Chapter 2
Introduction to Different Ways of Knowing

Abstract The ways of knowing of indigenous Africans and westerners are described. I look at the problem of how westerners discredit the knowledge system of others. I consider the effect of the dominance of the western way of knowing imposed on Africa during the colonial period.

The Lesotho Highlands, 1968

The pilot of the tiny Cessna plane deposited us on a desolate landing strip in the Lesotho mountains. We started our 2-day trek to find an unmapped village known as Seroalankhoane. Our party consisted of Masekhobe who came from this village and served as our guide, David Ambrose, a mathematician dedicated to mapping all of Lesotho, and me, a science educator, both from the University of Lesotho, Botswana and Swaziland.

On the second afternoon of our journey, herd-boys from the surrounding mountain slopes rushed ahead of us to announce the arrival of strangers. David and I were the first Europeans in that place.

The villagers welcomed us with great solemnity. We offered our gifts of food and cooking gear that we brought with us from Maseru. The headman said he would have liked to slaughter a beast for a celebration, but the village was too poor. "Perhaps we would accept a pumpkin?"

We soon learned that Masekhobe's sister was in training to become a traditional healer. She was sequestered in a small hut. Her exposed skin was painted with white clay, and she wore a straw mask over her face so that we could not look at her.

The headman announced that the sister's teacher was visiting that night to instruct his apprentice. The master teacher was a traditional healer from a nearby village.

"You can join us in the celebrations," he told us.

A full moon in the cold winter sky illuminated the mountains around us. We settled into the hut that had been offered us for the night and heated our

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dinner over a primus stove. The nearby drumming was intensifying and I was eager to go and see what was happening. Eventually a messenger announced that we could join the group.

On hands and knees we crept into the dark, smoke-filled hut. A dung fire was burning on the packed earth floor, and cast a red glow over the people crowded into every spot. The master teacher was addressing the group. We had no idea what was being said, but then the dancing started. The apprentice followed her teacher in a call and response sequence. The drummers played faster. The two dancers began to twist and turn until I could see only blurred images. The singing became louder, and more like wailing. The excitement was electrifying, mesmerizing, and ecstatic. The apprentice and her teacher entered a trance state. I could feel the draw of the trance state myself, but I held back and did not let myself slip into it. The trance felt dangerous and out of my control.

We had walked many miles that day. Even though we withdrew, the drumming and singing continued long into the night. The whole event was well beyond my understanding. It was difficult to explain but I knew that I had been privileged to participate in this event. I felt a buzz of excitement that lasted several weeks.

This event stayed with me as a topic I would revisit one day. It was almost 30 years later that I had the opportunity to meet traditional healers (THs) again. I was invited to run a workshop in Mozambique. My workshop was geared to helping masters-level science education students with their projects on alternative conceptions.

In order to model how to do a research project I carried out my own study, explaining the steps of planning and executing a research project. My choice of topic was traditional healers and their indigenous knowledge and skills.

"Aren't you scared of the traditional healers?" they asked me. They obviously thought this was a dangerous project, especially for a westerner.

"No, I am not scared." As a western trained scientist I had no commitment to the African way of seeing and understanding the world. I felt that I was not susceptible to the sort of fear these students experienced around the topic of traditional African medicine and THs.

Indigenous Knowledge (IK)

Indigenous people are located around the world in places such as in Australia, New Zealand, the Americas, Asia, and Africa. Although found in diverse geographic regions, indigenes constitute particular cultural groups, use indigenous languages, adhere to their own political systems, and maintain particular social patterns such as ancestral traditions concerning the seasons of planting, reaping and storing, as well



Fig. 2.1 Lesotho highlands (Photographer: Peter Hewson)



Fig. 2.2 Traditional healer trainee in Basotho village (Photographer: Mariana Hewson)

as birthing and dying, coming of age, and marrying. They identify strongly with their specific geographic areas. Their clothing, preferred foods, singing, and dancing are usually distinctive. Indigenes mainly have a subsistence economy closely tied to their physical environments and weather patterns. In so many ways, indigenes are simply not part of the western industrial world. The biggest difference would seem to be based on philosophical precepts concerning their ways of knowing (epistemology).

