theory based on the concept of palimpsest suggests that erasures of the existing traditional knowledge occurred as new layers of knowledge were added or applied. These erasures took the form of (1) renaming the *Hoodia* species with Greek or Latin names instead of adopting the indigenous names

(Renaissance Humanism), and (2) adding new meaning and complicated symbols, resulting in codification of existing indigenous knowledge (Post Modernism). The main themes emanating from the application of palimpsest as a framework present pressing issues such as de-contextualisation and re-codification of indigenous knowledge, resulting in the erosion of benefits for its originators.

KEYWORDS: *Hoodia*, traditional knowledge, scientific knowledge, commercial knowledge, legal knowledge, grounded theory (GT), palimpsest, curation, biopiracy, Pfizer, P57, CSIR, Phytopharm, Unilever, San people.

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Abbreviations

CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CSIR	Council for Scientific and Industrial Research
ETC Group	Action Group on Erosion, Technology and Concentration
ICH Convention	Convention for the Safeguarding of the Intangible Cultural Heritage
IK	Indigenous Knowledge
IPR	Intellectual Property Rights
GT	Grounded Theory
LISC	Library and Information Studies Centre
OA	Open Access
TK	Traditional Knowledge
UCT	University of Cape Town
UNESCO	United Nations Educational, Scientific and Cultural Organisation

CHAPTER ONE

INTRODUCTION

1.1. Introduction and Background to the Study

1.1.1. Introduction

The acquisition, transfer, use or application by research, pharmaceutical and biotechnological organisations of indigenous knowledge of the uses of plants has caused debates regarding ethics and intellectual property rights. This is because large corporations acquire biodiversity resources from indigenous communities through research, and then apply for patents without informing these communities or compensating them. This behaviour has come to be termed 'biopiracy', which refers to "the unauthorised commercial use of biological resources and/or associated traditional knowledge, or the patenting of spurious inventions based on such knowledge, without compensation" (Mgbeoji, 2006: 13). The *San-Hoodia* biopiracy case is iconic, in that it has brought people from different disciplines to engage in the matter. Accordingly, many research theses have been written on and about the topic. In addition, this iconic case has included

the academic fraternity...applying its mind to questions of justice in the CBD [Convention on Biological Diversity]; those in legal disciplines interrogating the use of intellectual property rights to protect traditional knowledge; environmental scientists analysing the extent to which the case reflects the intent of the CBD and national policies; anthropologists grappling with questions of how and whether knowledge should be commodified; and,...those with knowledge of other benefit-sharing arrangements throughout the world bringing their collective expertise to compare and contrast their experiences with those of the San (Wynberg, Schroeder & Chennells, 2009: 4).

This study traces the curation of indigenous knowledge in the *San-Hoodia* biopiracy case, basing the arguments and developing a theory around the concept of palimpsest. Palimpsest in this study specifically refers to the erasure of indigenous knowledge and its replacement by other knowledge systems.

Indigenous knowledge (IK), sometimes called traditional knowledge (TK), has been around for a long time within communities. It has been developed over a long time and been tried and tested to be used in agriculture, governance, medicine, and general social life. With different cultural groups and communities mixing through dominance and inter-marriage, new knowledge has been acquired, shared within the social setting and community, and integrated into the existing knowledge. On the contrary, contact with Western culture has to some extent corrupted, confused and changed some practices as

indigenous knowledge is tacitly decontextualized, severed of the cultural connections that grant it meaning to its indigenous producers, archived and classified in Western databases, and eventually used in scientific projects that may operate against the interests of indigenous peoples (Semali & Kincheloe, 1999: 21).

This description points to the problem statement as well as curation and biopiracy, the central points of this study. Since the age of Western exploration, contact with the West has led to indigenous knowledge being de-contextualised and misapplied through documentation or curation and archival processes that led to research. This de-contextualisation is mainly in relation to medicinal knowledge which interests research institutions as well as biotechnological and pharmaceutical industries. The process of curation or documentation means that indigenous knowledge becomes static as it loses meaning and its intended purpose.

1.1.2. Background to the Study

Many indigenous communities in Southern Africa, and indeed the rest of the world, depend on indigenous knowledge to deal with multiple problems and issues in their day-to-day lives. One such problem is diverse diseases which threaten the existence of every member of the community. To counter such ills, indigenous communities have acquired knowledge—some of which has been through trial and error—and refined it over a long period of time and it has thus been passed on from one generation to another. This means indigenous knowledge is mostly not recorded but passed on orally for generations. Exploiting this inherently open nature or format, research institutions, pharmaceutical and biotechnological companies have sought to capitalise on this freely-available knowledge in what is known as biopiracy and

bioprospecting. The United Nations Development Programme (2017) defines biodiversity prospecting or bioprospecting as the “systematic search for biochemical and genetic information in nature in order to develop commercially-valuable products for pharmaceutical, agricultural, cosmetic and other applications”. Indigenous communities have been raided by these institutions because they hold access and medicinal knowledge about a variety of plant species.

One such indigenous community holding considerable indigenous knowledge is the San, who are also recognised to be holders of indigenous medicinal knowledge relating to *Hoodia* (Wynberg & Chennells, 2009: 94). *Hoodia* contains an active chemical property or molecule known as P57 or oxypregnane steroidal glycoside, which is believed to be an appetite-suppressant. Following observation and documentation of the San people’s knowledge of *Hoodia*, research has since been conducted by the Council for Scientific and Industrial Research (CSIR) to isolate P57. It has also led to further development and clinical trials by Phytopharm, Pfizer and Unilever to develop a slimming drug that would be commercialised. The San have therefore undergone continued “biopiracy efforts designed to obtain information on how their supposedly unique diet facilitated their survival in the difficult climatic conditions” (Osseo-Asare, 2014: 174). This was partly done by taking advantage of their situation by providing gifts such as tobacco and food in exchange for their knowledge of the uses of plants or biodiversity resources such as *Hoodia*.

Research involving *Hoodia* is believed to have started based on documented accounts of Francis Masson in 1798 (Robinson, 2010: 61) and Rudolf Marloth in 1932 (Wynberg & Chennells, 2009: 93). These colonial botanical accounts “led directly to the CSIR, a South African research institution, including the [*Hoodia*] plant for investigation in a 1963 project on edible wild plants of the region” (Wynberg & Chennells, 2009: 95). The accounts of Masson and Marloth revealed that *Hoodia* was and still is indeed a hunger suppressant and a thirst quencher used by the San, especially on hunting trips or in harsh environments for several years.

By exploring the San people’s living conditions especially with regard to their diet, researchers have in the process, discovered their knowledge of *Hoodia* and other plant species. Large pharmaceutical companies and research institutions have

sought to take control over these resources and indigenous knowledge through patent applications and commercialisation. As a result, the *Hoodia* case has led to the drafting and adoption of the *National Environmental Management: Biodiversity Act 10 of 2004* (South Africa) in order to protect the use of indigenous biodiversity resources and to enable the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources.

The colonial and Apartheid governments in both South Africa and Namibia sought to exploit all races that are non-white. In addition, scientific studies were commissioned at the expense and exploitation of the so-called “inferior races” including the San people. An example of this exploitation could be indigenous people like the San being given compensation in the form of food and tobacco for sharing their medicinal knowledge in the name of research. Indigenous knowledge is tacit and as such, it resides mainly with community leaders such as chiefs, indunas, and traditional healers. Although curation presents some negative aspects, not all forms of indigenous knowledge are affected by it. A good example would be stories and other practices such as games, which are threatened by technology in the form of television and other Western cultural influences. These should be curated and preserved for future use and the future generations.

The focus of this study is on how indigenous knowledge was codified and curated, and what issues or problems surround curation or documentation of indigenous medicinal knowledge. Another aspect of this study is the implication of the assumption by researchers, pharmaceutical and biotechnological companies that “indigenous knowledge and people are disappearing” and thus a need “to save, document, and apply indigenous strategies of survival” (Agrawal, 1995: 420).

1.2. Problem Statement

Much indigenous or traditional knowledge is not recorded in any format for future or present use or reference. It is however preserved through story-telling, rituals and other customs. Because the knowledge is transferred from generation to generation through these methods, it becomes difficult to trace the original owners of knowledge as communities grow and inter-marriage occurs. With the scientific community

realising the potential of indigenous knowledge in certain fields such as medicine and plant species, powerful pharmaceutical and biotechnological companies have sought and continue to seek ways to use indigenous medicinal knowledge. Their approach is to commercialise the products by extracting valuable compounds from the plants that have been used and identified by indigenous peoples, and developing new drugs. Patents are then acquired and intellectual property rights set in place, thus claiming ownership of knowledge that already existed.

The purpose of this grounded theory study is to generate a theory that explores and explains the process of curation and the application of traditional knowledge (TK) in scientific and commercial knowledge domains. Furthermore, this study was seeking to understand, explore and, to some extent, reveal how documentation or curation of knowledge about *Hoodia* in a biopiracy case might have led to indigenous knowledge being de-contextualised, misrepresented and misinterpreted by the CSIR, Unilever, Phytopharm, and Pfizer. Three assumptions underpin the purpose of the study: that indigenous knowledge might be (1) misappropriated, (2) locked in time and space, and (3) misinterpreted as a result of curation. It is also important to note that the legal systems through which indigenous knowledge and scientific knowledge operate are very different to each other. For example, scientific knowledge operates within patents and intellectual property rights (IPRs) systems or laws, which encourage innovation. On the contrary, indigenous knowledge operates within traditional settings and communal laws, which encourage sharing and community togetherness.

Without acknowledgement of the contributions and knowledge of the San people, and unbeknown to them, a patent application was filed by the CSIR “for the use of the active components of the [*Hoodia*] plant which were responsible for suppressing appetite” (Wynberg & Chennells, 2009: 94). This movement of indigenous knowledge from its original holders and community to being modified in a laboratory and then its ownership being asserted through a patent by the CSIR presents issues of violation of intellectual property rights, community rights, human rights, and research ethics.

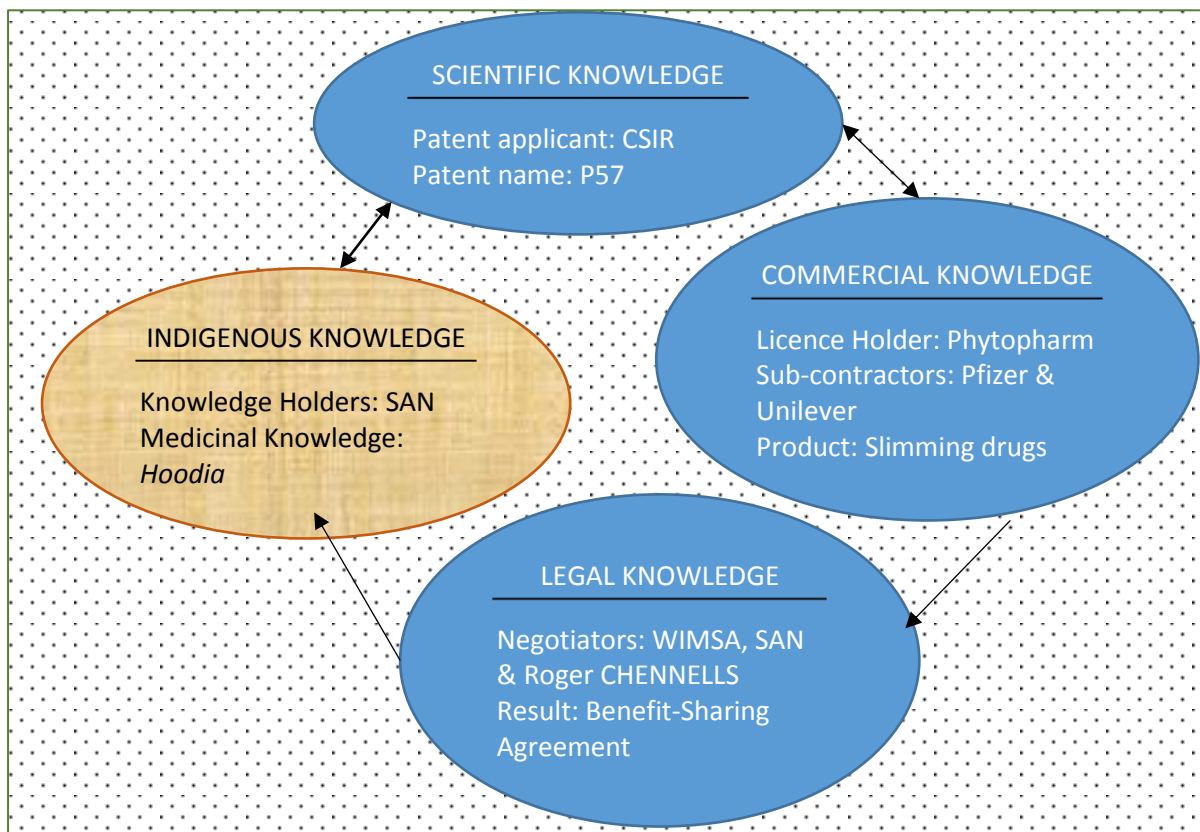


FIGURE 1.1: Knowledge domains which have added layers upon IK

1.3. Research Questions

The focus of this study was on how indigenous knowledge was codified and curated, and what issues or problems surround the curation of indigenous medicinal knowledge. The study explored and built a theory through a number of questions, issues pertaining to the *Hoodia* case and the curation of indigenous knowledge. The following objective and associated questions were used in developing the theory and arguments in the curation of traditional knowledge.

Primary Objective:

- The primary objective of this study is to define a proposed framework for the management of indigenous knowledge across the various ontological domains in possible biopiracy cases.

Associated Questions:

- How has indigenous knowledge been transformed through codification in various epistemological regimes?
- How do different knowledge domains operate within the framework of analysis?
- What kinds of information were codified in the different knowledge domains and in what ways were contexts changed?
- What changes do documentation, curation or codification of information effect on indigenous knowledge?

1.3.1. Research Objectives

The Open Access (OA) movement entails mainly (1) publishing “peer-reviewed journal literature” and (2) “removing access barriers to...literature [to] accelerate research [and] enrich education” (Budapest Open Access Initiative: 2002). This means free and unrestricted access of research and literature to the public via online platforms. However, the effects of making indigenous medicinal knowledge available online is that it will be much easier for pharmaceutical and biotechnology corporations to tap into it easily as IK will be in the public domain.

There were three objectives of this study, and each objective was essential and related to the primary objective and the associated questions. They were as follows:

1. To understand the methods and means through which indigenous knowledge was codified and curated by the CSIR, Phytopharm, Pfizer, and Unilever;
2. To explore how the knowledge about *Hoodia* moved from being indigenous to be held or owned by the CSIR, Phytopharm, Pfizer and Unilever; and
3. To trace how the San people’s knowledge about *Hoodia* was transformed from being indigenous to being applied in scientific, commercial and legal knowledge domains.

1.4. Underlying Assumptions

The researcher assumed that pharmaceutical companies invest a considerable amount of money in research to discover new drugs. To reduce costs and avoid duplication, pharmaceutical and biotechnology companies would rather engage with

indigenous communities and tap into their knowledge in the process of finding and producing drugs from plants. Aside from reducing costs in research, pharmaceutical companies will have a return in revenue after the drugs are produced and sold commercially.

The scientific community might assume that medicinal knowledge held by indigenous people is crucial to discovering better medicine and should therefore be used for the benefit of the world. The researcher assumed that pharmaceutical companies as well as research institutions view indigenous knowledge as very useful in medicinal development and should thus be in the public domain for public benefit. Documentation of indigenous knowledge leads to patents being applied for by research institutions as indigenous knowledge is mostly not recorded. It is also assumed that the curation of the San people's knowledge about *Hoodia* was subjected to several changes as it passed through different knowledge domains. These changes due to codification and application in different knowledge domains would in effect be viewed as de-contextualisation of indigenous knowledge.

1.5. Significance of and Rationale for the Study

Scientists and biotechnology companies look at traditional communities as holders of knowledge related to the uses and applications of plant species. Indigenous people and communities are also perceived to hold the knowledge and keys to unlock many medical woes affecting society today. As such, indigenous medicinal knowledge is prospected to develop technologically and clinically-tested medicine that is produced on a large scale to address health issues. Although this study did not address policy and legal issues in greater detail, it provided some arguments and backgrounds regarding *Hoodia* and the knowledge applications added to indigenous knowledge. It explored how value-addition and bioprospecting have led some institutions to exploit indigenous knowledge, communities and their resources through patents and biopiracy projects.

The rationale for this study was that tracing the path of curation through various interest groups involved in the *Hoodia* biopiracy case would help support the defence of future cases against biopiracy in a number of ways. For example, it can reveal

how indigenous knowledge and indigenous people are exploited by research institutions. Because there is limited literature regarding the curation of indigenous knowledge, this study was significant in further filling the gaps in literature by looking at *Hoodia* biopiracy from a different angle or perspective, that is, curation. Thus a new perspective from digital curation will be made in this study as well. The results of this study might contribute to understanding the concept of palimpsest in relation to indigenous knowledge. It might also contribute to understanding what is involved in curating indigenous medicinal knowledge.

Furthermore, although there have been several Master's and Doctoral research studies being done regarding *Hoodia*, minimal or no attention have been directed toward the curation of information in a biopiracy case. Most studies that have been conducted are focusing more on the biopiracy of indigenous knowledge than on curation. By examining the concept of palimpsest in a *Hoodia* biopiracy case, we can better understand how indigenous knowledge changed with every layer of curation at every stage or institutional level within each knowledge domain. This study attempts to contribute to the knowledge base by exploring the influence of a palimpsest concept in the curation of indigenous knowledge in biopiracy cases. It also seeks to trace the curation of *Hoodia* knowledge from four domains of knowledge, namely: indigenous, scientific, commercial and legal knowledge.

1.6. Delineations and Limitations

This study was concerned with the changes that curation might have made to indigenous knowledge of *Hoodia* in relation to both content and context. It did not focus on the legal negotiations about the case between parties to find a workable solution about the issue. This study was limited to the scope of *Hoodia*, biopiracy, palimpsest and indigenous medicinal knowledge. Data collection depended on the permission from participants from institutions that were involved in *Hoodia* case. However, after several contacts proved futile, data collection depended on identifying individuals who were involved in the negotiations or from each knowledge domain. This means that the collection of data was heavily dependent on unstructured interviews and available documents such as journal articles (available literature) for comparison and building theory.

