



## The Intersection of Culture and Science in South African Traditional Medicine

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### Abstract

*Traditional African medicine often carries with it a perception and stigma of being irrational and ungrounded in scientific method in academia. One reason for this common prejudicial view of traditional African medicine is the failure to effectively interpret African traditional medicine concepts, as these are often metaphorical descriptions of the biological and psychological effects of plants or combinations of them used in the traditional medicine preparations. When translated into other languages such as English, these metaphorical descriptions of medicinal plant use can seem to incorrectly reflect mysticism and/or superstition with no scientific basis. This difficulty in interpreting cultural descriptions of medical phenomena, together with the fact that there are hardly any academic papers engaging the science of South African traditional medicine in the biological sciences, is an indication of the disconnection between the humanities studies and the biomedical studies of South African traditional medicine. This paper investigates some popular examples of spiritual plant use in traditional South African medicine using phytopharmacological studies together with anthropological fieldwork methods, demonstrating the empirical basis for use of some plants in divination (by producing clarity of thought or dreams). The examples also reveal the phytochemical and biomedical foundations of the South Bantu speaking traditional healers' explanations of why and how various spiritually used plants have medicinal value. The challenge for scientists (such as botanists) is to effectively translate and interpret cultural and language based descriptions of spiritual medicinal plant use made by indigenous peoples while recognizing and discarding cultural prejudices that prevent a more comprehensive and integrated understanding of the science that intersects and forms the basis of many, though not all, cultural healing practices.*

### South African traditional medicine

The World Health Organization (WHO, 2008), defines traditional medicine as:

The health practices, approaches, knowledge and beliefs incorporating plant, animal and mineral-based medicines, spiritual therapies, manual techniques and exercises, applied singularly or in combination to diagnose, treat and prevent illnesses or maintain well-being.

Traditional medicine is by no means an alternative practice in South Africa, with an estimated 72% of the Black African population in South Africa relying on this form of medicine, accounting for some 26.6 million consumers (Mander, Ntuli, Diederichs, & Mavundla, 2007). These consumers encompass a diverse range of age categories, education levels and occupations. The value of the trade in raw medicinal plant materials in South Africa is estimated to be approximately R520 million per year (in 2006 prices), with the traditional medicinal plants and products

trade in South Africa estimated to be worth R2.9 billion per year (Mander et al., 2007).

Scientists have taken advantage of the region's immense botanical diversity with South African research institutions being at the forefront of phytopharmacological studies of South African plants with the aim of developing new allopathic medicines (Light, Sparg, Stafford, & van Staden, 2005). These studies focus predominantly on screening and isolating phytochemicals for specific pharmacological actions. This has resulted in an increasing trend in validating traditional medicine claims from scientific studies, especially for plants with traditional uses for physical ailments, such as plants with antibiotic properties used for infections. One example is the pharmacological validation of uterotonic compounds and activity of *Rhoicissus tridentata* that is traditionally used in pregnancy to augment labour (Brooks & Katsoulis, 2007). However, the same research validation has not yet occurred for the majority of plants used for spiritual healing in South African traditional medicine. One reason for this may be because the psychological effects from the internal administration of psychoactive plants in humans are more difficult to test, assess and interpret using the scientific method than those producing physical effects. However, I argue in this paper that a more prevalent reason is the culturally ingrained prejudice against traditional medicine and its associated religious or spiritual plant use, which is often deemed irrational, non-empirical and unscientific.

Medicinal plant use in South African traditional medicine occurs on a sliding scale from physical to spiritual uses. There are polar extremes of plants used only externally and exclusively as charms for magical purposes, while others have only physical uses. However, for numerous plants that are administered internally for spiritual healing purposes in South African traditional medicine, there exist mutually inclusive physical, psychological and spiritual therapeutic effects, as in the case of *ubulawu* plant mixtures (Sobiecki, 2012). This overlapping physical and spiritual medicinal plant use coincides with the African worldview of the co-existing and inter-dependent relationship between the physical and spiritual nature of sickness, medicines and existence (Petrus & Bogopa, 2007).