Apart from a small book by Vera Bührmann (1984), a Jungian analyst and psychiatrist in South Africa, little has been written about African healing practices. She wrote that the western world is primarily scientific, rational, and ego-centered: 'We are technology and concept oriented—we abstract, analyse, and categorise the external objective world through our thinking and sensation functions.' On the other hand, the African world is 'primarily intuitive, non-rational, and oriented towards the inner world of the collective unconscious' (Bührmann 1984, p. 15). According to Bührmann, traditional Africans 'live closer to the world of the unconscious, where symbols are still alive and vibrant and where archetypal images form a natural part of their daily existence and direct their behaviour in ways that seem irrational to us…. They function largely on the level of intuition and feeling. Images, not concepts, are their main mode of apperception' (Bührmann 1984, p.105).

Indigenous knowledge (IK) is a product of the culture and cognition of people that operate independently of western ideas. African IK predates colonialism and has evolved over time into contemporary forms. One characteristic of African IK is the acceptance that spirit pervades everything (living as well as non-living), leading to a broad concept of spirituality. Traditionally, Africans believe that all spiritual powers come from the African concept of God, and exist in decreasing amounts through various levels such as the ancestors (forefathers), living people, animals, vegetation (plants, crops, trees), rocks and soil, mountains, streams, and the earth itself (Mbiti 1969).

These beliefs lead to the idea that all events in life are caused by the agency of God or the ancestral spirits, and that people have little control over their destiny (determinism); the idea that there is some bigger purpose or eventual end state that justifies the current situation (teleology); non-human phenomena, such as wind or earthquakes can be explained of in terms of human or personal powers (anthropomorphism); and the attribution of animal powers to humans (theriomorphism).

Western Knowledge

Western knowledge is a general word for the dominant knowledge system of the western world that originated in Europe. In many ways, great thinkers in the East (e.g., China, India, Thailand, Japan, Korea), the Middle East, and Africa have contributed to western knowledge. However, modern western knowledge, values, and skills dominate those of indigenous peoples around the world.

The history of western science started with pre-Socratic and Greek notions about the universe. The works of Ptolemy, Copernicus, Aristotle, Newton, Descartes, Darwin, and Einstein, amongst many others, form the basis of western scientific

knowledge, values and skills. The philosophical concerns of science include ideas about the nature of reality (ontology), ideas about ways of knowing such as the nature and scope of ideas (epistemology), and the value or worth of different ideas (axiology). In addition, science is concerned with generating ideas on the basis of empirical tests and concrete experiences (empiricism), using reason as the main criterion for believing an idea to be true (rationalism), the idea that everything that happens must have a cause (causality), the chance that something will happen, or not (probability), and the belief that it is possible to explain all natural processes in terms of their functional parts, as if they are machines—particularly relevant in medicine (mechanism and reductionism).

Western Science and African Indigenous Knowledge

In order to describe the different ways of knowing of westerners and non-westerners, I attempt to list some of the characteristics of the respective epistemologies—the grounds of the knowledge systems. Incorporating the work of Aikenhead and Ogawa (2007), and Onwu and Ogunniyi (2006), I list some of these characteristics in the following table.