The unforeseen limitation arising from inaccessibility of interview participants for various reasons (resulting in only one formal unstructured interview being conducted, thus significantly restricting one of the sources of empirical data available for analysis) may in itself be indicative of processes that systemically erase traces of indigenous knowledge on its path to commercialisation. While the comparative lack of interview data, and resultant heavy reliance on other data sources such as literature, constitutes a weakness in this study, the validation of the emergent framework is naturally open to further research and review.

1.7. Definitions of Terms and Concepts

There are some terms and concepts that should be understood in this research study. Some are general, and others require the context within which this study has undertaken.

First and foremost, this study employed the use of several terms like *Khoi*, *Khoisan*, and *Hottentot* denoting the ethnic grouping. However, these terms are currently widely regarded as unacceptable. In addition, *Khoikhoi*, *!Kung* and other terms denote individual tribes within an ethnic grouping. Therefore, wherever these terms appear, they refer to the more appropriate and acceptable term referring to the ethnic grouping known as the *San*.

The term *curation* (borrowed from Latin *curare*, meaning to “take care”) can be defined as the management or oversight of cultural heritage and other resources or “the act of curing or healing” a resource (Abram, 2014: 25-26). This implies that something is intended to be curated if it is in a bad state, feared to be rare and highly valuable, or fragile. Therefore, for future use, these resources should be preserved to prevent them from being lost forever.

As mentioned in the beginning, indigenous knowledge is also referred to as traditional knowledge and these terms have different definitions because they cover a different scope, but their meanings are closely related. Firstly, *indigenous knowledge (IK)* is defined as “a body of knowledge belonging to communities or ethnic groups, shaped by their culture, traditions and way of life” (Moahi: 2007, 72).

In other words, this knowledge is embedded in the lives of people and has become part of their existence. It is knowledge that follows “serious contemplation and reflection on human behaviour and nature of things and life”, and it is also very “adjustable and adaptable for all people for all time” (Chivaura: 2006, 218). This simply implies that with this kind of knowledge people can easily adjust their lives in accordance to the knowledge which they acquire within the community. In addition, it is assumed that indigenous people have also learned to appreciate nature and conserve it for future use.

Secondly, *traditional knowledge (TK)* is mainly seen as knowledge held by a community rather than individuals. It is therefore collective, and is defined as

...a collective intellectual property of a society based on a systematic and coherent body or stock of culture-specific knowledge of indigenous and local communities occupying a specific geographical territory about the relationship of living beings with one another and with their environment (Kamau, 2009: 160-161).

It is important to note that this definition mentions indigenous as well. Like indigenous knowledge, traditional knowledge also include people’s “beliefs based on orally preserved past experiences and observations of older generations” and it is in addition “culturally transmitted down through generations by the indigenous and local community” (Kamau, 2009: 161). This is to an extent the wisdom, knowledge, and the ways or methods which indigenous people have developed over the generations; the tried and tested means of living and adaptation to the environment and living with others.

Therefore, the terms *indigenous knowledge (IK)* and *traditional knowledge (TK)* will be used interchangeably in this study.

Another important term that needs to be defined is *Hoodia*, which resembles most cactus trees. It is a member of the Apocynaceae family defined as a “part of the succulent flora in southern Africa, and are a minor source of food and moisture to a range of wildlife species in arid ecosystems” (Convention on International Trade in Endangered Species of Wild Fauna and Flora [CITES], 2004: 2). This implies that it

is a plant that has plenty of juice or liquid, which can be used as a source of food or water, especially for people.

Ebermann (2012: 11) defines *traditional medical knowledge* as “the knowledge that local and indigenous peoples hold of the healing properties of plants.” However, this knowledge is not only limited to healing properties of plants, but it also applies to other purposes such as driving evil spirits away. Additionally, “while it consists mainly of plant and medical knowledge it incorporates certain rituals and practices that stem from beliefs without scientific foundation” (Ebermann, 2012: 14).

Bioprospecting “refers to corporate drug development based on medicinal plants, traditional knowledge, and microbes” (Hayden, 2003: 1). Originally, Reid *et al.* (in Robinson, 2010: 11) defined bioprospecting as “the exploration of biodiversity for commercially valuable genetic and biochemical resources.”

Another term closely related to bioprospecting is biopiracy. According to the Action Group on Erosion, Technology and Concentration (ETC Group, n.d.) *biopiracy* refers to the “appropriation of the knowledge and genetic resources...by individuals or institutions that seek exclusive monopoly control (patents or intellectual property) over these resources and knowledge”.

1.8. Outline of the Dissertation

This study consists of six chapters and includes appendices. **Chapter 1** is the introduction and provides a background or foundation to the study. **Chapter 2** covers the literature that was reviewed and definition of terms. **Chapter 3** provides an explanation of the methodology used. **Chapter 4** presents an overview of the theory based on palimpsest, and is part one of the findings section. **Chapter 5** is a continuation of Chapter 4 and is a detailed explanation of the theory, emphasising major points with detail with some examples. It is part two of the findings section. **Chapter 6** is the summary and conclusion. Finally, the **Appendix** includes unstructured interview questions, consent form, and a letter of ethical clearance.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

Who owns medicinal knowledge and how has indigenous medicinal knowledge found its way in medical institutions, scientific, and commercial knowledge domains? These are some of the questions that have been raised in this study which can be answered through available literature. The reviewed literature relates to the key concepts found in the title of this study as well as the related areas. These include biopiracy, bioprospecting, and *Hoodia*. This chapter provides a basic understanding to the study, and it should be noted that literature is part of the data collection process in grounded theory approaches.

The indigenous medicinal knowledge at the core of this study is the San's knowledge of *Hoodia*, which is gained and mastered through life experience. Moahi (2007: 72) refers to "life experience,...which is passed down from generation to generation through word of mouth in the form of folklore, idioms, proverbs, songs, rites of passage and rituals" as the source of indigenous knowledge. Similarly, Kargbo (2006: 73) mentions that IK is "expressed in legends, music, proverbs, stories, myths, beliefs, rituals, language, dance, songs, art, agricultural practices, materials, animal breeds and plant species." The emphasis, in this study, is on plant species. Together, these activities or forms of indigenous knowledge form a shared identity for people in a community.

It has been found that one of the methods used in collecting plants for pharmacological screening is known as "*ethno-directed sampling*...[which] is based on the traditional knowledge of medicinal plant use" (Cotton, 1996: 316). More recently, ethno-directed sampling has been referred to as an "ethno-pharmacological bioprospecting project", which simply means that "the pharmaceutical company's field team or intermediaries interact with local and indigenous groups with the intention to use their knowledge in order to find pharmacologically active plants" (Ebermann, 2012: 124). Usually this is done without informing local and indigenous

groups, thus deceiving them to reveal their knowledge to research teams. Therefore bioprospecting companies such as pharmaceutical firms continue to seek and exploit local and indigenous groups for their specialised knowledge on medicinal plants or biodiversity resources. Since indigenous knowledge in southern Africa is mostly oral, these research explorations document and curate this knowledge for future reference, use and study. Patents are acquired at the end of such explorations or bioprospecting initiatives without the knowledge and acknowledgement of indigenous people.

2.1.1. Documentation and Curation

Botanists, researchers, and others documented the uses of *Hoodia* in different ways. For example, Francis Masson records that “the stems of *Trichocaulon piliferum* were eaten by the ‘Hottentots’”, and Rudolf Marloth records how it “removed the pangs of hunger” (Wynberg & Chennells, 2009: 93). Thus Masson gives an idea of the plant as food, and Marloth went further to reveal why it is eaten.

On the one hand, a document provides details about something, whereas to document means “to record the details of something” (“Document”, 2010: 431). On the other hand, Reitz (2014) defines documentation as a “process of systematically collecting, organizing, storing, retrieving, and disseminating...documents” for the purpose of facilitating research or preservation. Traditional knowledge, especially relating to medicine, has not been recorded in documents by the San and other traditional peoples but it has been transferred orally from generation to generation. One reason why indigenous knowledge should not be curated is that indigenous people and local communities feel that “they do not have adequate control over research conducted into their cultures, nor over how their cultures are recorded and presented to the public at large” (Wendland, 2009: 80). In other words, indigenous people might feel that their knowledge is detached from the cultural context and they now have no control or right over it. However, when it is codified differently or applied scientifically, they recognise its trail as originating from within their cultural setting.

The word curation is derived from Latin *curare*, which means ‘to take care of’ (Kreps, 2009: 195) and it is usually used in the context of preservation and mostly in

museums. Therefore curation can be defined as the management or oversight of cultural heritage and other resources or “the act of curing or healing” a resource (Abram, 2014: 25-26). One of the keywords in curation is preservation, and as such it could be said that indigenous communities curate their knowledge not in documents or databases but by passing traditional knowledge to new generations. Through this oral transfer, their knowledge is preserved for generations. This oral and ‘fieldwork’ method of knowledge transfer and preservation, acts as the curatorial agency that has shaped “public memory and community identity” for indigenous people (Sabharwal, 2015: 49). However, this ‘curation’ is vulnerable to outside influence such as research and scientific knowledge.

Nonetheless, based on the documentation, the CSIR began to conduct a scientifically-validated observation of appetite suppression caused by extracts derived from *Hoodia* in 1963. The results of these observations showed that the animals “lost their appetite, accompanied by a loss of weight, with no apparent toxic effects” (Maharaj, Senabe & Horak, 2008: 1). This means that with the clinical trials conducted on animals and even human subjects, scientists used indigenous knowledge but were now documenting something different yet based on the same knowledge. The underlying knowledge was that *Hoodia* could suppress hunger and thirst, but the exact chemical responsible for this was now under study. This shows a pattern in which indigenous medicinal knowledge can change ontological context from being indigenous to being scientific.

Another layer of curation is when scientists from the CSIR “filed a patent in 1996 to reserve the right to make use of the molecule...as an anti-obesity drug” (van den Daele, 2008: 255). In addition, “a licence to develop and market products from the patented molecule” contracted to Phytopharm in 1997 (van den Daele, 2008: 255) brought about contextual and semantic changes of indigenous knowledge. Because of the commercialisation of *Hoodia*, indigenous knowledge was misrepresented as many vendors sought to capitalise on its popularity by selling fake products. Also, the San people ceased to own the newly ‘created’ knowledge as it began to be Westernised through documentation and further research. Indigenous knowledge was also misinterpreted as there was no acknowledgment of the origins of the inspiration to begin research on *Hoodia*.

2.2. Historical Backgrounds

The historical background serves as an introduction on how indigenous knowledge was adopted first by the explorers and later by colonialists as a part of Western empirical knowledge. It is the researcher's belief and understanding that the coming of the colonists and explorers led to the exploitation of the San people's knowledge of *Hoodia*, which initially started by mere observation, recording these observations, as well as their limited associations with the San. The main focus of this study was on the recording or curation of indigenous knowledge related to the *Hoodia* plant.

2.2.1. Bioprospecting

The case of biopiracy cannot be discussed without linking it to bioprospecting because the two are related. According to Hayden (2003: 1), bioprospecting "is the new name for an old practice [referring] to corporate drug development based on medicinal plants, traditional knowledge, and microbes culled from biodiversity." The use of '*old practice*' in this definition suggests that this practice already existed before modern times but it was not called bioprospecting as it is today. The practice known today as bioprospecting has been taking place since the Bronze Age. A good example of this is found in 1495 BC "when Queen Hatshepsut of Egypt sent a team...to the land of Punt (Somalia/Ethiopia)" to obtain species of *Boswellia*, a plant whose resins produced frankincense (Juma, 1989: 38). However, the modern phase of bioprospecting can be traced back to the time of the European explorers starting from the 1400s CE, which resulted in or led to colonialism.

Therefore, "bioprospecting is not merely a 'channel' along which travel local knowledge, biodiversity, and community...interests" but it has also become a tool that drives the production, "invoking, and giving shape to these subjects, objects, and interests in the first place" (Hayden, 2003: 6). What this entails is that pharmaceutical companies, through research institutions or teams, make their way to indigenous communities with the aim of extracting resources using indigenous medicinal knowledge. After obtaining the resources and applying for patents, they seek ways in which to compensate the indigenous communities. This leads to the belief that they exploit biodiversity resources and indigenous peoples. Based on this

assumption or belief, a conclusion can be drawn that because of the diversity of medicinal plants, bioprospectors identify plant species for their chemical components and thus have the potential to play a role in the medicinal market on a global scale (Coetzee, Jefthas & Reinten, 1999: 160).

The aim of bioprospecting is to explore the chemical components of plant species in the hope of developing drugs, which have a high market value. In essence and consequently, these interests have led to “bioprospecting [being] done on all plants in South Africa to determine among other things [their] pharmaceutical potential” (Coetzee, Jefthas & Reinten, 1999: 160). However, the search for pharmaceutical potential of plant species leads to exploitation of these biodiversity resources. As studies are carried out, plants are classified and recorded according to their usefulness and effectiveness. This creates a new layer of knowledge which means these plants are looked upon by the outside as having the potential for something special, such as a cure. This leads to more research and patent applications.

In 1492 CE, Christopher Columbus collected a number of useful plants from the Americas, including the ‘discovery’ of tobacco from Cuba based on the observation of local practices (Cotton, 1996: 4; Wynberg & Laird, 2009: 71). Without the observance of the practices of indigenous people, the usefulness of plants would not have been known by the Western world. Therefore, what started as collections of plants, herbs and spices resulted in trade, economic expansion and eventually conquests. This is perhaps because countries began to realise the usefulness and economic potential of these plants and now wanted them to be available or supplied on a large scale to boost their economies. Also, it is important to note that the selection and collection of these plants, herbs and spices was undertaken after the observation of how and for what purposes indigenous people used them. The explorers recorded all these spices, herbs and plants which they observed from the indigenous people’s use, especially for the purposes of food and medicine. The development of the Spice Routes and the numerous cases of colonialism in Central Asia (especially India) over hundreds of years could be seen as a result of bioprospecting.

However, Osseo-Asare (2014: 167) claims that the “San were the first ‘bioprospectors’ in Southern Africa”, a claim that is perhaps due to the San people’s previous lifestyle of hunting and gathering. This lifestyle might have led them to “[experiment] with different species of wild plants, identifying vegetation containing nontoxic sap and juices” (Osseo-Asare, 2014: 168). Unfortunately these observational claims do not point out the exact species of plants or whether these included *Hoodia*. It can however be deduced that these experimentations might have led to the discovery of *Hoodia*’s effects on hunger and thirst, and the development of knowledge for preparing it for consumption.

There are three dependent benefits or objectives that justify bioprospecting. These are

the pursuit of novel chemical compounds useful for the development of new drugs to combat diseases through studying biological material found in biodiverse regions; compensation offered to source country collaborators which generates economic activities in developing nations; [and that] bioprospecting projects create more motives for biodiversity conservation as more people recognize its value as a reservoir of future genetic resources (Takeshita, 2001: 261).

As research is carried out through bioprospecting projects, indigenous knowledge of plant uses or medicinal knowledge in general is being recorded and carefully curated for further refinement and subject to clinical tests.

2.2.2. Biopiracy

The novelty of traditional knowledge in the United States and elsewhere allows it to be patented with no compensation given to the actual inventors – a process known as “biopiracy” (Garcia, 2007: 6). This term is a “compound word consisting of ‘bio’, which is an abbreviation for ‘biological’, and ‘piracy’” (Dutfield, 2009: 264) which, when put together, can thus be simply defined as stealing indigenous people’s knowledge of plants or biodiversity. The use of traditional knowledge is therefore unauthorised and patents usually cover “a refinement of the traditional knowledge” (Dutfield, 2009: 265), with the indigenous people having little or no knowledge of these acts or plans. The Action Group on Erosion, Technology and Concentration defines biopiracy as

the appropriation of the knowledge and genetic resources of farming and indigenous communities by...institutions that seek exclusive monopoly control (patents or intellectual

property [rights]) over these resources and knowledge (Action Group on Erosion, Technology and Concentration [ETC Group], n.d.).

Osseo-Asare (2014: 3) asserts that “by the Early Modern Period (1450s-1800s), Africans sought treatments in forests, fields, and outskirts of farms, redistributing herbal seeds and medicinal recipes” within communities and families. The forests, fields, and outskirts of farms is where most medicinal plants and herbs are found. Each variety depends or grows on different soil types, biodiversity distribution, or temperature. The community circle benefits from an individual’s knowledge as a whole, whereas the family circle continues the tradition and carries on with the knowledge by passing it to new generations.

In addition, Osseo-Asare (2014: 3) points out that “European colonists adapted these indigenous medicinal recipes in hospitals and laboratories while simultaneously restricting healers from practicing their trade (1800s-1950s)”. These restrictions slowly allowed transfer of the ownership of this indigenous knowledge as the recipes were introduced in Western medicine and medical practice. As the indigenous knowledge of medicinal recipes came to be used in hospitals and laboratories, it was codified and given new meaning: the context was changed as well as the ways in which indigenous people prepared and used such medicines. The restrictions on the healers to practise their trade seem to have been such that indigenous peoples would depend on Western medicine, to whose effect they had contributed through their use and knowledge of plants.

However, this was not so in the beginning when the Dutch, under the leadership of Jan van Riebeeck, settled at the Cape (today Cape Town) from 1652 onwards. The evidence of this is found in records of two Dutch doctors:

Ten Rhijne noted that Khoikhoi medical practitioners refused to divulge the contents and mixtures of their medicines. Kolb similarly noted that: ‘the doctors suffer none to see ‘em gather and prepare their remedies. All their salves and ointments, powders and poultices are nostrums; and they keep the preparations very secret’ (Pooley, 2014: 23).

This proves that the San were not willing to disclose their knowledge to foreigners. However, the observations of these doctors and others were probably included or adopted in Western practices through records they kept. In addition, as new

administrators replaced old ones, things began to change. As conflicts broke out between the Dutch and the Khoikhoi, the Dutch could have taken advantage of the situation in forcing the San and recording the knowledge of the Khoikhoi (San).

To make matters even worse, “[a]fter independence, scientists at African research centres interacted with their own relatives and healers in rural areas in their quest to find new pharmaceuticals, taking valuable plants into their laboratories (1960s-2000s)” (Osseo-Asare, 2014: 3). This might have been done to make known the values of indigenous knowledge as well as to preserve the knowledge. However, the way in which it was done is questionable as it seems African scientists wanted (Western) recognition for these breakthroughs in medicine. The result of this lack of recognition for the contributions of indigenous people and healers is the acquisition of the rights or registration of patents based on indigenous knowledge by outsiders. The beneficiaries of this conception would be scientists instead of indigenous communities. To this end, Osseo-Asare (2014: 6) describes their intentions as follows:

To manage personal gain, African scientists filed patents internationally to protect their research findings without affording benefits to herbalists or communities of plant users. [C]ases indicate that African scientists have sought exclusive rights to drug-making processes, often without fully acknowledging healers and communities from their own countries who also helped shape information about plants.