One aim of this paper is to investigate examples of spiritual plant use in traditional South African medicine using phytopharmacological studies and anthropological methods. Therefore, it is relevant to include some of the most significant spiritual beliefs held by the indigenous Southern Bantu speaking (hereafter referred to as Southern Bantu for brevity) people of South Africa and how they relate to their spiritual use of medicinal plants.

### Some important traditional cultural beliefs of the Southern Bantu speaking people

Bantu refers to the 300-600 ethnic groups in Africa of speakers of Bantu languages, distributed from Cameroon East across Central Africa and Eastern Africa to Southern Africa (Lewis, 2009). A large proportion of the indigenous ethnic groups in South Africa are represented by the Southern Bantu; the Bantu languages spoken in the southern African region (Nguni, Sotho-Tswana, Venda), which also includes languages of Mozambique (Tsonga) (Van Warmelo, 1935).

One of the most important of the traditional beliefs amongst the Southern Bantu people is the belief in the immortal ancestors who influence and direct the affairs of the living and to whom propitiatory practices such as food and drink are offered (D. Hammond-Tooke, 1937). Ill-health and misfortune are believed to often stem from ancestral wrath, witchcraft or ritual pollution (W. D. Hammond-Tooke, 1998), but often also point more deeply to disturbed social relations.

In southern Africa there are two main types of traditional health practitioners: the herbalist (Zulu *inyanga*; Xhosa *ixhwele*; Tsonga *nyanga*; Sotho *ngaka*) and the diviner (Zulu *isangoma*; Xhosa *igqirha*; Tsonga *mungome*; Sotho *selaodi*) (Sobiecki, 2012). The diviners are considered to be the spiritual specialists and use divination to communicate with their ancestral spirits to diagnose their patients' misfortunes or medical conditions (although both types of practitioner use plant medicines for spiritual healing). It is the work of the traditional Southern Bantu diviner to apply or recommend the appropriate action in the form of counseling, prescribing medicines and/or instructing on ritual ceremonies. Southern Bantu diviners develop an extensive knowledge of human disease and treat a variety of conditions using natural medicines. Petrus and Bogopa (2007, p. 7) explained that "there is an acute awareness, among African societies, of the three-dimensional nature of human beings, as simultaneously, biological, social and spiritual beings ... and that humans exist in three interrelated worlds: the human, nature and supernatural worlds". As an example of this worldview, the Southern Bantu diviner will prescribe plant, mineral or animal based medicines, often in a ritualized context of use, to either, for example drink, vomit, bath or sprinkle with around the home for physical, psychological and spiritual medicinal effects or spiritual protection. In these ways the traditional healer aims to rectify imbalances on the physical, spiritual or social (inter-personal) level, and thus the traditional diviner-healer can be said to be practicing holistic medicine in that the approach addresses the whole of the person and

his/her relationships to society and the environment. Thus, the authentic African traditional healer plays a vital role in health care where people accept and believe that nature, humans and spirits are not separate but are all within the world, and use medicines in order to influence these forces on the physical, psychological and spiritual/transpersonal levels.

### Research methodology

In this paper I provide literature evidence on, and a critique of, the prejudicial assessments of South African traditional medicine occurring in the academic literature and mass media.