Some characteristics of African indigenous knowledge and western science[a]

Category	Indigenous knowledge systems	Western science
Knowledge	Necessary for survival, both physical and spiritual	Used for survival, gaining food supplies, health and hygiene, medical advances, national security, economic progress
Nature	Mostly knowable but often mysterious and unknowable. Interdependence of all living and non-living things. All entities are imbued with spirit	Ultimately knowable with ongoing research. Nature is neither good nor bad
Intellectual goals	Seeking harmonious co-existence of knowledge and mystery (especially spiritual forces). Existence of multiple truths	Eradication of mystery by describing and explaining, exploring, discovering, creating, and exploiting for the benefit of humans
Fundamental values	Establishing harmony between humans, nature, and spirits. Respect and equality for all. Participation for the common good. Communalism. *Ubuntu*	Establishing power and dominion over nature for the use of mankind. Knowledge for its own sake. Survival of the fittest. Winner takes all. Individualism
Types of knowledge	Oral knowledge involving appropriate living transmitted inter-generationally in the form of stories, riddles, games, songs, dances, rituals, ceremonies, dreams, and intuitions	Documented knowledge in libraries, texts, publications as well as digitally—involving principles, laws, theories, axioms, conceptual systems, concepts, facts, models, and representations (graphs, pictures, etc.)
Validity	Content/face validity, historic validity, consensus decisions	Content/face validity, predictive validity, concurrent validity, construct validity

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Category	Indigenous knowledge systems	Western science
General perspective of knowledge	Descriptions of natural and non-natural (spiritual) world: vitalistic, holistic, monist, subjective, relational, place-based, humanistic, deterministic, idiosyncratic, intuitive, spiritual, teleological, and theriomorphic	Explanations and predictions concerning natural world: dualist, objective, reductionist, materialistic, generalized, decontextualized, mechanistic, probabilistic, axiomatic, empirical, rational, and causal

Adapted from Aikenhead and Ogawa (2007), and Onwu and Ogunniyi (2006)
[a]These categories suggest clear differences between the ways of thinking of western and non-western people. They are, however, not completely watertight distinctions—there is overlap and leakage between the concepts in the two columns. Most people think in ways that mix these characteristics, forming a dynamic pattern of thinking that probably changes and evolves during their lives

Process of Making Sense

Sense-making by people in different parts of the world involves different ways of knowing. The western way of understanding the vast array of animals and plants is based on Linnaean taxonomy that reflects either/or methods of categorization. In other words, a biological specimen is classified as either a plant or an animal on the basis of objective morphological criteria, such as the number of petals for plants, or the arrangement of bones for animals. However, many Africans categorize plants in terms of their impact on humans, e.g., being poisonous, nutritious, and/or a healing agent. But these categories are not discrete because there is overlap between them—a plant may be poisonous in some circumstances but a healing agent in other circumstances.

A key difference between African IK and western science concerns the absence of an African commitment to empirical testing and theory building in favor of vitalism (the idea that life is not explainable solely by the laws of physics and chemistry, but also by the presence of a vital life-force), and holism (the idea that the universe and living organisms are whole entities that are more than the sum of elementary particles). When looking at the indigenous medical science of traditional healers, we find approaches that combine empiricism and magic, with physiology, psychology, and sociology (Janzen 1978). These approaches involve the central idea of a supreme being (God) and spiritual forces (recently deceased ancestral spirits) that influence and control the lives and well-being of humans and other living things.

Both medicine and science are evidence-based systems, not religious belief systems. The African way of knowing is not a religion either—no deity is worshiped. Instead it is an ancient and sophisticated (but different) way of seeing and interpreting the world, and explaining the vicissitudes of human lives.

It is easy and commonplace for westerners to discredit other peoples' ways of knowing. For example, Offit (2013) has taken a stand by announcing that there is only one medicine—medicine that works and medicine that doesn't work. He dismisses alternative and complementary medicine, as well as integrative and holistic

medicine, and every version of medicine that does not comply with the western way of knowing. He cites scientific illiteracy, denialism, and post-modern thinking as causal agents for the widespread interest in complementary and alternative medicine. And he suggests that because doctors have ceded their medical expertise in favor of joint decision-making (intending to improve patient compliance with medical advice), patients are taking their medical treatments into their own hands.