This gives a clear view that the exploitation of indigenous knowledge did not only come from without in the form of colonists but also from within, in this case African scientists. What might have led African scientists to break community trust is their hunger to succeed and be recognised in the field. However, these scientists might have been working in a colonial or Western paradigm. Therefore, they may not have seen it as piracy as they originated from those communities. Probably with deception at fault, a closely similar incident occurred during the 1950s and 1960s when the San people in Botswana and Namibia helped bio-prospectors from the United States and South Africa as

!Kung plant experts provided details on 113 vegetables and fruits that they used for surviving dry conditions in the Kalahari. By 1965, [they]...helped the researchers document 190 plants, seventy of which were edible (Osseo-Asare, 2014: 180-182).

Similarly, with regard to pharmaceutical research which can lead to ownership of indigenous knowledge particularly related to medicine,

African scientists have been complicit, sending specimens abroad in the name of research collaborations without understanding that Africa rarely gets a share of any economic benefits that such research brings (Chinsembu, 2006).

Bio-prospectors would use certain products as gifts in exchange for valuable information and knowledge of indigenous medicine and life skills of the San people. As Hall (2011) clearly states that “*Hoodia*...has been ‘stolen’ from its original owners, the San people”, pharmaceutical companies have been searching for a cheaper way to conduct research without using a lot of money by getting the know-how from the local and indigenous people. Therefore, biopiracy is mainly driven and complicated by patent laws which do not make sense when applied to indigenous knowledge systems. These laws originate from the industrialised countries and have been imported to developing countries through colonialism. A patent is defined as a document “which confers the right to secure the enforcement power of the state in excluding unauthorised persons, for a specified number of years, from making commercial use of a clearly defined invention” (Machlup, 1958: 1).

In the case of *Hoodia*, a patent was filed without the knowledge of the San people. In addition, while scientists were transforming *Hoodia* into an appetite suppressant at CSIR, they intentionally “omitted the names of Khoi-San informants who may have helped shape their investigations” (Osseo-Asare, 2014: 184). This is an indication that scientists at CSIR tried to eliminate the connection which involved the San people’s knowledge and contributions to the outcome of P57 (Programme 57), making this a case of biopiracy. As mentioned in Chapter 1, P57 refers to a chemical molecule or compound isolated from *Hoodia*. The concept of biopiracy is concerned or deals with issues related to “law, ethics, morality, and fairness” (Mgbeoji, 2006: 12) especially in relation to indigenous knowledge and non-Western communities.

2.2.3. Hoodia Use

Hoodia is a succulent plant belonging to the cactus type of plants and it is indigenous but not limited to southern Africa. The species recognised for “their appetite-suppressing properties are *Hoodia gordonii*, *H. currorrii*, *H. flava*, *H. lugardii*..., *H.*

piliferum..., [and] *H. officinale*” (Van Wyk & Gericke; White & Sloane, as cited by Wynberg & Chennells, 2009: 119), referred to in this dissertation as *Hoodia*. It is important to note also that the original or vernacular names for *Hoodia*, as found among the San communities include “*ghaap*, *Igoa.-l*, *Ikhoba.b*, *Ikhowa.b*, *Igoai-l*, *Ikhoba*, *Ikhoba.bls*, *Ikhobab*, *Ikhowab*, *Igoab*, *otjinove*, *!nawa#kharab*” (Convention on International Trade in Endangered Species of Wild Fauna and Flora [CITES], 2004: 1).

South Africa, Namibia and Botswana, where most of the San population live, have a diversity of plant species, many of which are used for food and medicine by the San and other indigenous communities. Over the years, indigenous communities have identified the uses of a variety of plant species. Because the creation of traditional knowledge “often goes back to the prehistory of the community,” it becomes difficult “to trace its origins” (Ebermann, 2012: 15). This is the case with the San people’s knowledge of *Hoodia*. What makes it even more difficult to trace the history of their knowledge of *Hoodia* is that there are no records available as indigenous knowledge is “passed on orally from generation to generation and continually refined, enhanced and improved by integration of new knowledge into existing knowledge...” (Ebermann, 2012: 15).

Nonetheless, the references of the use of *Hoodia* by the San people is found from the records of the “European settlers, missionaries, and explorers” during the 1700s (Osseo-Asare, 2014: 168; Wynberg & Chennells, 2009: 93). These groups of people recorded the information as they saw the usefulness in prepared recipes and the actual use of plants and herbs for medicinal purposes. It might also have come at a time when colonists were not adjusting to local conditions, which led them to observe the practices of the San people in order to cope as well. The evidence that the San are the original owners of the *Hoodia* knowledge lies in the fact that

from the seventeenth century, Khoi-San lived near the Atlantic Coast of Southern Africa and provided information on hoodia to new migrants who came from Africa, Europe and Asia....Bottled specimens, herbarium sheets, letters, and recorded discussions provide evidence of the circulation of Khoi-San plant knowledge within England by the late nineteenth century (Osseo-Asare, 2014: 168 & 172).

Under unknown circumstances, some San communities in Namibia and Botswana “provided names, uses, and samples of plants” to researchers or bioprospectors during the 1950s and 1960s (Osseo-Asare, 2014: 174). The samples and names of plants might have included the *Hoodia* species. However, the knowledge of the effects of *Hoodia* on hunger and thirst was acquired from the earlier writings of others. For example, in 1932, a German pharmacist named Rudolf Marloth made a description that “provided perhaps the first published indication that *Hoodia* might thwart hunger” (Osseo-Asare, 2014: 175; Wynberg & Chennells, 2009: 93).

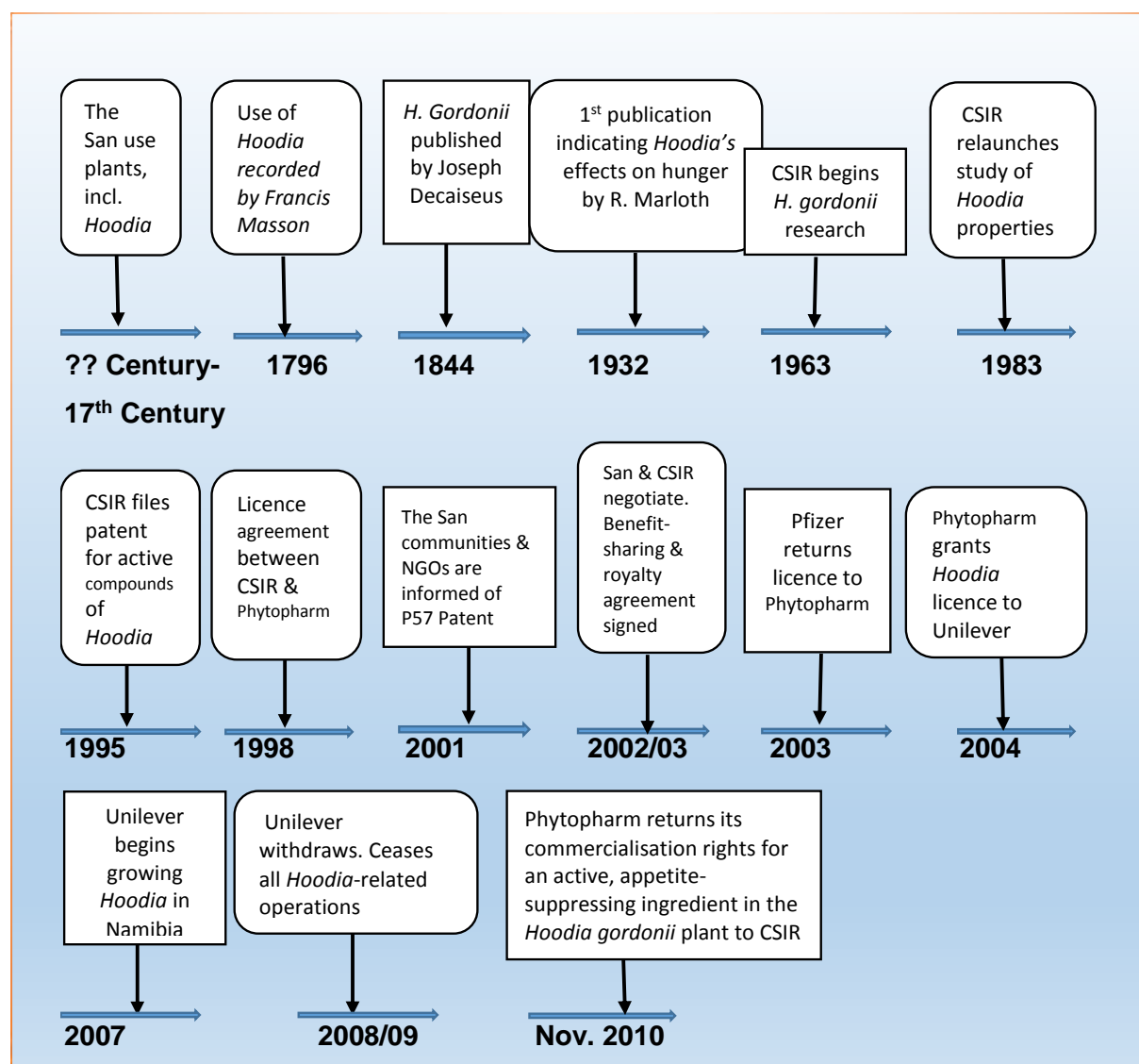


FIGURE 2.1: Timeline of *Hoodia* usage and development

The description of Marloth is as follows:

This is the real ghaap of the natives, who use it as a substitute for food and water. The sweet sap reminds one of licorice [*sic*] and, when on one occasion thirst compelled me to follow the example of my Hottentot guide, it saved further suffering and removed the pangs of hunger so efficiently that I [Marloth] could not eat anything for a day after having reached the camp (Wynberg & Chennells, 2009: 93).

While this description led others to study the plant and add its species to the family of succulent plants, it would later lead research institutions such as the CSIR to start research with *Hoodia* in the quest to discover compounds that would be transformed to medicine or drug in an effort to fight obesity. Violations of research ethics and other rights were also to take place as scientists neglected to recognise the contributions of the San people, and acknowledge that they are the original owners of the knowledge. *Figure 2.1* sketches a timeline with key dates on the usage and continued developments in an effort to commercialise of *Hoodia*.

2.3. Legal Aspects

Indigenous Knowledge operates within customary law and is not easily suited to Western legal systems. As such, traditional knowledge is held within family circles known to the entire community, and is thus hardly disclosed to outsiders. For example, “families guarded—not patented—such indigenous knowledge, passing it down from generation to generation” (Chinsebu, 2006). Therefore, indigenous knowledge is for the benefit of the entire community, whereas scientific knowledge seeks patent laws and intellectual property rights (IPR) laws for ownership and financial gain. Article 2(1) of the Convention for the Safeguarding of the Intangible Cultural Heritage (ICH Convention) adopted by the United Nations Educational, Scientific and Cultural Organisation clarifies that indigenous knowledge, as part of the intangible cultural heritage,

is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity (United Nations Educational, Scientific and Cultural Organisation [UNESCO], 2003: 2).

The patent system is exploitative, as the rights of indigenous people are waived to Western institutions in the name of research. The result of this system is that

indigenous knowledge and communities are not recognised as the original owners of the knowledge that leads to the development of medical drugs.

In addition, the intellectual property rules favour Western institutions and countries but put indigenous communities and developing countries at a disadvantage. It is understood that the rights of indigenous communities to their knowledge cannot expire because “traditional knowledge is handed down from generation to generation and remains the property of the community as long as the community exists” (van den Daele, 2008: 261). In contrast to communal laws, the Western legal system “limits all intellectual property rights in time” (van den Daele, 2008: 261). This means there is a time frame set when resources or the output is embargoed in relation to use or copying.

2.4. Summary

Bioprospecting is a term used to describe the situation in which companies, especially from the pharmaceutical industry, seek out biological resources (plant species) in order to develop new medical drugs. Most of these resources are found in developing countries, and therefore pharmaceutical companies on bioprospecting missions seek the guidance of indigenous peoples in discovering plant uses from which to develop medicine. Closely related to bioprospecting is biopiracy – a term used to refer to the theft of biological resources. Both bioprospecting and biopiracy have led to the misappropriation and exploitation of the San people’s knowledge of the *Hoodia* plant.

CHAPTER THREE

METHODOLOGY

3.1. Introduction

This chapter examines Grounded Theory (GT) in general and constructivist grounded theory in particular as the methodology employed in this study. Among the seven characteristics of Grounded Theory to be discussed in this chapter include "...theoretical sampling, constant comparative analysis, coding and categorizing the data, literature as data sources, and theory integration" (Cox-Davenport, 2010: 33). Although seven are mentioned, some will not be discussed based on the scope of the study. This study, situated within the interpretivist paradigm and taking a qualitative approach, is exploratory in nature as the goal is mainly, according to Stebbins, "the production of inductively derived generalisations about the group, process, activity, or situation under study" and these generalisations will be woven in Grounded Theory (El Hussein et al., 2014: 8). In brief, exploratory studies enable "researchers to conduct a fairly comprehensive, open-ended search for relevant information, identify the major themes and patterns associated with the phenomenon of interest, develop or adopt constructs that embrace the patterns...and refine questions" (Ogawa & Malen, 1991: 271).

The study applies an inductive qualitative research approach in tracing the curation of indigenous knowledge in a biopiracy case. Qualitative approaches make it easier to understand a phenomenon, the problem or event being studied (Kumar, 2005: 12). Inductive research builds up from specific issues to generalisations and Soiferman (2010, 7) observes:

In making use of the inductive approach to research, the researcher begins with specific observations and measures, and then moves to detecting themes and patterns in the data.

This allows the researcher to form an early tentative hypothesis that can be explored.

As opposed to the deductive approach, induction is "a type of reasoning that begins with the study of a range of individual cases and extrapolates patterns from them to form a conceptual category" (Charmaz, 2006: 188).

3.2. Description of the Research Method

This research study will use the qualitative methodology for exploring the research problem. Most qualitative research is inductive in nature. As such, an inductive approach “begins with specific observations and moves toward the development of general patterns that emerge from cases under study” (Rudestam & Newton, 2001: 37). The case under study here is the San-*Hoodia* biopiracy case. A case means a situation or event that is surrounded or contains some circumstances during a specified period of time. It can also be “the circumstances of the instance that are being studied” to find out why, where, when and what happened as well as who was involved (Thomas, 2016: 13). This particular case has two main variables: *Hoodia* and biopiracy, which the researcher investigates to reach the desired outcome of the research, especially in addressing research questions and developing a theory using the concept of palimpsest.

There are several methodologies used in qualitative research, which different authors have mentioned. Marshall & Rossman (2016: 17-19), for example, have identified the following as major genres in qualitative studies: ethnographic, phenomenological, sociolinguistic, Grounded Theory approaches, and case studies. From these genres, this study will be using the Grounded Theory approach. Grounded theory is both a methodology and theoretical framework. Some researchers apply it as a theory in research employing other methodologies. It is applied in this study as a methodology.

Grounded Theory was developed in 1967 by Barney Glaser and Anselm Strauss “in order to assist sociologists in systematically gathering and analysing data in the process of theory development” (Cox-Davenport, 2010: 33). As a result, it has been defined as “the attempt to derive theories from an analysis of patterns, themes, and common categories discovered in observational data” (Babbie, 2010: 307). The three types of Grounded Theory are classic, constructivist, and objectivist (see Figure 3.1). However, some authors refer to the three evolved grounded theories as “the original version by Glaser and Strauss (1967); the Glaserian approach (1992) and the Straussian approach (1990)”, whereas constructivist grounded theory by Charmaz

(2000) is referred to as a “variation” of the three versions (Kanyangale & Pearse, :190). Moreover, the original version has been defended and developed further by Glaser and it is what is now commonly known as “*Classic GT*, or *Glaserian GT*” (Kenny & Fourie, 2014: 5). This study will be using a constructivist grounded theory approach, with the focus being on the curation of indigenous knowledge and the changes that occur when this happens.

Grounded Theory, in general, is defined as “an overall approach to inquiry with the primary purpose of generating theories that explain the interactions and/or settings of interest” (Marshall & Rossman, 2016: 18). These theories emerge from the data or the available literature. It is also defined as “a method of conducting qualitative research that focuses on creating conceptual frameworks or theories through building inductive analysis from the data” (Charmaz, 2006: 187). More specifically, a constructivist grounded theory approach “places priority on the phenomena of study and sees both data and analysis as created from shared experiences and relationships with participants and other sources of data” (Charmaz, 2006: 130).

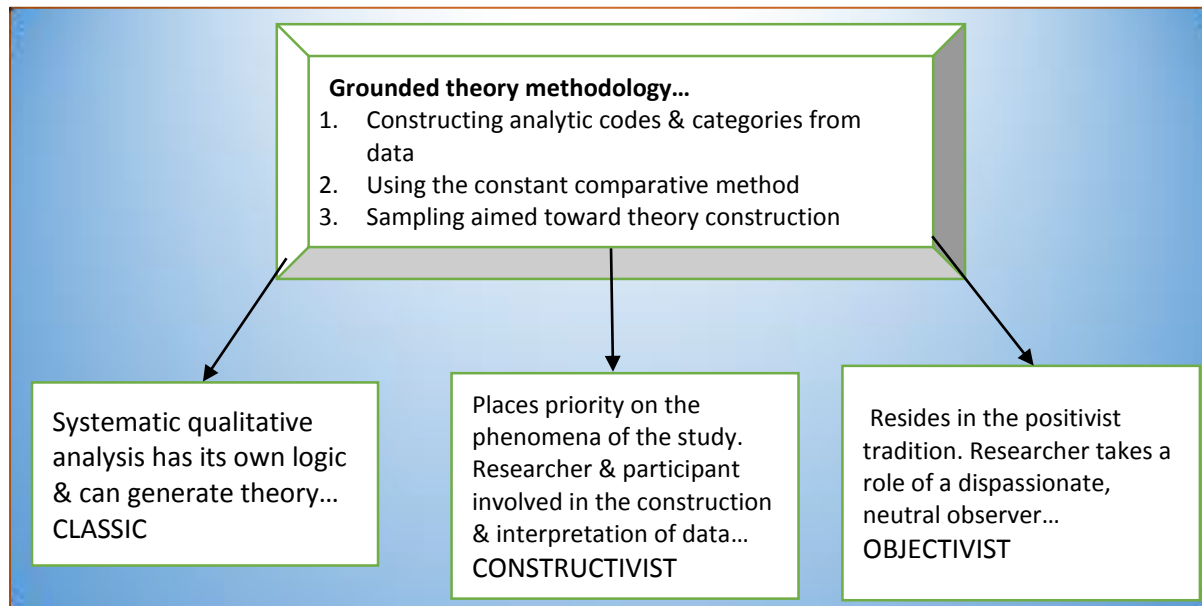


FIGURE 3.1: *Types of grounded theory*

Constructivist grounded theory approaches stipulate that theories and data are constructed by the researcher in interaction with and interpretation of the social phenomena of interest; thus they are not discovered, as the original ideas of

grounded theory suggested (Marshall & Rossman, 2016: 19; Charmaz, 2000: 524). The phenomena of interest in this study are the presumed changes other knowledge domains can have on indigenous knowledge as a result of curation and other activities such as biopiracy. These changes include, but are not limited to, de-contextualisation, misinterpretation and misrepresentation of indigenous knowledge when it is codified and curated to form part of the scientific and Western knowledge systems.