I further investigate some popular examples of spiritual plant use in traditional South African medicine using phytopharmacological study findings together with anthropological research methods such as participant observation and interviewing. These examples of spiritual plant use were part of my anthropological fieldwork observations primarily between 2008 and 2012 with a key research informant, Mrs Maponya, a Northern Sotho traditional healer who has been my long-term and credible research informant since 1998. I initially used structured and semi-structured interviewing with her and 18 other traditional healers on their use of plant medicines in traditional healing. Later, as my relationship with her and other traditional healers developed and trust was established, my fieldwork was based more on unstructured interviewing and participant observation in helping to prepare medicines for her patients. This became more routine as part of my formal apprenticeship training process with her in 2012 to learn South African traditional medicine. Detailed notes were made routinely after each day's work. Informal conversations often led to key insights into the cultural understandings of use of traditional medicine and their significance. Mrs Maponya's knowledge of spiritual plant use has been invaluable in contributing to my understanding of the physical and spiritual aspects of traditional South African medicine in the ethnobotanical research field (Sobiecki, 2008, 2012). Study aims were described and verbal informed consent was obtained from all the traditional healers I interviewed. Having observed, experienced and noted the uses and effects of some popular spiritually used plants, I analyzed these experiential reports in context of phytopharmacological studies done on these particular plant species, and combined the findings presented in this paper.

### Prejudicial assessments of African traditional medicine and the disconnection between the cultural and biomedical studies of African traditional medicine

From an anthropological point of view I argue that one of the problems with many of the ethno/phytopharmacological research publications is that indigenous knowledge regarding traditional medicine understandings is rarely given mention and integrated into the ethno/phytopharmacological research outputs. This gives the impression that the indigenous cultural use of plants is, by and large, incidental, anecdotal and ultimately insignificant. However, for example, a recent research paper has indicated complex therapeutic processes and psychoactive mechanisms involved in ritual plant therapy in southern African traditional healing. This paper suggests that these processes cannot be understood by focusing solely on the plants' phytochemical actions, but also need to incorporate the interacting dynamics of ritual, phytochemical synergy of the plant mixtures used and the psychology of the medicine user (Sobiecki, 2012). While many universities in South Africa are involved in pharmacological or chemical studies involving indigenous plants and seek novel chemical products for pharmaceutical drug development, there is a paucity of research focused on the intersecting cultural (ritual) use of South African medicinal plants. This was previously highlighted in Liengme's (1983) survey of ethnobotanical research in South Africa, which showed that the majority of studies of indigenous plant use have focused on medicinal plants (16%) and food plants (20%), with only a few (7%) relating to the category magic, ritual and customs (Dold & Cocks, 1999).

This lack of research on the cultural and spiritual aspects of South African medicinal plants is exacerbated by the continuous and entrenched view in the biological sciences that African traditional medicine is unscientific or irrational, as the following excerpt (Taylor, Rabe, McGaw, Jäger, & van Staden, 2001, p. 24) suggests:

The rational use of traditional medicine is also not well-defined, and often relies on ritual, mysticism and intangible forces such as witchcraft, with some aspects based on spiritual and moral principles which are difficult to rationalize.

I argue that this common misperception of the supposed irrational aspects of traditional medicine has its origins partly in the "the colonial constructions of Africa's 'otherness' and essential "primitiveness" that persists today" (Croucamp, 2001, p. 1). "Colonial attitudes towards indigenous southern Africans expressed themselves, in part, in the invalidation and distortion of the traditional public domain. To a large degree, this involved the denigration of the diviner" (Croucamp, 2001, p. 1). "Early colonial views ranged from describing southern Africans as entirely without

religion, to denouncing diviners as ‘pillars of Satan’s kingdom’. The ‘religion’ of the colonialists was often contrasted with the ‘superstition’ of southern Africans” (Croucamp, 2001, p. 1). Furthermore, “The way colonialists conceptualized Africa’s ‘otherness’ has leaked into the nomenclature and the expectations of anthropology and historiography” (Croucamp, 2001, p. 3). I would argue that these perceptions have also leaked into society as a whole.

It is easy to see how such prejudicial views on African traditional healers can creep into sensational mass media. For example, in the National Geographic documentary series “The Witchdoctor Will See You Now” (Crick, Griffiths, & Payne, 2011) there is an almost exclusive focus on unusual and apparently magical traditional African rituals of blood-letting and animal sacrifice that appear to be sensationally framed without truly engaging the indigenous understandings of what these and other more common traditional medicine practices mean. In the series, frontman Piers Gibbon takes the stance that “it’s important to keep an open mind and take a closer look at things that may be alien to us in the West” (Dunbar-Curran, 2012, para 18). However, such superficial and sensational media stories focusing on traditional medicine only reinforce the fears and doubts regarding traditional medicine in the public eye and mind, doing little to provide an impartial and balanced view of all aspects of traditional medicine in operation within traditional healing.