Medical quackery, charlatanism, and exploitation of desperate patients by unscrupulous healers have been with us for ages. Offit (2013) claims that magical thinking is the underlying reason for much of the public acceptance of alternative healing approaches. He does accept that the western public is dissatisfied with modern medicine, perceiving it to be cold and impersonal. He also concedes that some patients do receive benefits from acupuncture and other healing modalities such as yoga and massage, but states that research must be done to check out the validity of these claims (Offit 2013). Even in contemporary medicine there are 'just some things we can't understand.' For example, why does a virus infect one person, but not another? Is it magic? But Offit claims that while we may not understand such questions at the moment, he is sure that with further research everything will eventually be understood—a type of scientism. This is the view that science is the only reliable source of knowledge, to the exclusion of all other views (Sorrel 1994). According to Blackburn (2005), scientism is a 'pejorative term for the belief that the methods of natural science, or the categories and things recognized in natural science, form the only proper elements in any philosophical or other inquiry.' The attempt to subsume religion to the principles of science is nonsensical. And *vice versa*, to subsume science to the rules of religion would be equally nonsensical.

Traditional healers do not consider their approach as magical. Rather they get their knowledge from their ancestral spirits who speak with them in various ways. The intention of this book is not to judge African indigenous knowledge (IK) as true or untrue, in terms of western criteria. Rather, the intention is to open western minds to other ways of knowing that may be difficult to understand, but which have much to teach us westerners for our own good as teachers and healers.

A caveat to keep in mind is that when describing differences between knowledge systems it is easier to be categorical and insensitive to the shades of grey that exist between the categories. This black-and-white approach is not an accurate reflection of reality—the distinctions between different ways of knowing are fuzzy. But making a categorical distinction is helpful for the sake of explaining differences.

Interactions Between Different Ways of Knowing

Contact between western and indigenous people is increasing in our contemporary world. This is true for the developing countries as well as for developed countries where non-westerners have migrated to the west and joined the school systems. In such heterogeneous situations the 'intercultural rub' can be felt in school classrooms. Western teachers assume they can teach in western ways, but find this is no longer

possible. Western medical doctors have patients that come from very different cultures and environments, often bringing their cultural concepts of health and illness with them. Increased cultural interaction provides opportunities for improving many aspects of life, such as in education and medicine. Western science expanded the human capacity for invention, creativity and problem-solving to unimaginable heights. And indigenous ways of knowing produced knowledge and skills that have worked magnificently over thousands of years for the survival of the human species. Westerners can learn a great deal from indigenous people, and *vice versa*. But there are also difficulties when two different ways of knowing intersect.

The western vision of equality in education is considered essential around the world. There are social and economic reasons for a unified western science curriculum. Economic and political influences have resulted in a dominant western curriculum as the norm—every person in every country should be on the same page, the western page.

When people are unable to bridge the cultural gap between western and African societies they are left culturally and morally adrift. And being culturally and morally adrift is dangerous both psychologically and socially.

Four different leaders in southern Africa reflect on the sad fate of a culture that becomes separated from itself as a result of unresolved interaction between different ways of knowing. The first comment is by South African Black Consciousness leader Steven Bantu Biko, writing in the 1960s about the effect of western schooling on African children:

> The African child learns to hate his heritage in his days at school. So negative is the image of African society presented to him that he pretends to find solace in close identification with white society. (Biko, in Stubbs 2009)

During my travels in Lesotho I met Morena Borenahabokhethe Sekonyela, a senior traditional healer who is also a chief, an advocate, and a university lecturer at the University of Lesotho. In our discussion he told me:

> My greatest concern is that western education has produced a gap between what people are, and what they are supposed to be. When people grow up without morals they can turn into monsters, killing with impunity. We need to bring values back into our children who are the future of our society. (2008)

I also met Dr. Lira Molapo while I was collecting data in Lesotho in 2008. He is a Science Advisor to the Ministry of Education, Maseru, and was engaged in research in science education. Lira Molapo told me that in some regions of Lesotho, there was a 0 % pass rate in the O-level science exams.