3.2.1. Rationale for Choice of Method

The researcher has chosen GT methodology over other methodologies because it enables “researchers to examine topics and related behaviours from many different angles—thus developing comprehensive explanations” (Corbin & Strauss, 2015: 11). In addition, Grounded Theory procedures can be used to “uncover the beliefs and meanings that underlie action, to examine rational as well as non-rational aspects of behaviour...” (Corbin & Strauss, 2015: 11). Thus, GT – especially constructivist GT – enabled this researcher to construct meaning based on data and to finally construct a theory based on the concept of palimpsest.

Similarly, other GT methods such as the Straussian or objectivist grounded theory could not be used in this study because it would mean that the researcher

...takes the role of a dispassionate, neutral observer who remains separate from the research participants, analyses their world as an outside expert, and treats research relationships and representation of participants as unproblematic (Charmaz, 2006: 188).

On the contrary, constructivist grounded theory, acknowledges the subjectivity and the “researcher’s involvement in construction and interpretation of data”, with the involvement of participants (Charmaz, 2014: 14). For this study, GT was chosen to describe patterns used by the CSIR, Phytopharm, Pfizer, and Unilever in codifying, re-codifying, and making significant changes to traditional knowledge through the application and use of scientific and commercial knowledge. GT was also chosen to develop a theory centred on understanding curation in a biopiracy case by using the concept of palimpsest.

Since constructivist GT lies within the interpretive paradigm, it aims “to gain an interpretive understanding of the empirical phenomenon so that the theory

constructed will be credible, original, [and] useful...” (Charmaz *cited in* El Hussein et al., 2014: 10). In addition, a constructivist grounded theory “lies between post-modernist and post-positivist approaches to qualitative research” whereby multiple voices, views and visions are given relating to the phenomena under study (Charmaz, 2000: 525). Finally, an inductive approach was chosen because although “the conclusion is not certain, merely probable, but [it] does contain new ideas; that is, a creative leap may be necessary to reach the conclusion” (Preece, 1994: 55).

3.3. Data Collection

Data collection does not only mean the ways in which data is collected using instruments such as interviews and questionnaires, it also means choosing a sampling strategy, and anticipating ethical issues that might arise in the process (Creswell, 2013: 145). In addition, it involves looking at the data beyond data collection, that is, data analysis and interpretation, as well as reaching the conclusion for the study. The data collection techniques used in this study follow an interpretive process wherein meaning is sought to respond to research questions and fulfil the objectives of the study. For example, the study aimed to explore how indigenous knowledge changed as scientists and pharmaceutical giants used it to develop scientific knowledge, and to seek explanations for these changes.

An alternative methodology that could have been used instead of Grounded Theory is the systematic review. However, the systematic review methodology would not have provided the researcher with the needed information or data since the essence of the analysis is founded on non-canonical information and information sources. Thus in Grounded Theory, data collection is also known as data generation, which is called upon to “acknowledge the different roles that the researcher has in relation to the process of data acquisition”, and it helps the researcher to “directly [engage] with the data source (for example, a participant) to produce materials for analysis” (Birks & Mills, 2011: 73). The strategies for generating data include working “directly with participants [to conduct] interviews or facilitating focus groups” or personally generating data “in the form of field notes and memos” (Birks & Mills, 2011: 74). Gathering GT data begins with the question: “What’s happening here?” which leads

to “either of the two levels: What are the basic social processes? What are the basic social psychological processes?” (Charmaz, 2006: 20).

3.3.1. Population and Sampling

Population is referred to as “all things or people that possess the characteristics” in which a researcher is interested to explore and to draw conclusions or generalise the findings (Leacock, Warrican & Rose, 2009: 76). The target population for this study included an advocate who worked on the *Hoodia* case, as well as archivists or librarians from the CSIR, Phytopharm, Pfizer, and Unilever. After reviewing the literature, the next stage was to engage participants through interviews by using concepts that were discovered or identified. In Grounded Theory, this process is known as theoretical sampling, which is defined as:

the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyses his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges (Glaser & Strauss cited in Birks & Mills, 2011: 69).

The purpose of theoretical sampling is “to collect data from places, people, and events that will maximise opportunities to develop concepts..., uncover variations, and identify relationships between concepts” (Corbin & Strauss, 2015: 134). Through theoretical sampling, it is “concepts and not people...that are sampled” (Corbin & Strauss, 2015: 135). In addition, theoretical sampling helped the researcher to look for concepts that were relevant to the study. Concepts were thus sampled both from the literature and from the interview.

3.3.2. Forms of Data

Data is categorised as secondary and primary, and as such the sources from which these two categories are collected from are known as secondary and primary sources. Examples of secondary sources are documents or archival records, and an example of primary sources is interviews. The different sources of data collected using Grounded Theory procedures included some of the following: “interviews, observations, videos, documents, drawings, ...newspapers, historical documents...” (Corbin & Strauss, 2015: 37). Secondary data sources were documents and articles relating to the *Hoodia* case, whereas the primary sources were the gatekeepers of

knowledge such as the archivists or librarians from the CSIR, Phytopharm, Pfizer, and Unilever, and an advocate who worked on the *Hoodia* case.

3.3.3. Data Collection Procedures

This is a description of how data was generated or collected using the grounded theory approach. Two or more interviews were supposed to be conducted, but due to the UCT #FeesMustFall¹ protests, unwillingness of intended interviewees to participate and difficulties with obtaining permission to conduct interviews, this was not possible. The 2016 UCT Fees Must Fall protests began on 6 September when students disrupted The Fees Commission hearing and blocked UCT vice-chancellor Max Price from leaving the venue. Therefore, data was generated through one unstructured interview, which was open-ended, audio recorded, and later transcribed. According to Cohen & Crabtree (2006), “these methods ensure an adequate dialog between the researchers and those with whom they interact in order to collaboratively construct a meaningful reality”. In addition to generation, data was collected from other sources such as the “literature and other documents that are already in existence...or materials can be obtained from participants” (Birks & Mills, 2011: 79). These sources were specific or related to biopiracy and traditional knowledge, palimpsest and curation.

Unstructured interviews provide a means useful in addressing research questions and objectives, as well as defining themes. They are important as they “provide the richest source of data for theory building” because they enable participants to speak freely, and they also “provide researchers with the ability to follow up...on concepts found to be relevant to the evolving theory and in need for further elaboration” (Corbin & Strauss, 2015: 38).

The other data collection strategy used was the exploitation of literature. In grounded theory approaches, literature refers to

published research reports and scholarly discourse of a theoretical or philosophical nature....Published literature and existing theory are not revered in grounded theory research; they are data and should be treated the same as data from any other source... (Birks & Mills, 2011: 80).

¹ <https://twitter.com/search?q=uct%202016%20%23FeesMustFall&src=typd>

This means that the literature review chapter part of this dissertation serves the additional purpose of data collection, and it includes document sources such as newspapers and magazines. Non-traditional data sources used in grounded theory include “visual media (such as film and photographs), artwork, music and artefacts...” (Birks & Mills, 2011: 83). In the absence of a satisfactory corpus of interview data, some of these strategies or methods of data collection were relied upon to build the theory based on palimpsest.

3.3.4. Reliability, Validity, and Generalisability

According to Gibbs (2007: 91), results are considered:

Valid if the explanations are really true or accurate and correctly capture what is actually happening. *Reliable* if the results are consistent across repeated investigations in different circumstances with different investigators. *Generalizable* if they are true for a wide (but specified) range of circumstances beyond those studied in the particular research.

To ensure reliability of the study, the researcher listened to the recorded interviews several times to ensure that errors or mistakes would be limited or avoided. To increase the validity of the findings, the researcher used strategies such as the “constant comparative method” (Corbin & Strauss, 2015: 342) by comparing data and concepts, triangulating data sources by examining evidence from the sources, and using descriptions to convey findings. Generalisability in qualitative research is difficult to make because “the value of qualitative research lies in the particular description and themes developed in context of a specific site” (Creswell, 2009: 193). However, results in this study were generalised in relation to the concept of palimpsest, curation, and biopiracy of indigenous knowledge.

3.4. Data Management and Analysis

In this study, data management involves how data generation or collection was undertaken with regard to recording and transcription. In addition, this data would be made available to the public through UCT Libraries. Unstructured interviews were to be audio-recorded using a mobile phone, and later transcribed in MS Word. In Grounded Theory (GT), data collection begins with data that is constructed through “observations, interactions, and materials that we gather about the topic or setting” (Charmaz, 2006: 3). The events within the data were studied to get an understanding

of the topic and isolating main concepts that were used to develop the theory. These events and data were analysed in order to develop questions and a guideline to conduct unstructured interviews. This is because the first analysis (Chapter 2) exposed some gaps which could only be filled through gathering data from participants by way of unstructured interviews. The researcher studied the “early data and [began] to separate, sort, and synthesise these data through qualitative coding” (Charmaz, 2006: 3). These pointed to areas to explore next during the data collection process. The researcher thus found a platform to compare events and views from early data with those expressed by participants and more literature. By making comparisons of the data collected, the analysis began to take shape. Studying data and comparing data formed or helped in the identification of categories or themes for the framework of analysis.

3.4.1. Coding Data

Although Grounded Theory emphasises coding data in different ways, not many aspects of coding were used in this study. However, the interview was coded in order to identify concepts, for elaboration, and for context (Corbin & Strauss, 2015: 323). According to Charmaz (2014: 111), “coding means naming segments of data with a label that simultaneously categorises, summarises, and accounts for each piece of data”. More specifically, two types of coding were used—initial and axial coding. Initial coding helps the researcher in defining the core conceptual categories, and thus, “should stick closely to the data” (Charmaz, 2006: 47). Axial coding relates categories to subcategories, specifies the properties and dimensions of a category, and reassembles the data fractured during initial coding to give coherence to the emerging analysis (Charmaz, 2014: 147). Thus, constant comparison also helps in generating codes for the data which leads to categorising pieces of information, especially those obtained from interviews.

Coding makes it easier for analysis to be conducted. The two rules in grounded theory data analysis are that (1) “everything is a concept”, and (2) “data analysis needs to proceed in relation to the research question, aims...” (Birks & Mills, 2011: 89). A concept is defined by Holloway as “a descriptive or explanatory idea, its meaning embedded in a word, label or symbol” (Birks & Mills, 2011: 89). Thus,

concepts were grouped together in order to develop themes, categories and sub-categories.

3.4.2. Data Analysis

The main purpose of interpretive analysis is to provide detailed description, which means “a thorough description of the characteristics, processes, transactions, and contexts that constitute the phenomenon being studied” (Terre Blanche, Durrheim & Kelly, 2006: 321). The analysis of the data sought to make what seems strange to be familiar. Data does not operate in isolation, but it is the context with text or other data sets that gives meaning to certain data and GT provides a platform to group concepts into categories or themes. Grounded theory coding provides a platform for the researcher to begin analysis. Therefore, coding “shapes an analytic frame from which [to] build the analysis” (Charmaz, 2014: 113). To this end, data was analysed by continually comparing specific incidents in the data and finding relationships within the data and concepts. Breckenridge (2010: 54) provides details concerning the constant comparative method in grounded theory analysis as follows:

Constant comparison is based on a concept-indicator model, which compares incidents in the data as a means of identifying underlying uniformities, which in turn leads to the identification of conceptual categories. Categories can then be further refined by comparing additional incidents to the emergent category, establishing best fit with the data and explicating its properties.

Comparison is therefore not undertaken at the end of the study but rather constantly throughout the study, and it involves three types of comparison: incident to incident, concept to incident, and concept to concept. From the Council of Scientific and Industrial Research (CSIR), for example, evidence of recodification or palimpsest was sought in the transfer of scientific to commercial and back to scientific knowledge. Therefore, the below framework which illustrates de-contextualisation, misrepresentation and misinterpretation was integrated in analysing data and relating it to palimpsest. An interpretation of the data was finally put together after the data was sorted out in categories or themes and after it was codified to represent meaning.

Themes		Plant Physiology	Human Physiology	Chemical Properties	Epistemological Certainty	Ownership of Information
Ontological Domains	Indigenous					
	Scientific					
	Commercial					
	Legal					

FIGURE 3.2: Palimpsest framework of analysis

3.5. Limitations

One of the limitations that affected data collection included lack of cooperation as *Hoodia* research might still be deemed by institutions to be top secret to avoid others from getting patents or duplicating their work if data is released to the public. Interviewing participants was problematic as some were either busy or were not available. Interviews also meant that the researcher went out to meet interviewees which implies personal financial costs for travelling and accommodation. Although Skype is a better option to use to conduct unstructured interview, face-to-face interviews offer a feeling of appreciation from participants. This might lead them to open up on some issues which may not happen over Skype. For this reason, one interview was scheduled to be conducted via Skype, and another one face-to-face. The Skype interview could not take place due to the schedule of the participant. Access to some organisations involved in the *Hoodia* biopiracy case in order for the researcher to collect data from individuals and documents was denied, despite ethical approval having been obtained from UCT to conduct the research.

Although *Hoodia* is an iconic biopiracy case, the results of this study may not be applicable to all cases but could still be used as a stepping stone toward framing an understanding of biopiracy.

3.6. Ethical Considerations

In accordance with the University of Cape Town (UCT) ethics requirements, ethical clearance to conduct interviews was sought from the Ethics Review Committee of the Library and Information Studies Centre (LISC) in the Faculty of Humanities before proceeding with the data collection process. Permission and ethical clearance were also sought from the organisations from which data was supposed to be collected. Interviews involved human subjects, so ethical considerations included

seeking consent, maintaining confidentiality and anonymity. All these were considered before proceeding with interviews for data collection.

The information provided by participants could not be anonymised in the reporting of findings as some information regarding the *Hoodia* case is already publicly accessible. In addition, the anonymity of the participants could not be guaranteed due to the nature of the study. Participation in this study was voluntary. Participants had the right not to participate at all or to withdraw from the study at any time. Two consent forms were given to participants. The first, which outlined the rights of participants, was given before the interview. The second, allowing participants to withdraw statements from the interview, was given after the interviews. One interview was audio-recorded for analysis and transcription. Appendix A, detailing participants' consent to the study; and Appendix B with interview questions, were attached to the application of ethical clearance together with the summary of the study.

3.7. Summary

This study employed a qualitative methodology with constructivist grounded theory design. The methods were meant to focus on the understanding of the process of curating indigenous knowledge. This Chapter provided methods through which data was to be collected, managed and analysed. The framework through which analysis would follow is provided, but it does not mean that this is the only way to conduct analysis. The main tool for data collection was the unstructured interview but this study also employed reviewing literature and constant analysis of data.

CHAPTER FOUR

FINDINGS: OVERVIEW OF THE THEORY

4.1. Introduction

This chapter is part one of two parts on the findings of the study, and presents the theory based on the concept of palimpsest. It also presents the main concern of the study, which is curation and biopiracy in the *San-Hoodia* case. Furthermore, a description of the framework in Chapter Three in the context of knowledge domains is also provided, as well as an explanation of its structure.

A conceptual framework is defined as "a network, or 'a plane,' of interlinked concepts that together provide a comprehensive understanding of a phenomenon or phenomena" (Jabareen, 2009: 51). The approach of this study was to respond to the problem statement by using the relationship between concepts to understand and offer interpretations related to the study, as well as developing a theory based on these concepts and themes.

For the purposes of this study, the researcher was to make sense of multiple meanings by applying an interpretivist paradigm, which has two arguments about the nature of research:

[1] Findings or knowledge claims are created as an investigation proceeds. That is, findings emerge through dialogue in which conflicting interpretations are negotiated among members of a community. [2] All interpretations are based in a particular moment. That is, they are located in a particular context or situation and time. They are open to re-interpretation and negotiation through conversation (Cohen & Crabtree, 2006).

Dialogue in this case is not in relation to human subjects but to texts or documents which were investigated or carefully analysed. These texts constitute the community of negotiation described in the definition above. As Jacques Derrida explained, the text is thought of as "the situations and events (in addition to the narratives) that

constitute our research sites — that which is communicated” (Jackson & Mazzei, 2012: 19), so this researcher engaged in dialogue with texts and placed them in dialogue with each other in order to discover conflicting as well as similar interpretations that existed. The focus of the interpretive approach is “on harnessing and extending the power of ordinary language and expression to help us understand the social world we live in” (Terre Blanche, Kelly & Durrheim, 2006: 274). Therefore, the aim of this study was to contextualise the interpretations from the collected data and the reviewed literature to understand the case being studied.

It has been mentioned by others that constructivist Grounded Theory is both possible and desirable because “[d]ata do not provide a window on reality. Rather, the ‘discovered’ reality arises from the interactive process and its temporal, cultural, and structural contexts” (Charmaz, 2000: 524). As such, data in this study was derived from the interactive process between the researcher, available literature and the interviewed participants as well as the contexts of culture science and commerce.

4.2. Theoretical Overview

A theoretical overview of the concepts and interrelationships in this study is provided here. The construction of a theory in the Grounded Theory method does not begin with hypotheses as it does in other methods, but “with observations... [and] seeks to discover patterns and develop theories from the ground up” (Babbie, 2010: 396). The Grounded Theory presented in this dissertation is complex, and it is therefore helpful to provide a theoretical overview of the concepts and their relationships.