Prejudicial views can also commonly be found in academic literature relating to the supposed ‘unscientific’ diagnostics or practice of traditional medicine, and the toxicity issues leveled at traditional medicine. For example, the suggested distinction between Western and traditional medicine, with Western medicine seen as scientific and traditional medicine as non-scientific, is articulated by Bruce (2002, p. 162) who states, in a chapter entitled “Differences between Western and traditional approaches”, that:

Modern or Western medicine is dominant in Western societies and is firmly rooted in a scientific paradigm; medical science is used to explain the cause of disease using a biomedical practice model. Traditional medicine operates within an indigenous, spiritual realm, which explains the cause of disease as social and psychological conflicts or imbalance.

I argue that this is a grossly polarized view, and the suggestion made (that there is no scientific basis to the practice of African traditional medicine) is a false construction. Southern Bantu traditional healers typically assess patients by diagnosing medical signs and symptoms based on repeated observations, and

prescribe medicinal plants that have replicable effects and results correlated with the presenting symptoms. This diagnostic system is based on testing such plant therapies for observed and replicable effects for many generations, thereby demonstrating the underlying scientific method involved with such medicine practices. However, this diagnostic aspect of African traditional healing is often not acknowledged or studied by Western practitioners or researchers who often focus more on the conspicuous ritual aspects of traditional medicine. This focus is indicated in Bruce (2002, p. 163) who stated: “In protecting against disease and other forms of adversity, traditional approaches include certain rituals, performed at significant events during one’s life stages” without mention being made of established medicinal plants being used as protection from disease.

Another biased academic focus is the issue of the safety and efficacy of African traditional medicine. It is doubtlessly true that if African traditional medicines are to be manufactured and sold as products safety and efficacy needs to be standardized. However, concerns regarding toxicity issues are usually leveled only at traditional medicines, while similar concerns are not mentioned in relation to biomedicine, although these concerns do in fact exist. Bruce (2002, p. 162), while purporting to address the common elements in Western and African traditional healing practices, instead highlighted the dangers of toxic plants used in African traditional medicine and provided statistics of traditional medicine related deaths in South Africa caused by plant toxins. However, no such mention is made of the existence of adverse drug reactions and toxicity resulting from the use of Western medicines. This is despite the fact that research suggests that “adverse drug reactions (ADRs) from Western pharmaceuticals are one of the leading causes of morbidity and mortality in healthcare” (Alomar, 2013, p. 2). According to Alomar (2013) in 2000 The Institute of Medicine, located in the United States (US), reported that between 44 000 and 98 000 deaths occur annually as a result of medical errors. Of this total, an estimated 7000 deaths occurred due to ADRs (Alomar, 2013). Not mentioning the impact of Western drug toxicity in papers addressing the scientific validation of traditional medicine introduces an unbalanced and biased focus on the issue of toxicity that pertains to both systems of medicine but that is usually highlighted only in relation to traditional medicine practices.

Fennel et al. (2004, p. 205) also stated:

The prescription and use of traditional medicine in South Africa is currently not regulated, with the result that there is always

the danger of misadministration, especially of toxic plants.

This quotation implies that regulatory standards are the mechanisms by which toxicity issues are prevented in Western medicine. However, this is an erroneous view, owing to the fact that despite the well know regulatory frameworks in place within Western/biomedicine, study figures indicate there is a trend of increasing death and injury resulting from adverse drug reactions in biomedicine (Alomar, 2013). Thus, toxicity from drug side effects is a major and growing issue in Western scientifically based medicine. Fennel et al.'s (2004) statement quoted above also assumes that Southern Bantu traditional healers are not aware of toxicity issues. However, this has not been my observation over 14 years of fieldwork experience with South African traditional healers. In fact, traditional healers have reported methods to prepare medicines which nullify toxins, or prescribing particular dosages for limited time periods to prevent toxicity.