Science Advisor's View, Lesotho

"My concern about science students is about the environment they live in. It is very much what I would call dilapidated. The land is 'degradated'—there is a lot of soil erosion in Lesotho, there is a lot of pollution, and there are many hazards that are surrounding the Basotho children. And we also have these diseases. They are my concern because there is nothing that the Basotho

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educational system contributes to solving some of these problems—the land degradation, the pollution and the diseases. What is it that the education system should be providing so that the children in Lesotho can survive in a more healthy way? This is my concern.

My research is about linking their formal and their environmental knowledge with their daily practices. My suggestion is that the curriculum should empower our children to take action, to do something about the environment we are living in, to fight the soil erosion we are living in, empower them to do something about the pollution, do something about the littering, do something about their healthy living, eating a properly balanced diet, avoiding the diseases, and living a healthy life. So my suggestion would be to empower our children to take action now, not in the future, even as they are school children. As to the AIDS pandemic they should be empowered to change their behavior. They shouldn't be forced by others to engage in these promiscuous behaviors that lead to the major spread of HIV and AIDS. They should learn they can say 'No!' to whoever comes wanting to manipulate them to have sex. They have to be empowered to take responsibility for their lives… As it is, the children are interested in science but are not passing their exams here in Lesotho."

Interview with Dr. Lira Molapo (June 2008)

Meshach Ogunniyi Ph.D., Senior Professor of Science Education and Director of the School of Science and Mathematics Education, University of the Western Cape, South Africa, told me:

> Many Africans throughout Africa have lost track of their cultural identity due to outside influences. Although they try to embrace a new cultural identity they never quite make it. So they are in-between cultures all the time. I find that they tend to denigrate their own cultural knowledge as superstitions, but they don't really understand the western culture except at a very superficial level in terms of material acquisitions. They are neither here nor there. Such people are without roots, have lost their sense of direction, and respect no one. (2010)

Education is a political force—having appropriate knowledge to compete in a rapidly changing scientific modern world is a powerful asset for any nation. But is it necessary to annihilate the IK of a group in order for that group to learn the knowledge of a different, more economically powerful group? I think not. I also do not think it is possible to annihilate the knowledge system of an indigenous group without having a negative psychological impact.

Colonialism and the supremacy of the west have helped create the gap between indigenous people and their current situation. Contemporary education reinforces this gap. Educators must find ways to negotiate this gap. They must be able to reconcile the IK of their students with modern knowledge to enable learning. When teachers fail to take account of their students' diverse cultures, the students often fail to learn—particularly science. And science is the *sine qua non* of modernity, and of the success of countries as participants in world economics.

When seeking to reconcile different ways of knowing, the intention is to heal and rebuild indigenous peoples 'by restoring their ecologies, consciousnesses, and languages, and by creating bridges between indigenous and western knowledge' (Battiste 2000, p. xvii). The ways of knowing of both indigenous and western peoples need to be identified and compared.

These differences are substantial. People representing such different ways of seeing the world may have difficulty communicating with each other. The assumptions of their respective knowledge systems diverge so much that they may be unable to find much, if any common ground (Toulmin 1972). This is especially problematic for westerners when communicating with non-westerners because the western scientific way of knowing has clear rules concerning what counts as valid knowledge, such as rationality and causality.

In heterogeneous communities of people with different ways of knowing, there are numerous occasions when mutual understanding is essential, for example in medical emergencies, in daily trading, and also in classrooms. For functionality within a heterogeneous community, there needs to be interpersonal understanding, dialogue, and mutual respect. Only then can diverse ways of knowing be tolerated and managed by all groups.

My purpose in science education is to find ways of improving science teaching for the greater satisfaction of the teachers and improved examination results for the students. In medicine, I hope to improve both medical teaching and learning (patients as well as medical students) in trans-cultural situations. My aim is to help trainees from non-western cultures know how to manage western knowledge and skills that differ substantively from their own, and for medical personnel such as doctors to better understand their foreign students and care for their foreign patients.

We Can Teach the Children: Additional material to this book can be downloaded from http://extras.springer.com

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