The main or core category of the theory is *Palimpsest*, which determines the means, ways or methods, and offers an explanation through which large corporations exploited indigenous medicinal knowledge—*Hoodia*. It is characterised by the changes made to the existing indigenous medicinal knowledge (*Hoodia*) as well as the scientific and commercial activities undertaken to override the San-*Hoodia* knowledge. Renaissance Humanism and post-modernism are sub-core categories of palimpsest. As will be discussed in detail later, while Renaissance Humanism conceptualises the liberation of plant species by using scientific rather than indigenous names, post-modernism conceptualises the addition of meaning.

Renaissance Humanism defines the limits of changes made to indigenous knowledge, categorised by the concept of Scientific Knowledge and Biopiracy. On the other hand, post-modernism defines the extent to which meaning and changes are made, categorised by Commercial and Legal Knowledge.

TABLE 4.1: Summary of the substantive codes Palimpsest derived in tracing the curation of Indigenous Knowledge in a biopiracy case

<p>Palimpsest – core category and central theme of the study, and concept used as theory.</p> <p><i>Renaissance Humanism</i> – sub-core category of Palimpsest, determining the liberation of indigenous medicinal plants by renaming plant species according to names famous botanists, or replacing them with Greek or Latin names.</p> <p><i>Scientific knowledge</i> – property of Renaissance Humanism in which indigenous medicinal plants and knowledge are subjected to tests to determine their usefulness.</p> <p><i>Post-Modernism</i> – sub-core category of Palimpsest which entails the addition of meaning to the existing knowledge (IK).</p> <p><i>Commercial knowledge</i> – property of post-modernism in which medicinal knowledge and plants are turned into slimming products for financial gain.</p> <p><i>Legal knowledge</i> – property of post-modernism in which scientific and commercial domains were used to generate new information within the legal context in order to negotiate a settlement or agreement on the use of <i>Hoodia</i>.</p> <p><i>Biopiracy</i> – related category entailing the nature in which indigenous knowledge (<i>Hoodia</i>) was used without permission or authority of the San.</p> <p><i>De-contextualisation</i> – property of biopiracy in which other knowledge systems manipulated indigenous knowledge in different ways.</p> <p><i>Misrepresentation</i> – property of biopiracy explaining some actions taken by pharmaceutical and biotechnological companies in their representation and use of IK.</p> <p><i>Misinterpretation</i> – property of biopiracy in which the public, pharmaceutical and biotech view IK in the context of other knowledge systems.</p> <p><i>Misappropriation</i> – property of biopiracy entailing how pharmaceutical and biotech companies misuse traditional knowledge for their own benefit.</p> <p><i>Curation</i> – related category describing the nature in which indigenous knowledge was recorded.</p> <p><i>Codification</i> – property of curation referring to all changes, both minor and major, that were made to indigenous knowledge in general and <i>Hoodia</i> in particular.</p> <p><i>Time and space</i> – property of curation describing how indigenous knowledge become static when kept in databases. IK changes with time, but if kept in databases it becomes difficult to make the necessary changes and the information becomes obsolete.</p>
--

Biopiracy and curation are related categories or themes of palimpsest: they conceptualise how indigenous knowledge is used without the permission of local people as well as the recording of indigenous knowledge in documents, in research or in databases. Table 4.1 provides an overview of the theory and the relationships and interrelationships between concepts. The theoretical codes used were

developed from the knowledge domains and interview questions. The examples are as follows:

- ^{LDQ1} represents interview responses to questions in the Legal Domain
- ^{CDQ1} represents interview responses to questions in the Commercial Domain
- ^{SDQ1} represents interview responses to questions in the Scientific Domain

4.2.1. Palimpsest

Palimpsest is both the core category of the study as well as the concept used as theory, and it conceptualises the act of erasing IK and replacing it with scientific and commercial knowledge. This concept of palimpsest will guide the study. Palimpsest is applicable to pharmaceutical and biotechnological companies in biopiracy cases where indigenous knowledge has been involved. Palimpsest can be formally defined as follows:

[1] a very old document on which the original writing has been erased and replaced with new writing; [2] something that has changed over time and shows evidence of that change; [3] something having usually diverse layers or aspects apparent beneath the surface ("Palimpsest", 2015).

The first definition of the original writing being erased and replaced by new writing applies to this study as new layers of knowledge emerge and changes are made to indigenous knowledge. In the case of *Hoodia* biopiracy, it is the researcher's assertion that as in the time of explorers, CSIR, Phytopharm, Pfizer and Unilever adopted a palimpsest approach with indigenous knowledge being hijacked from the local people by Western society and being applied in the latter's knowledge and scientific systems. In this case, they have found indigenous knowledge already in existence but have tried to erase that original knowledge with laboratory experiments to derive new knowledge, evidence or results. Most importantly, what they represent as innovation in developing appetite-regulating drugs from *Hoodia* was gained through contact with the San people. Thus, indigenous knowledge remains an underlying basis of drug development but is not acknowledged as such because a new layer of Western knowledge is superimposed upon it.

The concept of palimpsest as a tool can be traced back to Thomas De Quincey, when he wrote in his 1895 *Suspiria de Profundis* that palimpsest

arose in the Middle Ages, to discharge the writing from the roll, and thus to make it available for a new succession of thoughts. [...] They expelled the writing sufficiently to leave a field for the new manuscript, and yet not sufficiently to make the traces of the elder manuscript to be irrecoverable for us (de Groote, 2014: 109).

Although this concept of a palimpsest referred mainly to literary works, it is today applicable in most, if not all, fields of study. Perhaps another important observation by De Quincey is that when anyone reads palimpsests, that person can be caught in time, but if you “collect [palimpsests] into temporal hierarchies of succession, [then] you can reverse time into sense and eke out the origins of every superficial sign” (de Groote, 2014: 109). Therefore, the original knowledge does not die out even when other knowledge systems seek to erase it.

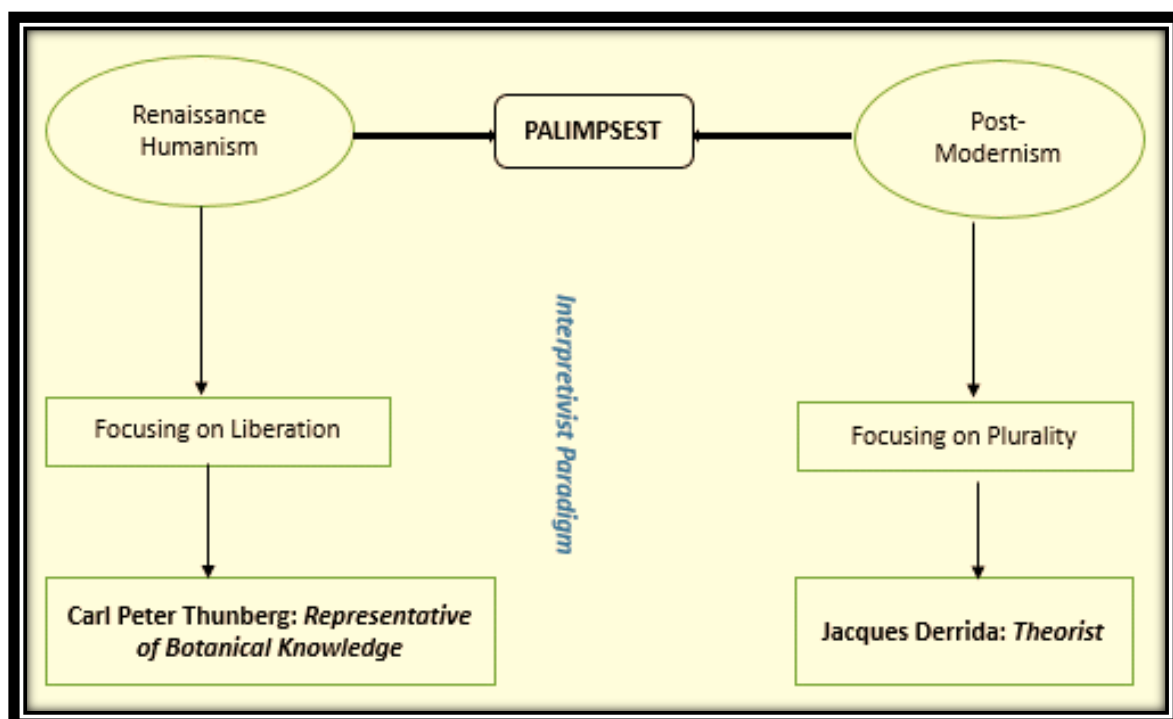


FIGURE 4.1: Representation of the concept of Palimpsest

The complexities of curating or documenting indigenous knowledge cannot be explained fully, but there was a tendency of European explorers and natural historians of the 16th century to

record only what they judged to be useful observations, and absorb these into their own systems of classification, stripping away the theoretical, religious and other associations of the indigenous persons from whom they had acquired the information. [T]hat Dutch writers working in the Indies, '[shared] the quality of conveying matters of fact as if newly discovered, although careful examination reveals that their accounts were written on top of erasures, as in a palimpsest'. What they represented as objective facts gained through personal experience were more often gained through contact and communication with local peoples (Pooley, 2014: 10).

Two lenses or perspectives on the concept of palimpsest fit well with and can be applied in this study, namely: Renaissance Humanism and Post-Modernism. The concept of a palimpsest in relation to this study is represented in *Figure 4.1* above.

4.2.1a. Renaissance Humanism

Renaissance Humanism is a sub-core category of palimpsest, determining the liberation of indigenous medicinal plants by renaming plant species according to names of famous botanists, or replacing them with Greek or Latin names. Because this liberation was determined by scientific contexts, it excludes indigenous people's knowledge and does not acknowledge TK, or may be seen as placing TK in bondage by seeking to dominate it. Renaissance Humanism can be defined as "a body of literary knowledge and linguistic skills based on the 'revival of good letters'" (Partner, 1976: 14). When applied to palimpsest, humanists were determined to liberate or "attempt to recover classical virtues of clarity and purity" through translations or copying the original works (Davies, 1996: 47). With regards to *Hoodia*, the San people's knowledge would have been deemed foundational but needing further refinement to 'liberate' it for Western scientific purposes.

Humanists drew on the concept of liberating ancient or primitive knowledge from the bondage of history. Additionally, the emergence of Renaissance Humanism also led to increased literacy and broader study than the narrow theology of the Middle Ages, thus liberating Europe. However, by making 'man the measure of all things', Humanism both liberated and enslaved. One of the processes of creating liberation in palimpsest through documentation, is described below:

From December 1621, the VOC [Dutch East India Company] had insisted that a *Daghregister* or daily journal be kept at all of its stations, thus facilitating the emergence of a global network of plainly written, factually-oriented, testable information on valuable natural resources – and the best means of acquiring or producing them. The rich trade was in 'green gold', predominantly spices, but also medicinal and food plants (Pooley, 2014: 8).

This informs us that documentation would provide access to knowledge that had been unknown to Western science before, thereby acting as a means through which colonialists would find a way of acquiring 'valuable natural resources'. Carl Peter Thunberg (1743—1828) was a botanical pioneer in the Dutch Cape Colony and the first great collector of more than 3,000 species of the Cape flora (Svedelius, 1944: 130). In relation to the indigenous knowledge of the San people, a form of liberation into Western knowledge through palimpsest took place when Thunberg gave the plants Greek names, in the process erasing their indigenous names. In the case of *Hoodia*, this genus was named after "Van Hood, a keen succulent grower" in 1830 by Robert Sweet (Barkhuizen, 1978: 46), following the same process as that adopted by the Dutch colonisers two centuries earlier.

4.2.1b. Post-Modernism

Post-Modernism is a sub-core category of palimpsest which entails the addition of meaning to existing knowledge. In this study, the existing knowledge is the San's *Hoodia* to which meaning has been added by other knowledge domains. A relevant post-modernist approach is Derrida's deconstruction theory in which he argues that "there is nothing outside of the text" because a text only adds "meaning from a trace" or in this case, to the original knowledge base (Derrida, 1967: 201-202). Within the context of palimpsest and biopiracy, the apparent inference from Derrida's statement is that new knowledge is added to the old or existing knowledge. In this case, the study of *Hoodia* to isolate the chemical compound (P57) responsible for suppressing hunger and thirst by the CSIR in order to produce new slimming products was based on the San people's knowledge of *Hoodia* as well as its use. Therefore, from one source of knowledge there can be many outcomes or developments of new knowledge. In addition, Derrida's theory of deconstruction "teaches us that all knowledge, all constructions are contingent and partial" (Jackson & Mazzei, 2012: 15) because they can be changed or re-

developed. In deconstruction theory, there is room for multiple simultaneous voices in a text and the voice of the text is constructed by the reader or, in this case, the researcher.

Another inference to the 'text' in the context of indigenous knowledge is that it

may be found in any cultural or natural artifact capable of interpretation; knowledge and culture are thus transmitted through language, image, implicit relationship, structure, procedure or performance, or more particularly through story, dance, calendars, maps, architecture, textiles, hunting and farming practice, rock art, trails, spaces, stone placement and numerous other forms in which knowledge may be fixed, discerned or performed (Chambers, 2016).

4.2.2. Dialogue Between Renaissance Humanism and Post-Modernism

The Renaissance Humanist perspective, being by nature colonialist, considered the imposition of European perspectives on indigenous peoples to be liberating. By contrast, Post Modernism seeks to add meaning to existing knowledge. These two perspectives are in dialogue with each other because new meaning is added to indigenous knowledge when scientific names are given to plants, leading to methods of extracting valuable chemical compounds to liberate the plant species. Thus plant species are taken away from their indigenous habitat into laboratories and abroad for further studies to be conducted on them. In the context of *Hoodia*, this is ironic; as Chambers (2016) elaborates that:

Indigenous knowledges...rely on the full panoply of literacies. Their fight...is against the positivism and reductionism of Western Science with its attempt to exclude and devalue indigenous ways of knowing and transmitting authoritative knowledge.

4.3. How Knowledge Domains Operate Within a Framework

It is noteworthy that the only agreement still in place is between the CSIR and the San people, as other entities have returned the patent agreement to the main agent. Commercial agreements were intended to support further study of the chemical compound and clinical testing before developing a slimming drug. However, this meant that the ownership of knowledge would slip further away from the San people to the drug companies. This assertion is also supported by Escobar when he

suggested that nature or biodiversity resources are now “redefined as itself a stock of capital, and the biological milieu is codified as tradeable goods” (Takeshita, 2001: 265).

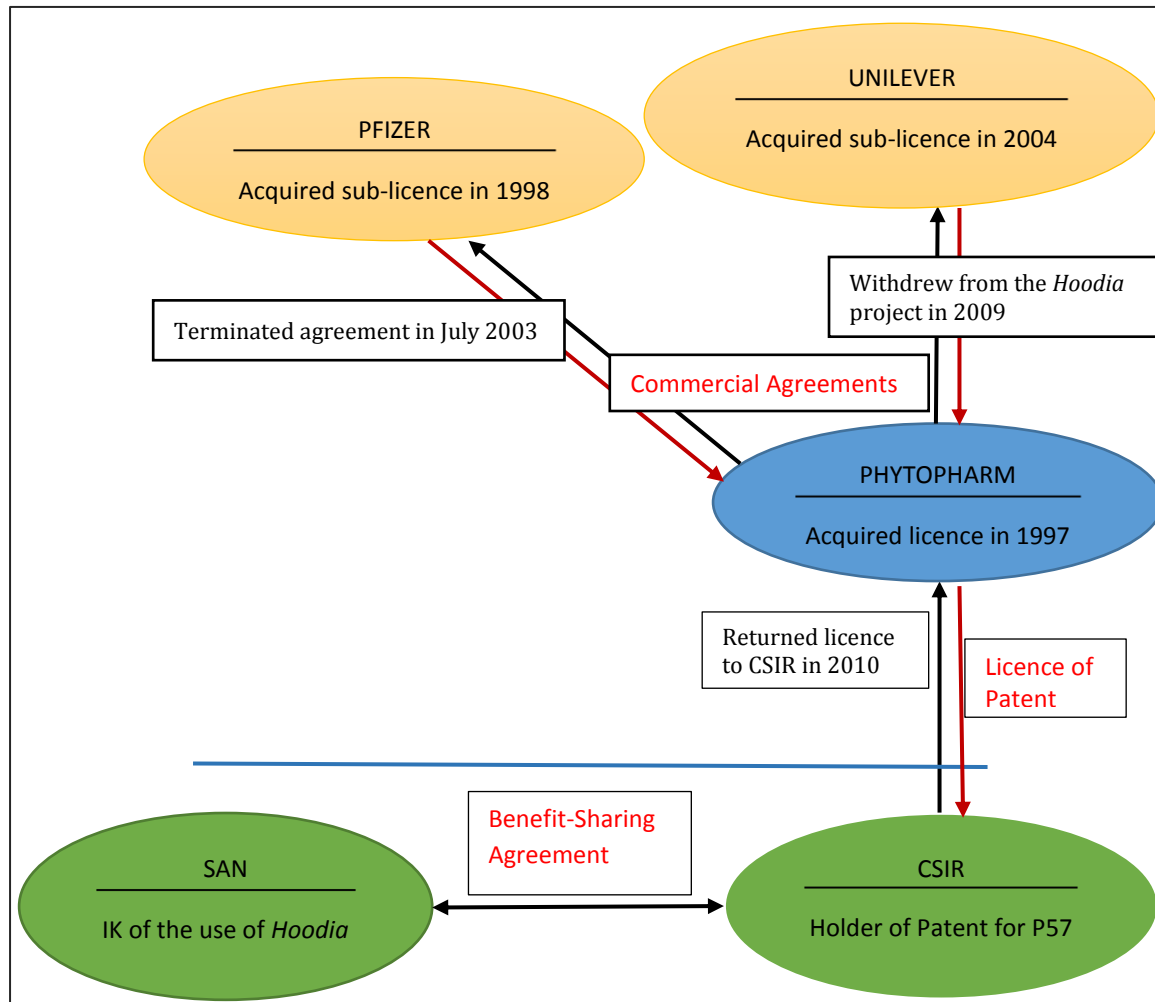


FIGURE 4.2: Benefit-sharing and commercial agreements

Furthermore, some knowledge domains are preferred while others are not seen as genuine or valid. This assertion is supported by Foucault and Parpart when they mentioned that “...certain epistemic systems come to be valued over others and are seen as the only or the best way of understanding the world” (Wayland, 2003: 484). The theory of palimpsest suggests that some knowledge systems seek to suppress other domains such as indigenous knowledge, which is vulnerable because it is seldom recorded or encoded in forms that Western knowledge systems deem to be stable or valid.