Other obvious prejudicial viewpoints have been noted within the literature. For example, Bruce (2002, p. 162) stated: "The absence of sophisticated technology is characteristic of (the healers') practice: herbs, plants and plant products, animal products and spiritual resources are used to prevent and treat disease". What she fails to mention is the complex phytochemical synergistic actions of traditional medicine preparations skillfully employed by the authentic Southern Bantu traditional healers in treating various diseases and illness, and the sophisticated psychoactive mechanisms involved with the use of ritual plant therapy in their healing initiation process (Sobiecki, 2012).

The prejudicial viewpoints mentioned above are only some of many examples of the limiting and polarized beliefs afforded traditional medicine. These beliefs have been carried into the academic research field without a true and thorough assessment of the scientific principles in operation in traditional medicine. However, as some researchers have pointed out, "the reason that various ethnomedicines have not been scientifically validated for safety and efficacy is mostly attributable to the lack of collaboration between biomedical scientists and traditional healers" (Chinsebu, 2009, p. 1), rather than being because the treatments or processes lack scientifically verifiable mechanisms of action.

I was unable to find many academic papers including 'science' and 'South African traditional medicine' in the title, keyword or abstract search terms by screening the biological sciences databases such as Science Direct, Sage, Cabi, Wiley and Scopus. (A notable exception is Green's (2012) paper focusing on

the contradictions in the debate on traditional medicines and the sciences in relation to HIV.) This paucity of research is an indication of the disconnection between the humanities studies (cultural explanations) and the biomedical studies (biochemical explanations) of South African traditional medicine. These findings may be due to the ingrained cultural prejudices discussed above as well as difficulties in decoding cultural and language based meanings, rather than the underlying scientific validity of these cultural practices.

In the context of such ingrained culturally conditioned prejudice against African traditional healing as unscientific, the following examples demonstrate that African traditional medicine concepts are often metaphorical descriptions of the biological and psychological effects of plants or combinations of plants used in traditional medicinal preparations. These concepts are thus culturally encoded in the language used by indigenous peoples and are therefore masked. Thus, the view of traditional medicine as irrational is often based on failing to correctly interpret, and therefore misunderstanding, these culturally defined metaphorical descriptions of plant use.

#### **Some South African traditional medicine examples and their cultural and scientific basis**

This section provides some popular examples of plants used for spiritual healing purposes in South African traditional medicine and discusses their interrelated pharmacological, psychological and spiritual healing dynamics. I have documented these dynamics as part of my anthropological fieldwork studies.

##### ***Mlomo mmandi* 'Sweet mouth'**

On one occasion while visiting Mrs Maponya, I mentioned that I was feeling under stress as a result of the day's activities. She offered me some short stick-twigs called *mlomo mmandi* (meaning 'sweet mouth' in Zulu) on which to chew. She remarked that I should just chew on them as if they were gum. I did so and found the taste peculiarly sweet. After some time talking to her, I felt more relaxed, and what started off as an anxious conversation ended with laughing and joking. Later, at home, I researched the botanical meaning of *mlomo mmandi*, discovering that it is referred to *Glycyrrhiza gabra L.* or licorice in Western cultures. Licorice is a well-known tonic plant used in Europe and America for fatigue, adrenal exhaustion and to improve vital energy (Vanrenen, 2000). When I relayed this information to Mrs Maponya the next time I saw her, she was unsurprised and said that the plant is often used before meetings to "make one talk nicely, that is to have a sweet

mouth” (i.e. to open communication). Subsequently, I have repeatedly used this licorice powder in stressful situations. In my experience it has a distinctly uplifting psychoactive and tonic effect that promotes relaxation and improved communication.