...I can think about four levels of knowledge probably which...where the *Hoodia* have been very active... And each level of knowledge is different. Different forms of knowledge and there is a link all way down and up. And I would say there might be another level but I'm thinking of four levels. And it's very fascinating (Chennells, interview, 2016 August 25)

This suggests that other knowledge systems have used the San's medicinal knowledge relating to *Hoodia* in an innovative way that is difficult tell except through careful analysis and research. Figure 4.2 above shows a rough sketch of the agreements that took place after the patent for *Hoodia* was obtained by the CSIR. The vertical dark red lines show the reversal or termination of agreements.

4.3.1. Indigenous Knowledge Domain

So the one was underground where the San are actually using it, and they are still using it, and they will carry on using it because they know what it does. That is theirs (Chennells, personal interview, 2016 August 25)



FIGURE 4.3: Holding on to Hoodia. (Sculptor unknown. Photographed in Roger Chennells's office: Stellenbosch, South Africa)

This domain is the basis that other knowledge systems have acquired and refined to develop the *Hoodia* slimming remedy. The San people used *Hoodia* as a source of food and water. Following the creation of the botanical records, further research has since taken place to add value to the existing knowledge by developing a slimming product. Figure 4.3 shows a San man holding on to the *Hoodia* cactus, symbolising the desire of the San people to retain their knowledge and to continue to use it for generations to come.

4.3.2. Scientific Knowledge Domain

Then there is a scientific level where [*Hoodia* or TK] is taken under a microscope and it was patented to the CSIR and Mr. Maharaj has the scientific area. So this is what *Hoodia* actually does in the laboratory that turns into a patent (Chennells, personal interview, 2016 August 25).

W.C. Dampier has defined science as an “ordered knowledge of natural phenomena and the rational study of the relations between the concepts in which these phenomena are expressed” (Narayana, 2010: 322). Science proves things through testing and getting the desired results. As *Hoodia* was taken to the laboratory to prove or identify whether the effects of hunger suppression were present, science was at work to modernise *Hoodia*. Furthermore, Narayana (2010: 342) asserts that “[s]cientific and technological knowledge holds the key to material progress of mankind” through certain findings or discoveries. However, the *Hoodia* case proves otherwise because it is TK that formed the basis of subsequent discoveries.

4.3.3. Commercial Knowledge Domain

Then there is a commercial [level where] you can have a patent and you can use it to make a lot of money in the world but you must have the right agreement. So that’s another whole range of conversation (Chennells, personal interview, 2016 August 25).

The domain of commerce refers to the activity of buying and selling goods and services on a large scale (“Commerce”, 2017). Since pharmaceutical and biotechnological companies are business-driven, they sought ways to add value to *Hoodia* in order to target global sales from the outcome products. This layer of domain adds upon the previous layers – those of indigenous and scientific knowledge. As this layer is added up, the traces of indigenous knowledge become indistinct because of the transformation it undergoes. Commercial knowledge used science and technology to transform *Hoodia* into the desired products. Affirming this

view, Narayana (2010: 347) states that technology “is generally perceived as the application of science to the production of material goods and conveniences.”

4.3.4. Legal Knowledge Domain

And then there is a fourth one, I think, is the international interest as the CBD and the Nagoya Protocol were negotiated. The Nagoya Protocol was only concluded in 2010, at which time the *Hoodia* case was still alive...(Chennells, personal interview, 2016 August 25).

Other knowledge domains that have added a further layer upon the *San-Hoodia* knowledge are the legal and international perspectives of the matter. The manner in which this has happened is through curation of legal negotiations, legal reports, laws passed, and international scrutiny. Due to the San-CSIR negotiations, other cases have since occurred.

The *Hoodia* is still regarded as the iconic bioprospecting/biopiracy case, almost as a foundation for all the other cases because it was done in 2001, 2003. Then the other cases were done earlier, so this one was scrutinised. It has PhDs and [Master's] research on it. So in the international knowledge, around traditional knowledge that whole body of knowledge is there. Research papers but also policy papers and even law, international law, on TK. That's the fourth level. And the fourth level is huge so the *Hoodia* is mentioned all the time. You look at international cases (writings) on traditional knowledge, the *Hoodia* is cited a lot. So this indicates that the first level of the San is cited. It has become very powerful (Chennells, personal interview, 2016 August 25).

In short, the legal environment in which the *Hoodia* biopiracy case is placed can be described as the “laws relating to human rights, to biodiversity, to property rights (of states and individuals) and intellectual property rights of indigenous peoples” (Chennells, 2007: 2).

4.4. Summary

This is the first of two chapters presenting an overview of the emergent grounded theory of palimpsest in the curation of the *San-Hoodia* knowledge. The chapter also explains how each knowledge domain operates within the framework and theory of palimpsest. The next chapter continues from this chapter by expanding and expounding the core categories, themes and concepts.

CHAPTER FIVE

FINDINGS: DETAILED EXPLANATIONS OF THE THEORY (ANALYSIS, DISCUSSION, AND INTEGRATION OF LITERATURE)

5.1. Introduction

This chapter is an extension of Chapter Four and provides detailed explanations of the theory, emphasising major points with detail and examples. It also provides findings and presents the results. The findings and results are presented in the form of literature following themes and categories proceeding from Table 4.1.

5.2. The *San-Hoodia* Biopiracy

Biopiracy is a related category of palimpsest entailing indigenous knowledge being used without permission or authorisation by the indigenous community. Extending the definition of biopiracy, Akram *et al.* (2012: 978) define biopirates as

those individuals and industries/companies accused of one or both of the following acts: (i) the theft, misappropriation of, or unfair free-riding on, genetic resources and/or traditional knowledge, and (ii) the unauthorized and uncompensated collection for commercial ends of biological/genetic resources and/or traditional knowledge.

Among these individuals are ethnobotanists who have "promoted the indigenous knowledge of medicinal plants as a valuable 'lead' to the identification of plants with potential biomedical utility" (Takeshita, 2001: 271). Their promotion, however, has led pharmaceutical giants and business enterprises to exploit indigenous communities and indigenous knowledge in their pursuit of commercial power by developing drugs without acknowledging or recognising indigenous knowledge and the local communities. Little, if anything, is mentioned at the end of the process about the usefulness of the local people in identifying and describing plant species with medicinal values.

Other cases of biopiracy that have been reported involved *Neem*, *Turmeric*, and *Ayahuasca* which “arose from granting of patent protection to inventions relating to traditional knowledge which was already in the public domain” (O’Connor, 2003: 680). The practice of bio-pirating indigenous resources leads, somehow, to the erasure of indigenous knowledge as the people might feel they have been robbed of their resources and knowledge. This feeling might lead to the refusal of sharing knowledge with outsiders and other community members, resulting in the loss of knowledge over time.

The central theme of this study was the curation of indigenous knowledge, and some categories emerged from literature and interviews. In addition to the framework of analysing palimpsest, other concepts can be reviewed in developing a theory based on this framework or concept. The concepts that best contextualise biopiracy are misrepresentation, misinterpretation, and misappropriation. Justification of these concepts requires a description of what biopirates as individuals or as companies are, or what they do. In addition to Akram’s definition above, Dutfield (2006: 19) defines biopirates as those who are accused of one or both of the following acts:

- (i) the misappropriation of genetic resources and/or traditional knowledge through the patent system; and (ii) the unauthorised collection for commercial ends of genetic resources and/or traditional knowledge.

In the following pages, concepts contextualising biopiracy are discussed.

5.2.1. De-contextualisation

De-contextualisation is the process of taking things out of context by using other means. According to Corbin and Strauss (2015: 268), context “locates and explains action-interaction within a background of conditions and anticipated consequences.” In this case the context of indigenous knowledge is the means and ways in which the San people accumulated and use(d) their knowledge of the *Hoodia* plant. On the contrary, de-contextualisation then implies the ways and means through which science—orchestrated in laboratory and commercial spheres—used the San *Hoodia* knowledge to shift it from being indigenous to being Westernised through processing and value-addition.

The context in which indigenous knowledge is transferred and learned is through stories and hands-on practices. Stories captivate the imagination, whereas hands-on practices build experiences. Contexts may be seen in different lights between those who are schooled and those who possess indigenous knowledge, as alluded to by Castellano, cited by Whitt.

Persons schooled in a literate culture are accustomed to having all the context they need to understand a communication embedded in the text before them... Persons taught to use all their senses – to absorb every clue to interpreting a complex dynamic reality – may well smile at the illusion that words alone, stripped of contemporary sound and colour and texture, can convey meaning adequately (Whitt, 2008: 1188).

Careful examination of the above statement suggests that indigenous knowledge “is caught up in experience and cannot be extracted from its context” (Whitt, 2008: 1188). When it is extracted from its context through other knowledge domains, it becomes de-contextualised. According to Takeshita (2001: 272), “Indigenous knowledge of medicinal plants is often complexly embedded in the local healing practices and belief systems”. A good, given example is that of the Samoan healers, who consider medicinal plants to be a gift from the gods, and must therefore “provide them to their patients without compensation” (Takeshita, 2001: 272).

It is believed that if a healer accepts payments for services, the remedy will cease working. [They] also believe that the healing effect of the remedy will be lost if a healer uses a herbal formulation owned by another healer without permission (Takeshita, 2001: 272).

The conclusion drawn from this observation is that IK, especially relating to medicine or plant use, is “embedded in beliefs about life, death, disease, healing, and ancestral heritage, and are anchored in the peoples’ cultural identity” (Takeshita, 2001: 272).

Perhaps another way to describe how indigenous knowledge can be de-contextualised through curation is found in the lyrics of the song, *Black is Beautiful*.

...we were fearful that our voices would be transferred into the [machines] and we would no longer be able to sing [ourselves]. What was [even worse] was that we would continue to sing in the [machines] long after our death (Ladysmith Black Mambazo, 2003).

The lyrics convey a message that the information will live on after the death of the information or knowledge holder. This would imply an ultimate de-contextualisation,

as the information would have lost its essence or “life force”: the very thing that makes it valid in the eyes of an IK information holder.

5.2.2. Misrepresentation

According to the Oxford Dictionary, misrepresentation refers to the “action or offence of giving a false or misleading account of the nature of something” (“Misrepresentation”: 2016). Due to the processing and value-addition on *Hoodia* information, product consumers might be led to understand that *Hoodia* originates from Western science and technology. At the beginning of the development of the *Hoodia* product, when asked about where they obtained the knowledge, “Phytopharm said it comes from the San, but the San are extinct” (Chennells, interview, 2016 August 25). This statement writes off the San as genuine holders of knowledge, even though the origins of the information are acknowledged. Those with power were able to give misleading accounts concerning *Hoodia*. With regard to power and status, Parpart (1994: 333) casts some light.

The development enterprise for the most part has been predicated on the assumption that certain peoples and societies are less developed than others, and that those who are more developed, i.e. more modern, have the expertise/knowledge to help the less developed (or developing) achieve modernity.

The attempt to help others achieve modernity relates directly to the Humanist concept of liberation in that others are seen as not having the expertise to do certain things. However, the San people have skills, knowledge and expertise on using *Hoodia* but Western experts seem as if they wanted to liberate ‘backward’ traditional knowledge into ‘modern’ scientific knowledge.

5.2.3. Misinterpretation

The term misinterpretation is defined as “a wrong or bad understanding of somebody/something” (“Misinterpretation”: 2016). Misinterpretation is often accidental, but it can be intentional too. It has been argued that “...some kinds of knowledge are inalienable from place-based (local), cultural (including values), spiritual (ritual, sacred and taboo) and environmental situations” (Robinson & Kuanpoth, 2009: 380). One particular kind is indigenous knowledge, which when removed from the local community and stripped of its cultural relevance, may be misinterpreted by those who view it through the lens of science. It takes living in and

within the community for any outside person to fully understand the nature and context of indigenous knowledge. Without this understanding, indigenous knowledge can be easily misinterpreted.

5.2.4. Misappropriation

Misappropriation refers to “[taking] dishonestly for one's own use” (“Misappropriate”, 2016). This is simply the transfer of ownership through means or processes such as scientific studies and value-addition of that which already existed and was owned by indigenous peoples. In addition, what seems to be an original invention may not be case as ideas may be stolen for commercial gain and recognition. In this case, the element of palimpsest present would be the discrediting of the *San-Hoodia* knowledge, especially its origin. That means erasing the San people from the whole equation. According to Sharma (2002: 2416) “private companies will go to any extent to manipulate what is already known to project [a product] as an invention or novelty”. A product deemed to be an invention in this case was the *Hoodia* slimming or diet range of products. Sharma (2002: 2416) concludes that any “tinkering of the original medicinal remedy with a little cosmetic covering can be easily presented as a novel product that was not previously known”. The truth of the matter is that the San already used it as a source of food and water, though not specifically for losing weight.

More specifically, Takeshita (2001: 273) provides another example of how Indigenous Knowledge can be misappropriated when it is made available in the public domain.

Components of the original knowledge that were vital to the indigenous healers—such as prayers and rituals accompanying healing practices, the symbolic meaning of medicinal plants, and the constraints of where, when, and how the plants may be collected—are easily omitted. In *science*, the knowledge that originated in a Samoan healer is no longer understood through the Samoan belief system but is now expressed and communicated in the form of chemical symbols ready for commercialisation. ...When bioprospectors discuss reciprocation for indigenous knowledge, it is their assumption that knowledge can be converted to a commodity worthy of economic compensation.

According to the palimpsest theory being utilised in this dissertation, pharmaceutical giants were able to over-write the *San-Hoodia* knowledge with new terms and nomenclature, symbols (such as chemical symbols), and scientific discourse.

5.3. Action-Interactional Strategies Carried Out by Key Players in Each Domain

5.3.1. How Information or Other Details Were Curated

Curation is a related category to palimpsest describing the nature of the recording of indigenous knowledge. Two examples can be given regarding the curation of indigenous knowledge. An established digital library of indigenous medicinal resources (knowledge) is that by the Chinese. The approach taken by the Chinese in documenting Chinese medicinal knowledge may eliminate some problems related to bioprospecting, biopiracy and palimpsest.

Between 1992 and 2000, China revised its patents laws twice to ensure that it could draw intellectual property control over its unique system of medicine. China has drawn a total of 12,000 patents on its medicine system and therefore does not have to worry about constructing a digital library (Sharma, 2002: 2417).

In contrast, India's proposed digital library for its medicinal resources will be "helping the companies to easily scout for the commercial uses of the medicinal and therapeutic properties from the databases" (Sharma, 2002: 2416). This would assist pharmaceutical and biomedical companies to increase their bioprospecting and biopiracy activities on indigenous medicinal resources.

With these two examples in sight, there may be pros and cons regarding the curation of indigenous medicinal knowledge and resources. This study focused more on the cons than the pros to align the findings with the theory and the research objectives.

5.3.1a. Codification

Codification is a property of curation referring to all changes—both minor and major—that were made to indigenous knowledge in general and *Hoodia* in particular. When ethno-botanical findings are presented in journals,

there is significantly more focus on knowledge that constitutes *scientific* information relevant for communicating with other scientists—such as the Latin binomial and the common local name of the plant, part(s) of the plant used, and geographical area where used (Takeshita, 2001: 272).

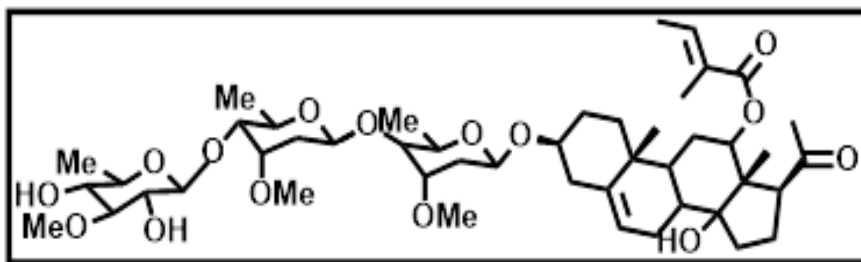


FIGURE 5.1: P57 Molecule—*Hoodia* codified

5.3.1b. Transformation of IK through Codification

Codification refers to “the process of creating systematic rules to govern a specific activity” such as producing pharmaceuticals (Reitz, 2014). A good example is when the pharmaceutical industry uses plants and assigns names to the drugs produced. The assigned labels are called codes. In the case of *Hoodia*, this occurred at different levels. At a scientific level it became known as P57 whereas in the commercial level several labels existed such as UniqueHoodia and Hoodia Super Slim, to mention only a few. The first scientifically-validated study of appetite-suppression caused by *Hoodia* was conducted in 1963 by the CSIR. The study focused on “the biological effects of extracts of [*Hoodia*] on small laboratory animals”, whose results showed that “the animals lost their appetite, accompanied by a loss of weight, with no apparent toxic effects.” This was followed by attempts “to isolate and identify the chemical substance responsible for the appetite suppressant effect of extracts of the *Hoodia* plant” (Maharaj, Senabe & Horak, 2008: 1).

The CSIR isolated the active molecule in the 1990s and filed a patent in 1996 “to reserve the right to make use of the molecule for commercial purposes, e.g., as an anti-obesity drug” (van den Daele, 2008: 255).

After a chemical compound known as P57 was found in *Hoodia*, the CSIR obtained a patent and negotiated a licence with Phytopharm. The British media broke the news of this agreement by reporting that

the cactus has attracted the interest of the Western drug industry, which exploits developing countries through the international patent system. It emerged that [Phytopharm] had patented P57, the appetite-suppressing ingredient in the Hoodia, hoping it would become a slimming miracle. But it appears that...[Phytopharm and

Pfizer] ...had forgotten to tell the bushmen [*sic*], whose knowledge they had used and patented (Barnett, 2001).

This report suggests that the patent system is indeed exploiting developing countries, and in this case indigenous people's rights are waived to Western institutions rather than residing in communities and countries where the resources originate. Also, biodiversity resources are being pirated by Western institutions such as pharmaceutical companies that give no acknowledgement of the contributions of indigenous peoples towards the development of drugs. Therefore, indigenous people and indigenous knowledge are not recognised as playing vital roles in medical discoveries and developments. In addition, the intellectual property rules favour Western countries, thus putting indigenous communities and developing countries at a disadvantage. It is argued that industrialised countries

...use the traditional knowledge accumulated by indigenous people freely, but indigenous people have no prospect to participate in the wealth created through the use of the collective source which they contributed. Instead indigenous people...are likely to face further impoverishment. This amounts to exploitation (van den Daele, 2008: 157-158).

5.3.1c. Time and Space

Time and space are properties of curation, with each having an implication for TK when it is curated in a Western framework. Time refers to indigenous knowledge being locked in a time period when it is curated, while space refers to TK being kept in specialised databases and other systems unreachable to indigenous people. When indigenous medicinal knowledge is recorded or curated in Western systems, the ways and means through which it can be developed further become limited. Because it is preserved in systems that are not familiar to traditional or indigenous forms, when the original community modifies or adds to the existing knowledge in the future, they cannot make changes to the curated information or details. The information will remain the same for longer periods of time being unchanged. This is because those who have access to such systems as databases will not know of the changes or adjustments made to the existing knowledge. The San people, being pastoralist, do not have access to these databases, nor do they have the authority to make such changes. Where curation of indigenous medicinal knowledge takes

place, the authority is in the hands of outsiders who would decide what to include and what to exclude. The decisions are made on behalf of the San, thus effectively obliterating the people, culture and knowledge in its original form from the record in both time and space.

5.3.2. Impact on Information Substance, Meaning and Context

The *Hoodia* case became an iconic and world-famous case. There have been many PhD and Master's theses focusing on the *Hoodia* case, each analysing it from a different angle. The *Hoodia* case

created a good platform of best practice for a benefit sharing agreement. Since then...we've had four other plants having a very good benefit-sharing agreements, all based upon the *Hoodia* negotiations (Chennells, personal interview, 2016 August 25).

As a result of the *Hoodia* case, new information was created in the Western context to deal with similar cases. At the same time, it is assumed that the San people were awakened with regard to their knowledge and cultural heritage in oral and practical transmission. Due to different knowledge domains, the indigenous context of *Hoodia* was expanded and changed according to the context of each layer. In addition, meaning also changed in each domain. Figure 3.2 shows different themes depicting the impact of other knowledge domains on the meaning and context of indigenous medicinal knowledge.

Themes		Plant Physiology	Human Physiology	Chemical Properties	Epistemological Certainty	Ownership of Information
Ontological Domains	Indigenous					
	Scientific					
	Commercial					
	Legal					

FIGURE 3.2 (Reproduced from Chapter 3)

5.4. Answering Research Questions

The study sought to answer the following objective and associated questions, viz.:

- *To define a proposed framework for the management of indigenous knowledge across the various ontological domains in possible biopiracy cases.*

A framework of palimpsest was defined in terms of layers imposed upon IK in an attempt to erase it. The management of possible biopiracy cases can be

conceptualised within the themes and knowledge domains presented in Figure 3.2, with each successive ontological domain through which indigenous knowledge passes; serving to erase some element of indigenous knowledge by over-writing the source knowledge within to a range of distinct themes from plant physiology to ownership of information.

- *How has indigenous knowledge been transformed through codification in various epistemological regimes?*

The study identified that indigenous knowledge was transformed by the scientific and commercial knowledges. In the scientific domain, IK relating to *Hoodia* was codified using scientific, Latin names and the P57 molecule. In the commercial domain, different labels have been used.

- *How do different knowledge domains operate within the framework of analysis?*

The IK of the San's *Hoodia* is the basis of this study and it is also generalised as indigenous knowledge. Scientific and commercial knowledge domains operate as overriding systems seeking to erase indigenous knowledge. The legal domain is an extra layer representing negotiations, which in the interests of its own ontology can be seen to erase or modify IK.

- *What kinds of information were codified in the different knowledge domains and in what ways were contexts changed?*

Starting from the change of indigenous names of *Hoodia* to the preparation or exact uses, all were codified to suit science and commerce. From the cultural setting to the laboratories and onto the store shelves, the context was also changed meaning IK was de-contextualised.

- *What changes do documentation, curation or codification of information effect on indigenous knowledge?*

The effect of these processes on indigenous knowledge is the placement of value-addition leading to putting the price tag (commercialisation) on *Hoodia*. In addition,

the processes contribute to the de-contextualisation, misrepresentation, and misappropriation of indigenous knowledge.

5.5. Summary

This chapter is second of two chapters and it explicates the grounded theory of palimpsest in the *Hoodia* biopiracy and curation context. Expanding from the first chapter, it offers mostly the cons of curating indigenous knowledge with particular interest of the San-*Hoodia* case. The concepts of biopiracy and curation are discussed with expansion into arising or related concepts.

CHAPTER SIX

SUMMARY AND CONCLUSION

6.1. Introduction

This study developed a theory based on the concept of palimpsest and explored and traced the curation of indigenous knowledge in different domains. The findings indicated that the transfer of indigenous knowledge into other knowledge spheres could be conceived of as palimpsest. In the *Hoodia* case, this process led to re-contextualisation through many domains, resulting in many erasures and over-writings. One way in which this happened is described in the statement below:

With the recognition that local culture held stores of useful information concerning medicinal plants, botanists, pharmacologists, anthropologists, and biologists began investigating their knowledge. This process continues today as scientists draw on local knowledge for drug development (Wayland, 2003: 485).

6.2. Summary of the Emergent Grounded Theory

The grounded theory of palimpsest accounts for the changes on the San people's traditional knowledge and use of *Hoodia*, which were made by other knowledge systems. These accounts or assumptions are that the additional layers of knowledge and information brought by other knowledge systems meant erasures of the San's *Hoodia* knowledge and use. This dissertation offers conceptual explanations of how these erasures were bound to happen or did indeed occur. The theory has proposed that erasures took place from the moment Dutch explorers began to catalogue indigenous species. Eventually, the CSIR began its experiments on a variety of *Hoodia* species in the 1960s. Experiments would not have taken place without the early botanical records that suggested *Hoodia* could suppress hunger and thirst.

6.3. Contribution to theory

Most grounded theory studies are focused in the fields of health and psychology. While the theory presented in this dissertation has been derived from artistic expressions, its conceptual nature extends to curation and addresses biopiracy as

well. This dissertation has therefore offered some insights into traditional knowledge, curation, biopiracy, and other knowledge domains with regards to the development of the theory. Therefore, the contributions to knowledge of this dissertation are centred on the balance between curation, biopiracy and the changes caused by other knowledge domains on indigenous knowledge.

6.3.1. Constructivist Grounded Theory

This study used the constructivist Grounded Theory procedures as a means of generating a theory that conceptually explains the curation which led to the biopiracy of *Hoodia*, thereby resulting in scientific experiments aimed at developing slimming drugs. Other types of Grounded Theory were also explored in minor detail as well, explaining the choice of constructivism over other procedures. Like classical grounded theory, constructivist Grounded Theory is a popular research method in the disciplines of psychology, education, and nursing. Unlike other Grounded Theory methods, constructivist Grounded Theory “actively [repositions] the researcher as the author of a reconstruction of experience and meaning” (Mills, Bonner & Francis, 2006: 2). The theory of palimpsest in this study will contribute to the constructivist grounded theory, digital curation and preservation of heritage, cultural and other materials. This study is evidence that constructivist Grounded Theory can be applied in other fields or disciplines other than the traditional disciplines.

6.4. Implications of the Study

Theoretical implications. The main purpose of this study was to develop and define a proposed framework for the management of indigenous knowledge across the various ontological domains. Understanding the process of how these ontological domains are represented and the impact of that representation on indigenous knowledge is of primary importance as curation and Western knowledge become more and more dominant.

Research implications. This study only looked at the available literature rather than experiments on *Hoodia* conducted by institutions; it is therefore by no means a conclusive study but offers an insight into the problem. Further research needs to look at the literature produced by involved institutions in order to get a more

comprehensive understanding of the impact of such documentation, experiments, and other studies on indigenous knowledge. Due to the UCT #FeesMustFall protests (from September to November 2016), there were delays in obtaining the ethical clearance letter meaning that only one interview was conducted successfully. As such, it is recommended that more interviews be carried out in order to address the problem statement more effectively.

6.5. Observations

Traditional knowledge, and any other knowledge system, is fluid and changes are due to take place as time pass by and when people from different cultural backgrounds mingle or live together. The expertise of the San people concerning the *Hoodia* cactus was recorded by Rudolf Marloth in 1932 after an expedition with the San. Marloth's recorded experience led to further experiments on *Hoodia* plants. With the traditional knowledge of the use of *Hoodia* being established at this point, science sought to capitalise on it. What the CSIR started investigating was not *Hoodia gordonii* (which is bitter) but *Trichocaulon piliferum* as recorded by Marloth. However, the "previous classification of *Trichocaulon* is not recognised as all *Trichocaulon* species were reclassified as *Hoodia*" (Vermaak, 2011: 7).

6.6. Conclusion

There are two arguments that may arise from this study: those for and those against the curation of indigenous medicinal knowledge in Western preservation systems and modes. Those arguing for the curation of traditional medicinal knowledge are concerned that the lack of systematic records for most indigenous medicinal knowledge may result in "an extensive array of knowledge [to] be lost over time through modernization, introduction of modern medicines and because the knowledge may not be passed down inter-generationally" (Robinson and Kuanpoth, 2009: 381). The main argument against the curation of indigenous knowledge in Western systems suggests that this process will "be only helping the companies to easily scout for the commercial uses of the medicinal and therapeutic properties from the databases" (Sharma, 2002: 2416). Both these arguments are valid when looking at their perspectives.

This study traced *Hoodia* from its holders, the San, and its indigenous context through to the CSIR and scientific knowledge; Phytopharm, Pfiser, Unilever and commercial knowledge; as well as the legal fraternity. The available literature and the interview conducted shows that there were changes made to indigenous knowledge of the San people's use and knowledge on *Hoodia*. Since the focus of the study was on curation, the details surrounding *Hoodia* are not outlined in this study. The emphasis was, however, in developing the theory based on the concept of Palimpsest in explaining the layers upon indigenous knowledge from other knowledge domains. This conceptual theory suggests that the San's *Hoodia* medicinal knowledge was being erased by the scientific and commercial knowledge domains through various methods or mechanisms.

The palimpsest framework derived from the data through the application of Grounded Theory will hopefully provide a touchstone to researchers, commercial entities and lawyers who come into contact with Indigenous Knowledge at any point in its evolution, to ensure that they are fully aware of the implications of their curation actions and activities. While erasures, re-contextualisations and re-representations of IK are unavoidable, an understanding of the compounded and compounding effects on meaning of curation in many domains may help to make informed and wise decisions when dealing with indigenous knowledge.

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APPENDICES

APPENDIX A: INFORMED CONSENT

University of Cape Town

Library and Information Studies Centre

Title: From fable to court: tracing the curation of indigenous knowledge in a biopiracy case

Student name: Fabian Kapepiso (KPPFAB001)

Introduction

This study is about the changes which documentation can make on indigenous knowledge in a *Hoodia* biopiracy case. It is being conducted for the fulfilment of an MPhil. (with Specialisation in Digital Curation) Degree at the University of Cape Town. The study focuses on the scientific, commercial, and legal knowledge domains in understanding how their application or use might have changed the context of indigenous knowledge. Therefore the purpose of this study is to understand how documentation or curation of *Hoodia* information and knowledge in a biopiracy case might have led indigenous knowledge to be de-contextualised, misrepresented and misinterpreted by the Council for Scientific and Industrial Research (CSIR), Phytopharm, Pfizer and Unilever.

Participant's Informed Consent

The researcher will be conducting an unstructured interview, which will not take more than 30 minutes. The information that you will provide will be anonymised in the reporting of findings. However, your anonymity cannot be guaranteed due to the nature of the study. This means that you may be identifiable, based on information

Signature of participant _____ Date: _____

If you wish to withdraw some statements you made in the interview, you may do so, and they will be removed from the record. In addition, anything you do not want to be included in the reporting of the findings will not be included in the study.

Signature of participant _____ Date: _____

APPENDIX B: INTERVIEW QUESTIONS

University of Cape Town
Library and Information Studies Centre

Title: From fable to court: tracing the curation of indigenous knowledge in a biopiracy case

Student name: Fabian Kapepiso (KPPFAB001)

B.1. Legal Domain: Guide and Questions

I. Introduction

- Movement of indigenous knowledge from one domain to the other

II. Background and contextual information

- What was your role and how did you get involved in the Hoodia case?
- Why were you interested in representing the San?

III. Specific questions

- What kind of information were you looking for to make your case in negotiations?
- From where and how did you source this information?
- How was this information documented? E.g. news articles, databases.
- How did you use the obtained information before, during, and after the negotiations?
- Were the negotiations being recorded in any way?
- What impact do you think your interaction with the information had on its substance, meaning and context, if any?
- What change occurred between the information you received and your information outputs in the legal domain?

IV. Winding down

- Would you say this was a biopiracy case?

- Has documentation and widespread reporting by the media on the case cultivated an interest in indigenous medicinal knowledge?
- Has it caused an interest into research in indigenous knowledge?
- Did it have an influence on the National Environmental Management: Biodiversity Act 10 of 2004?
- Has documentation made any changes to indigenous knowledge in your opinion?
- Your conclusions and suggestions

B.2. Scientific and Commercial Domains: *Guide and Questions*

I. Introduction and Background

- What the study is about
- Movement of indigenous knowledge in different knowledge domains
- What was your role and how did you get involved in the *Hoodia* case?

II. Contextual and Specific Questions

- Are you aware of the *Hoodia* research documents and documentation?
- How is information about *Hoodia* documented by the CSIR and others? E.g. database, articles, etc.
- In your opinion, do you think the process of extracting P57 changed indigenous knowledge relating to *Hoodia* in any way?
- Do you think ownership of indigenous medicinal knowledge shift from the indigenous people to the institution conducting research? In what way?
- Considering this, do you think this was a biopiracy case?
- What impact do you think science and commerce had over this indigenous knowledge's substance, meaning, and context?

III. Winding Down

- In what ways do you think indigenous knowledge was transformed as a result of scientific and commercial knowledge?
- In your opinion, does documentation in various forms and formats have an impact on indigenous medicinal knowledge?
- Your conclusions and suggestions.

APPENDIX C:

CODED INTERVIEW TRANSCRIPTS

C.1. Legal Domain

Initial Codes	Interview Statement
	<i>I. Why were you interested to represent the San?</i>
<p>Explaining involvement. Organisation worked for before the case. Nature of work. Knowledge & qualification background</p> <p>Protecting TK early. Explaining the use of TK. Value of TK leads to patents. Intention to protect TK. Reference to the book on San-Hoodia case. Explaining the start of patent application. Signed agreements.</p> <p>Content of agreement. Authorised company to use patent (P57). Sub-contract.</p> <p>Secret agreements. Disclosing knowledge of Pfizer working on Hoodia. Receiving the news. Questioning Phytopharm. Being questioned by the Observer.</p> <p>Explaining how it started. Discovered information. Writing to CSIR.</p>	<p>P. I was the lawyer for the San people from about 1996, working with them in Namibia with the organisation called WIMSA (Working Group for Indigenous Minorities in Southern Africa). Their head office is in Bacht Street, Windhoek. We were working on intellectual property rights. I happen to have a Masters in Intellectual Property Rights and Human Rights Law. So luckily enough my background gave me some advantage. I wasn't just an ordinary lawyer but I knew something about intellectual property rights, patents, copyright, trademark, and all that. So we knew that we were protecting the San information, especially where we know it were works used for traditional medicinal purposes, that is, where the San knowledge would likely have values because traditional knowledge would become patented or sold with commercial value. So we were trying to protect the San knowledge. In the book there [Indigenous peoples, consent and benefit sharing: lessons from the San-Hoodia case] the timeline is quite clear in the Wynberg book when CSIR started applying for a patent. It was in 1995, the patent was granted provisionally, I think, in 1996. Then in 2001, already by that time they signed an agreement with Pfizer, in about I think in 1998; with Phytopharm and then Pfizer. I'm not sure whether Phytopharm was first and then Pfizer. Because they had an agreement to develop a product, and Phytopharm acted as a middlemen company and Phytopharm had the rights to develop the patent, P57. Then they found Pfizer as a commercial partner. Pfizer signed up with Phytopharm. Phytopharm had a licence from CSIR. So, these are complicated agreements, which I have not seen sight of because they are secret. But we knew if Pfizer was about to launch information—or release information in 2001—to say they are working on this exciting <i>Hoodia</i> patent and they are developing an appetite suppressant drug. And then the Observer newspaper phoned me from London and said...Oh! The Observer newspaper asked Phytopharm and said "where did the knowledge come from?" Phytopharm said it comes from the San, but the San are extinct. So I got a phone call from England saying, "Mr. Chennells, I believe you are the lawyer for the San". I said "yes, I am." He said, "Are the San extinct?" [and] I said, "of course not, they are very busy and very alive". That's when it started from my side on that night, 11:00. We quickly got information about what had happened and then we discovered that CSIR had a patent with a partner before them. And we...I wrote a letter to CSIR, saying we demand a meeting and we will challenge the patent unless</p>