The scientific mechanism underpinning this use is the energy and mood boosting actions of tonic plants such as ginseng and licorice through the action of triterpenoid saponins that stimulate production of hormones by the adrenal glands (Chevallier, 1996; Vanrenen, 2000). In Ayurveda or traditional Indian medicine, licorice is reported as “nourishing the brain, promoting contentment and harmony. It improves voice, vision, hair and complexion and gives strength” (Frawley & Lad, 1993, p. 127). ‘Sweet mouth’ is thus a good example of an indigenous metaphorical term used to describe the medical application of the licorice plant.

### ***Imphepho: African incense of the ancestors***

*Imphepho* (the flowers of the everlasting family *Helichrysum*) is an important and widely used plant that is used as ritual incense in South African traditional medicine. Bundles of the dried flowers are often seen on the medicinal plant markets in Johannesburg where they are sold to the public and to healers alike. The dried flowers and stems are often burnt by diviners to invoke the ancestral spirits while practicing divination for clients. In 2010, while conducting a public workshop on ethnobotany, a colleague and I burnt a large bundle of *imphepho* in a room with attendants. The smoke filled the room and we inhaled the smoke and talked about its use. Within a short time, the group became quiet and meditative and an atmosphere of calm prevailed. Having noted its calming effects among the group, we discussed its ritual use and we made a connection with the use of frankincense, the resin obtained from trees of the genus *Boswellia*, that has been used since antiquity in various religious ceremonies in Christian churches (Moussaieff et al., 2008). Frankincense has been shown to have an anxiolytic (anxiety reducing) psychoactive effect in studies conducted by the Johns Hopkins University (Moussaieff et al., 2008). Likewise, the psychoactive chemistry of *imphepho* has been indicated in phytochemical studies, where Stafford, Jager and van Staden (2005) determined the GABA-receptor binding effect of extracts from various *Helichrysum* species used in South Africa. GABA is a significant inhibitory neurotransmitter chemical responsible for relaxation. Thus, there is an empirical basis that, at first hand, is not apparent to the use of *imphepho* and frankincense alike for spiritual healing purposes. The inhalation of these plants’ psychoactive chemicals promotes a calm and relaxed state of mind that is conducive to religious

and spiritual practices such as praying. Other South African plants, such as *Boophane disticha* (L.f.) Herb, that are used for “invoking the ancestors” or “arousing the spirits” (Sobiecki, 2008) have sedative effects and narcotic alkaloids have been isolated from the bulbs (Watt & Breyer Brandwijk, 1962). A similar example relates to *ubulawu* plant preparations, which are used by Southern Bantu diviners to open a connection to the ancestral spirits. These plant preparations have sensitivity and intuition enhancing psychoactive effects (Sobiecki, 2012). Thus, the hypothesis can be made that the African cultural descriptions of ‘arousing or invoking the spirits’ are often metaphorical indicators for the relaxing and mind-opening actions and effects of South African psychoactive plants.

### ***Ubulawu spiritual medicines and luck***

Closely related to this use of *imphepho* to invoke and connect with the ancestral spirits is the use of *ubulawu*. The term *ubulawu* refers to traditional South African plant preparations for ‘cleaning the body’ and to ‘bring luck’. These preparations are made mostly from the roots (e.g. *Silene bellidioides* Sond.) and stems (e.g. *Helinus integrifolius*, Lam., Kuntze.) of various plants (Sobiecki, 2012). These ingredients are ground and made into cold water infusions that are churned with a forked stick to produce foam. Both the foam and liquid of *ubulawu* preparations are drunk as part of vomiting (emesis) therapy by diviners and laypeople alike (Sobiecki, 2012). The psychoactive effects and possible chemistry of various *ubulawu* plant species has been recorded. For example, Triterpenoid saponins are confirmed to be in popular *ubulawu* species such as *Agapanthus campanulatus* F.M. Leight. and *Maesa lanceolata* Forssk. (Hutchings, Scott, Lewis, & Cunningham, 1996).

While the ‘cleansing’ effect of *ubulawu* preparations is evident, their reported ability to ‘bring luck’ is less evident. Mrs Maponya explained that *ubulawu* is important, in the first instance, to “clear the lungs” to enable her “inner vision” so as to remember her dreams (Sobiecki, 2012, p. 219). In this way “*ubulawu* will connect you with your ancestral spirits, to give you what you need, they open your way, and in this way all the plants can give you spiritual help” (Sobiecki, 2012, p. 219). This aspect of *ubulawu* is similar to *vamana* (emesis) therapy in Ayurvedic medicine, which aims to remove the body of excess mucus and water (*kapha*) that collects on the lungs and “disturbs the mind and clouds the senses” (vide Frawley, 2000, p. 156). The physiological mechanism of this use of emetics was elaborated by a pharmacist colleague who explained that the reported clarity of thought and improved dreaming could be due to the medicines having a highly effective expectorant

effect, removing viscous mucus and other impurities (e.g. carbon) from the lungs; thereby allowing more oxygen to enter the lungs and, possibly, increasing the functional surface areas of the blood-air barrier which would result in an overall increase in cognitive abilities as more oxygen would be reaching the cerebral cortex (Florczak, personal communication, March 2012). Accordingly, I suggest that it is possible that *ubulawu* preparations 'bring luck' in the sense of enabling the user to attain a positive frame of mind that comes from the feelings of well-being and of clarity of thought resulting from the consumption of psychoactive chemicals contained in the plants and the use and effects of emesis therapy. Thus, the culturally defined term 'bringing luck' could be further investigated as a metaphorical indicator of psychoactive plant effects used by Southern Bantu traditional healers and laypeople to connect with their ancestral spirits.

## Discussion

The popular examples in this paper highlight the fact that there is a scientific basis to many African traditional medicine practices. However, this topic is rarely explored in the academic literature. This indicates an apparent disconnection between the humanities and biomedical studies of African traditional medicine. This disconnection is partly attributable to the difficulty in effectively translating and interpreting the nuances of African cultural and language based descriptions of spiritual medicinal plant use and its effects. It is also partly attributable to the ingrained cultural prejudice of traditional medicine as being unscientific or 'irrational' evident in societal dialogue, mass media and academia.

In this paper, I investigate some popular examples of plants used for spiritual healing purposes in traditional South African medicine using phytopharmacological study findings and the anthropological participant observation method. Through so doing I demonstrate that African traditional medicine concepts are often metaphorical descriptions of, for example, the psychoactive actions and psychological effects of plants or combinations of plants used in traditional medicinal preparations. In the example above, the description and use of *ubulawu* plant species as 'bringing luck' is a metaphorical description of the psychological effects (clearer thinking and insight, revelatory dreams and good feelings) resulting from the consumption of psychoactive chemicals contained in the plants and the use of emesis therapy. Thus, such cultural descriptions of spiritual plant use are often fitting indicators of psychoactive and other medicinal plant actions. In other words, the metaphors associated with the spiritual use of plants in South African traditional medicine are clues to actual phytopharmacological

effects. These metaphors should not be considered evidence of the spiritual phenomena reported, but instead read as clues to phytopharmacological actions leading to changes in mood and states of consciousness (like sedative hypnotics) that can then be researched further. Researchers who collect descriptions of the effects of plants used during traditional spiritual practice may unwittingly be collecting indicators of phytopharmacological actions. This possibility could be tested and harnessed more effectively as these metaphorical indicators of phytopharmacological actions could have application in the field or in screening the literature to identify medicinal plants with specific actions. Multi-disciplinary research that makes use of a combination of phytopharmacological data and anthropological methods can test the frequency of these culture-bound metaphorical indicators that are analogous to medicinal plant actions.