<p>Describing willingness of CSIR to engage.</p> <p>Basis of the patent.</p> <p>Reference to book again</p> <p>CBD – framework of negotiations</p> <p>NEMBA Act (2004) – benefit sharing.</p> <p>NEMBA as a source used.</p> <p>Determining payment.</p> <p>Signing agreement.</p> <p>First payment made.</p> <p>Withdrawal of Pfizer.</p> <p>Unilever is contracted.</p> <p>Flow of payment</p> <p>Illustrating agreements between entities.</p> <p>Indicating relationships.</p> <p>Sub-contracts made by Phytopharm.</p> <p>Explaining the type of agreements.</p> <p>Cancelling agreements.</p> <p>Returning patent to CSIR</p> <p>Explaining process taken.</p> <p>When contract expires.</p> <p>Reference to Mr. X.</p> <p>Questioning CSIR's next moves; (questions on curation & use of data).</p> <p>Gladly shows sculpture to interviewer.</p> <p>Questioning how much the San of today knows</p>	<p>we are satisfied that we are being treated properly. CSIR knew that the whole commercial, sort of pyramid, will fall away if we challenge the patent because the patent was a basis of a licence, which is the basis of a commercial licence to Pfizer. So they arranged to meet with us very quickly. And the book describes how we had meetings with CSIR. The meetings were based upon benefit-sharing and based on the Convention for Biological Diversity [CBD]. I don't know whether you know something about it? So you know that that is the framework of the negotiations where the CBD (1992) and South Africa have got laws called the NEMBA law, which you don't have in Namibia. But it's the National Environmental Management Biodiversity Act (NEMBA), 2004. And under that Act, Chapter 6, the benefit sharing has to take place where indigenous knowledge is part of a commercial product. So, under NEMBA Chapter 6...So that was framework which I have checked under the law and then we negotiated. CSIR then negotiated an agreement which is on the record where the San will get 5%, I think it was now. And in 2003, March 2003, we signed an agreement with CSIR—a benefit sharing agreement for the <i>Hoodia</i>. After that...later on, half a million Rand was paid over into a <i>Hoodia</i> Trust. Then the story started with <i>Hoodia</i> not doing well. Pfizer then withdrew in about 2005, I think. I'm just going by memory now, I have to check. Then for about a year, there was no commercial partner, and then Unilever was brought in... If we draw a picture Phytopharm and CSIR are there—Phytopharm, CSIR, Unilever now. And if Unilever made the money, they would then pay it to Phytopharm who will pay it to CSIR who will pay to San. I can even draw a rough picture [showing] the San and CSIR (Benefit Agreement). The CSIR was to Phytopharm, you can say a middleman company to develop, so that's a Licencing Agreement (Licencing of Patent). The CSIR have got patent P57, and then Phytopharm, first of all had Pfizer and then that was cancelled. Then they had another agreement with Unilever. And each of these ones, it's another...so that was a Commercial Agreement (Commercial development). You could say marketing and sales, but that's commercial. So that's the basic structure. So the structure built up and then the structure came down again. They (Pfizer) cancelled in about 2005 and Unilever cancelled in 2010...and then Phytopharm cancelled the licence of patent and gave it all back to CSIR. So now, you can actually say, in round about plus minus 2012, I would say, that all got cancelled and now CSIR are sitting with a patent which is nearly finished—a patent is now nearly expired. Because it has taken so long for them to do all this stuff, so now it's very unlikely that the patent will be bought by somebody else because it's only got, I think, four years left...it's a twenty-year patent, so it's over now this year. So the patent is over and CSIR are sitting with this information. Now CSIR, the person who knows more about this product is Mr. Maharaj, and [he] left the CSIR in about two years ago, say about 2014. So there are many questions. You have to direct me. How much knowledge is CSIR holding? What are they doing with it? How much of that knowledge does Mr. Maharaj hold and what is he doing with it? And where is the knowledge sitting? Now from the San's side...Let me show you a sculpture...Not many San alive today have got the very active knowledge of using the <i>Hoodia</i> because it was used more in the</p>
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<p>about Hoodia. Hoodia uses by San then & now</p> <p>Knowledge of Hoodia today.</p> <p>Plant purposes</p> <p>Curating information from the agreement. End of patent. Referring interviewer to Mr. X Questioning reasons for cancelling sub-contracts.</p>	<p>olden days when people were hungry and were in the bush...where they will walk for two or three days and they come and eat it [or] put it the sack. Eat it and it takes away your hunger. And now when people are hungry, they go to the shop and they buy some custard. So now it is not being used in the way it was used before in the past. So the San leadership that I work with, they know the <i>Hoodia</i> through what they have learned and they have eaten, tasted it and I work with them. But their knowledge of the <i>Hoodia</i> is that this is one of the many plants that old people used for different purposes. If you have a headache, you and use that plant. As you know every plant has got different purposes. So they know the <i>Hoodia</i> have got a purpose and the leadership negotiated with me as their lawyer with the CSIR. We negotiated as much as we can to reach an agreement. I have put a whole file of <i>Hoodia</i> information, trust deed, all of that stuff....Now the CSIR, I think, have no further plans for the <i>Hoodia</i>. I think the patent is running out this year [2016] or next year [2017] and I think they have a thick file. Mr. Maharaj still got some information here and he might give you a different story about some of the reasons. Why did Pfizer decide to cancel, why did Unilever cancel? I'm not sure if you are interested in that information. So you need to guide me, what sort of information do you want. I'm just talking.</p>
	<p><i>I. You were talking earlier about NEMBA. I thought that the discussion with CSIR, the negotiation actually, led to this Act.</i></p>
<p>Period of negotiations. Framework for talks. Arguments for using CBD.</p> <p>Period for tabling of NEMBA Act. Believing that Hoodia influenced Act.</p> <p>Explaining existence of Act and biopiracy. Explaining willingness of CSIR to negotiate without law (Act).</p> <p>Linking biopiracy to prior informed consent. Explaining CSIR options. Confirming existence of NEMBA.</p>	<p>P. Good point. We discussed with them in 2001. At the time we were discussing, we were talking about the Convention for Biological Diversity, because there was no NEMBA. And we said the principles of the CBD are unique with benefit sharing and traditional knowledge where it's linked to the product must have benefit sharing and we negotiated the agreement. While we were negotiating the agreement, I believe that the Department of Environment was quickly trying to write the Act and the Act was an influence, very strongly, by the <i>Hoodia</i> negotiations. We were not drafting the Act; we were busy fighting...the CSIR. So the Act came out, I got a copy of it here, in 2004 (March 2004 or something). So definitely, when we... when this biopiracy thing happened before the Act came out. So they, CSIR, could have said there is no local law saying you have to negotiate. And it's true there was no local law, but the country had signed an international law but this international law is only binding in your country once you have a local law. And biopiracy, because you are using the word somewhere in your thesis, biopiracy is very closely linked with the word "prior informed consent" (PIC). And what NEMBA Chapter 6 says "we consent from indigenous peoples or PIC (Prior Informed Consent) but CSIR can escape and they say, "well, when we were doing the patent, there was no NEMBA so that's why we didn't get consent". So it's true NEMBA only came after we've finished the negotiations.</p>
	<p><i>I. Besides the CBD, what other information did you use to negotiate an agreement?</i></p>
<p>Listing some cases of biopiracy.</p>	<p>P. Okay. There was quite a lot of information around biopiracy, around bioprospecting internationally. So there are other products internationally like the <i>Neem</i>, and <i>quinine</i>, and <i>the rosy periwinkle</i>, and there are other plants that have been subject to biopiracy</p>

<p>Referring to an author & bioprospecting.</p> <p>Explaining role with San.</p> <p>Mentioning qualification as knowledge source.</p> <p>Reading on topics.</p> <p>Explaining what the team knew.</p> <p>Patents entail secrecy.</p>	<p>scandals internationally. There was the Mexican bean, in fact in Rachel Wynberg's papers she's written about bioprospecting. And bioprospecting and biopiracy are like that [closely related]. So what other information did I use? I was advising the San council, and [they] knew very little about international law and so on. I was required to get as much information as I could. So I knew about the law through my Master's thesis and my general knowledge when I read more about biopiracy and about bioprospecting. So when we went into the negotiations we knew quite a lot about best practice, and prior informed consent. And we knew that the CSIR had not done the right thing because they had done this thing secretly. Bear in mind that everyone who is doing a patent, people always keep secrets actually. Secrecy is a very much part of developing drugs, developing...if you give the information out, people could steal it.</p>
	<p><i>I. Were these negotiations recorded in any way?</i></p>
<p>Describing curation.</p> <p>Reference to book as a record.</p> <p>Agreement as a record.</p> <p>Notes as records.</p> <p>Trust deed as a record.</p>	<p>P. I kept my notes; I have got lots of notes. I think in the book there, Rachel Wynberg writes about it...because I can't...when you are a lawyer yourself, you can't write a paper about your own work. So my work ended up in an agreement. All the notes that I took ended up in clauses, clauses and the final result was the agreement. The agreement is there and all the notes become irrelevant because they are just leading toward the final map which is the legal map. The notes of who said what...etc. ended up in an agreement. And the agreement went into the trust deed where the CSIR said if we give you the money we want to make sure it goes safely into the trust. So there are also some stories about trusts.</p>
	<p><i>I. What impact do you think your interaction with the information had on its substance, meaning and context, if any?</i></p>
<p>Explaining impact of Hoodia case.</p> <p>Studies using Hoodia case.</p> <p>Explaining what people expected.</p> <p>Expressing luck due experience & advisors.</p> <p>Expressing grief on Hoodia success.</p> <p>Hoodia as benchmark in agreements.</p>	<p>P. A lot. I think...we knew that <i>Hoodia</i> was going to become an iconic and a world-famous case, which it did. I think if you google it now...there is something like 25 PhDs on the <i>Hoodia</i> case and everyone was analysing it from some different angle. Rachel Wynberg did her PhD, including the <i>Hoodia</i> not only the <i>Hoodia</i> but she also included three other plants. And we knew that we would be under the microscope of the world, people would be watching what we do, people will criticise of course because they always do. They would criticise the agreement, some of them would criticise me saying various things. Other criticisms came from other people saying you shouldn't support patents because patents are by their very nature, patenting life. It's terrible, only God can patent life. Some of the criticism were far left, far right. But basically, I think I was lucky enough to not be a human rights lawyer but also to have some commercially experience and anthropological experience and I read a lot and I have friends such as Rachel Wynberg and others who advised. So I think quite a lot of information went into informing us before we got the best agreement yet for the San. And even though we had an agreement, the fact that the <i>Hoodia</i> ended up not being commercially successful, means that that beautiful agreement is now worth not much. But it's still created a good platform of best practice for a benefit sharing</p>

	agreement. Since then, by the way, we've had four other plants having a very good benefit-sharing agreements, all based upon the <i>Hoodia</i> negotiations. But they were now after NEMBA came in.
	<i>I. What changes occurred between the information you received and your information outputs in the legal domain?</i>
<p>Putting thought to the question.</p> <p>Giving examples to papers most read.</p> <p>Neem patent.</p> <p>Reference to Dutfield & San-<i>Hoodia</i> books.</p> <p>Assistance from others.</p> <p>Difficulty in confirming changes to information.</p> <p>Translating to the San.</p> <p>Explaining overall change.</p> <p>Help from others.</p> <p>Explaining the sources of information.</p> <p>Assuming TK as key.</p>	<p>P. That kind of a question you have to think about actually, because...with so much information flowing around...you know these days I would google benefit sharing and I'll get many, many papers. I've got files that are thick; so I read papers on benefit sharing. Theoretical papers and then the Indian papers, for example the Neem. There was a patent on the neem tree and then there was a patent on the opposition to the patent. Lot of information on bioprospecting and biopiracy. There was a lawyer called Graham Dutfield who wrote some books and I used some information a lot. He also writes a chapter, I think, in that book (in the <i>Hoodia</i> book) you know. Anyway...I must add one more thing now. We got assisted while we were doing this, no, after we had this agreement, we got assisted by this lady...Doris Schroeder. She's a professor and other editors. This university got involved and helped us get information from sociologists, anthropologists...So we were getting quite a lot of information coming in. it's hard to say did the information change. There was lots of information coming into the pot, and I had to help transfer this to the San in almost like a drawing like that. And I would say, this is the CSIR, this is us, this is what we are trying to do...1, 2, 3, 4. So all of that information had to be reduced into something practical. We would get an agreement which will be the foundation for our rights. So my job was to try and synthesise the most useful information and I'm lucky to have quite a lot of people that were feeding in and to say which information, which person helped here and there is quite difficulty because many information came in and then it ended up in the agreement...and the trust deed. So I can't be specific...we didn't work with scientific information much, I must say, information we were dealing with was the negotiation comparing what's happened internationally and we assumed that the San had the right to their knowledge. So it wasn't challenging that...It was an assumption that the San knowledge was key informant into the patent. So we were not examining that. That was an assumption. So all the knowledge was about how do we get the best agreement with the CSIR and how can we help them become successful.</p>
	<i>I. Has documentation and widespread reporting by the media on the case cultivate an interest in indigenous medicinal knowledge?</i>
<p>Explaining <i>Hoodia</i> as an interesting study area.</p> <p>The fame of <i>Hoodia</i>.</p> <p>TK as an industry.</p>	<p>P. Very, very much. I have a lever arch file here about <i>Hoodia</i> with newspaper reports, magazine reports, articles, so much [that] people would come here and start doing their PhDs, studying the <i>Hoodia</i>, studying the San. The case, the <i>Hoodia</i> case, I would say made an explosion of knowledge not only in the world but the San people also became aware that their knowledge is an important component. Now, I don't know whether you have followed in the South African legal world. Traditional knowledge (TK), there is also IKS (Indigenous</p>

<p>IK Draft Bill.</p> <p>Bill as contributor of TK fame.</p> <p>Valuing TK.</p> <p>Hoodia remembered.</p>	<p>Knowledge Systems). It's a big industry now in this country. The department of Science and Technology has got a Draft Bill, I think it's a Bill it hasn't become an Act yet. Indigenous knowledge Act. I would say this contributed widely towards indigenous knowledge and TK (traditional knowledge) becoming public as an asset. It's not a patent, it's not into intellectual property right as such; it's not a patent or intellectual property right or trademark; but TK is a valuable product or commodity. So I would say the <i>Hoodia</i> case is quite recognisable. People still know [about it]. If you say <i>Hoodia</i>, everybody remembers that about ten years ago there was all this talk about <i>Hoodia</i>.</p>
	<p><i>I. You were talking about research earlier on. That people come to do their PhDs, Master's and so forth on Hoodia. Has documentation made any changes to indigenous knowledge in this case?</i></p>
<p>Research adds new knowledge; kept by libraries.</p> <p>Referring interviewer to Wynberg.</p> <p>Explaining the work of a lawyer on a case.</p> <p>Plants receiving most attention now.</p> <p>Type of knowledge added.</p>	<p>P. Every time a paper comes up, it adds to [knowledge] because that's how it works. Knowledge gets recorded in a library and then it gets expanded and I would say...By the way are you going to speak to Rachel Wynberg at some point? She can answer some of these questions from an academic point of view and her own PhD has got some <i>Hoodia</i> in it and I think...she will answer those questions more because she's an academic. I'm a lawyer so I only get papers that I need to show my case. So working on <i>Hoodia</i>, I look for papers on <i>Hoodia</i>. So she's an academic and they know how knowledge...The interest in <i>Hoodia</i> and indigenous knowledge is now gone to other plants—there is keletia, sutherlandia, halo, huhu, [and] rooibos. All these plants are now having similar interests but it all started with the <i>Hoodia</i> and every time someone writes a Master's thesis or an Honours or something, it adds to the knowledge on benefit sharing, and traditional knowledge and all of that.</p>
	<p><i>I. Your conclusions and suggestions. I'm trying to show that there has been some changes which leads to Hoodia knowledge, especially indigenous medicinal knowledge of the San people—whether it has been de-contextualised or misrepresented or misinterpreted.</i></p>
<p>Summarising knowledge domains.</p> <p>TK as underlying domain.</p> <p>Applications of scientific domain.</p> <p>Commercial domain & its applications.</p> <p>International domain & its applications.</p> <p>Explaining Hoodia as a benchmark for cases.</p>	<p>P. Just to summarise, I can think about four levels of knowledge probably which...where the <i>Hoodia</i> have been very active. So the one was underground where the San are actually using it, and they are still using it, and they will carry on using it because they know what it does. That is theirs. Then there is a scientific level where it taken under a microscope and it was patented to the CSIR and Mr. Maharaj has the scientific area so this is what <i>Hoodia</i> actually does in the laboratory that turns into a patent. Then there is a commercial [level where] you can have a patent and you can use it to make a lot of money in the world but you must have the right agreement. So that's another whole range of conversation. And then there is a fourth one, I think, is the international interest as the CBD and the Nagoya Protocol were negotiated. The Nagoya Protocol was only concluded in 2010, at which time the <i>Hoodia</i> case was still alive very much in 2010. Now, it's slipping a bit. The <i>Hoodia</i> is still regarded as the iconic bioprospecting/biopiracy case, almost as a foundation for all the other cases because it was done in 2001, 2003. Then the other cases were</p>

Research as part of international domain.	<p>done earlier, so this one was scrutinised. It has PhDs and research on it. So in the international knowledge, around traditional knowledge that whole body of knowledge there. Research papers but also policy papers and even law, international law, on TK. That's the fourth level. And the fourth level is huge so the <i>Hoodia</i> is mentioned all the time. You look at international cases (writings) on traditional knowledge, the <i>Hoodia</i> is cited a lot. So this indicates that the first level of the San is cited. It has become very powerful. And each level of knowledge is different. Different forms of knowledge and there is a link all way down and up. And I would say there might be another level but I'm thinking of four levels. And it's very fascinating. I would like to read your thesis when you are done.</p>
TK as main domain.	
Showing interest in interviewer's thesis.	

APPENDIX D:

ETHICS APPROVAL LETTER



Library and Information Studies Centre
University of Cape Town
Upper Campus

Private Bag X1, RONDEBOSCH, 7701 South Africa
Level 6 Hlanganani, The Chancellor Oppenheimer Library
Tel: +27 (0) 21 650 4546
E-mail: lisc@uct.ac.za
Internet: www.lisc.uct.ac.za

UCTLIS201612-07

01 December 2016

Mr. Fabian S. Kapepiso |
Library and Information Studies Centre
University of Cape Town

Dear Mr. Fabian S. Kapepiso

I am pleased to inform you that ethical clearance has been granted by the Ethics Review Committee of the Library and Information Studies Centre, Faculty of Humanities on behalf of the University of Cape Town for your Master's project entitled: *From fable to court: tracing the curation of indigenous knowledge in a biopiracy case*

I wish you the very best with your study

Yours sincerely,

A handwritten signature in black ink, appearing to read 'T. Matingwina'.

Dr Thomas Matingwina
Chair, Department (LISC) Research Ethics Committee.

|

APPENDIX E:

LETTERS FROM PARTICIPANTS



Pfizer Medical Information
E-Mail: Med.Info2@Pfizer.com

Fabian Kapepiso

07 June 2016

Your medical information enquiry concerning Hoodia

Dear Fabian Kapepiso,

Thank you for your request regarding Hoodia.

Please note that Pfizer can only provide information on specific questions pertaining to a Pfizer product. Pfizer does not have any products containing hoodia and will therefore not be able to assist.

I hope the information enclosed proves to be of help and interest. Please do not hesitate to contact us if you require anything further.

Yours sincerely

A handwritten signature in black ink, appearing to read "Sumari".

Sumari Davis
Medical Information

Ref: ZA16-000836

Disclaimers:

Pfizer stores your personal information to enable us to address your enquiry, complaint or such other matters that you have raised, and to document our response. Your information will only be used for this purpose, unless required for legal proceedings. It may be necessary to share your information with Pfizer affiliates, partners and regulatory authorities located in countries besides your own. If reporting an adverse event, the information provided will be used in order to meet our regulatory requirements in relation to the safety of our medicines. In accordance with applicable law, you may have a right to access and correct your information. For any question regarding our use of your personal information please contact us by using the local Pfizer telephone number, or by e-mail: Med.Info2@pfizer.com, or by submitting your request via www.PfizerMedicalInformation.co.za

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