Furthermore, analyzing the Southern Bantu speakers' cultural explanations of spiritually used plants in relation to the phytopharmacological studies conducted on these plants can also demonstrate the empirical basis for use of some plants in divination (by producing things such as clarity of thought and dreams), while simultaneously revealing the phytochemical and biomedical foundations of the African traditional healers' explanations of why and how various spiritually used plants have medicinal value. Therefore, scientific (phytopharmacological and phytochemical) studies can be used to support the culturally defined descriptions and explanations of spiritual plant use. For example, the recently verified psychoactive relaxing properties of *imphepho* (Stafford et al., 2005) are conducive to promoting an altered state of consciousness that facilitates its traditional spiritual uses.

In addition to the metaphorical indicators of phytopharmacological actions, the spiritual explanations of medicinal plant use should also be considered for their literal spiritual meaning. This is because Southern Bantu traditional healers are aware of and report that any medicinal plant has physical characteristics of use (e.g. burning the *imphepho* plant), corresponding psychological effects (e.g. from inhaling the smoke from the *imphepho* plant that contains psychoactive chemicals), and *spiritual* effects (e.g. the use of *imphepho* to connect with one's ancestral spirits). Thus, the Southern Bantu traditional healers consider the related physical, psychological and spiritual effects of plant medicines to be mutually inclusive of one another. Such a model of medicinal plant use is reminiscent of the African worldview of the "three-dimensional nature of human beings, as simultaneously, biological, social and spiritual beings" (Petrus & Bogopa, 2007, p. 7). This also indicates that science (the biological aspect) is

implicitly considered a component of sickness, healing and the human being. Scientific explanations are therefore shared with the social and spiritual aspects believed to be operating in reality.

The examples of culture bound metaphorical indicators of phytopharmacological actions mentioned in this paper are not isolated, with many more South African traditional plant medicine examples existing. Yet, despite this, and the need and value of understanding these cultural uses, sensitivity and respect should be observed in recording indigenous knowledge, especially in relation to those plants that are used in the initiation of traditional healers. Some of these plants cannot be divulged in public but only through training. To demonstrate one further example, there is a plant species that is used as a red *ubulawu* medicine in the initiation process of Southern Bantu diviners that has a vernacular name that indicates the sound of a beating heart. This medicine has other reported uses for palpitations elsewhere in Africa, indicating possible anti-arrhythmic and hypotensive actions. I have experienced the relaxing effects of this medicine and have also experienced what felt like a lowering of heart rate when using the medicine as part of my training apprenticeship. This could be another likely example of where the vernacular meaning of this plant's name is a metaphorical indicator of the plant's pharmacological actions.

The challenge for scientists (such as botanists etc.) is to engage traditional medicine practices with a mind open to the fact that there may be many more scientifically valid processes occurring beneath the

surface of ritual appearances. Scientists therefore need to effectively translate and interpret the cultural and language based descriptions of indigenous people's spiritual plant use, where rationality and empirical soundness is not always immediately evident, but is indeed often present. This aligns with the idea driven by the Royal Society in the UK of a Science Culture Index (SCI) "in which all cultures are seen to contain perspectives and practices that can be seen as forms of science literacy, that includes, e.g., trial and error, the use of evidence to plot relationships of cause and effect, curiosity leading to experiments with substances and the development of technology and recipes" (Croucamp, personal communication, September, 2013).

Combining anthropological, ethnobotanical and phytopharmacological research can help to counter the traces of academic prejudices with regard to the empirical basis and medicinal effectiveness of traditional African medicine. This multi-angled approach will also allow a deeper understanding of holistic medicine and the therapeutic mechanisms that occur in traditional medicine systems from around the world. Cultural prejudices exist in varying degrees among most, if not all, members of society due to vestiges of cultural conditioning. However, it is important to try to avoid these in research if we are aiming to obtain a more comprehensive and integrated understanding of science and medicine that intersects and forms the basis of many (though not all) cultural healing practices.

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developing employee wellness training programs, evaluating a fortified nutritional intervention project with the University of the Witwatersrand, establishing an NGO focusing on food gardens production and developing educational media on nutrition and primary health care. He is also an avid writer on consciousness, sustainable futures, health and healing for the popular press in South Africa.

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