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THE QUEST FOR COMMONALITIES IN RATIONALITY AND RESEARCH:

COGNITIVE SCIENCE AND THE EMBODIMENT OF AFRICAN RATIONALITY

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Abstract

In what way does research done in Africa differ from research done on other continents – if at all? Should African rationality be distinguished from Western or Eastern rationality? This article approaches the problem by linking African rationality to African hermeneutics. African rationality is influenced by post-colonial reactionism; it can be typified as holistic; embodied rationality; one with the physical and social environment and as ethno-rationality. In order to find commonalities between so-called different kinds of rationalities a recourse is taken to cognitive science which stresses the bodily links of rationality. Some examples are given from the work of Lakoff and Johnson and the way in which cognitive metaphors operate in rationality. Cognitive rationality is proposed as common ground to understand rationality and the way it influences research.

Key Concepts: African nationality, cognitive science, embodiment, post-colonialism

Understanding African Rationality

Rationality is a universal human ability. The "sapiens" in "homo sapiens" refers to this characteristic. Being rational, however, does not mean that we know what rationality is. The concept *rationality* is far more complex and combines cultural, ethnological, and philosophical ideas. For the purpose of this article our interest in African rationality will be related to the nature of research in Africa.

One can distinguish between rationality in science and rationality in everyday life. This distinction does not imply that rationality in everyday life or common sense rationality is illogical or less important than rationality in science. The distinction refers to the strict boundaries that confine scientific rationality (thinking), which are bound to scientific method, tradition and language. Rationality in everyday life or common sense rationality adheres to these confines.

Scientific rationality is not without its power strategies. The explanation of scientific rationality is usually done in a way that creates the impression that its rationality and the derivative scientific method are objectively and universally true and exclusive. This is not the case. The idea of a single, objectively true scientific method has been deconstructed, criticised and relativised, especially in the work of Thomas Kuhn, Paul Feyerabend and Karl Popper and through developments in quantum physics and in postmodern critique. This view of rationality and science is derived from modern Newtonian science, which is

empirically focused, method driven and theory laden, inductively and deductively orientated, systematising and generalising (formulation of laws). Science in this format has also been absent from Africa. Science is taken by most models of rationality as a paradigm of rationality in action with the unspoken assumption that this is true rationality.

Scientifically rational language and method are in a sense artificial. We do not use scientific language in everyday life, nor do we converse in a strictly scientifically methodological way. Religious rationality, for example, is not less rational because it differs from scientific rationality. Scientific rationality is not the only kind of rationality in action. Culture concerns our everyday life, and everyday beliefs provide paradigm cases of rationality in action since a proper model of rationality must be able to make sense out of everyday life (see Stenmark 1995:3). Rationality concerns beliefs held on the basis of appropriate reasons without which these beliefs could be considered to be irrational or non-rational. There are some beliefs that are arrived at through emotion, faith, authority or arbitrary choice, but this is not to say that these beliefs are irrational. There are also those beliefs that are considered to be non-rational because they depend on matters of taste and no reasons are required for adhering to them (Hondericht 1995:744).

Science and scientific rationality can be said to be meaningless and impossible without their link to everyday life and life experience. Scientific rationality should not only be linked to everyday life and experiences, but should also be linked to the human body. Cognitive science has indicated the extent to which rationality is rooted in biology, and how our metaphors have a physical origin. These factors help in bringing us to a new understanding of African rationality and its impact on research in Africa.

Rationality is closely linked to hermeneutics, the art of understanding. Hermeneutics helps us to understand why people differ. It shows the power strategies people use to get their points accepted. It also helps us to agree on certain issues. Hermeneutics makes us aware of our specific *culture of understanding,* of logical mistakes that could occur in the process of interpreting, and of the power strategies that may underlie our style of interpretation. It also helps us to understand ourselves and others, and to recognise the influence of culture, religion, pre-understanding and many other factors in co-determining the understanding process. Hermeneutics concerns the language we speak, how we express ourselves and understand the utterances of others (communication); it concerns our customs and belief systems, and how they influence our views and other aspects of our lives. Hermeneutics depends on one's specific concept of truth, the emphasis placed on the written or the spoken word, the way people integrate theory and practice, and one's critical aptitude.

African hermeneutics is directly related to African rationality. African hermeneutics is predominantly concerned with ways to reconstruct African ideas independently from Western influences. It is the effort to understand and interpret the significance of African culture. African thinkers concentrate on the anti-colonial struggle and on post-colonial reconstruction in order to find what is typical of Africa and to redefine the African intellectual. The quest for an African hermeneutics testifies to the need for thinking autonomously and creatively in a context of political threat and economic need, and the presence of Western influences.

African hermeneutics obviously cannot refer to a single approach to interpreting and understanding African culture. It is therefore unwise to attribute any specific characteristics to African hermeneutics (rationality). For the purpose of this contribution, African hermeneutics may be defined as the effort to rid Africa of the unacceptable legacy of colonialism and to recover African traditional ideas. The text that African hermeneutics tries to understand is much wider than any specific political, scientific or literary text, since

it includes the African world as text. The dominance of an oral tradition over a literary tradition necessitates this. What is typical of Africa may be found in its proverbs, narratives, sagacity, customs, rituals and beliefs. The African world is therefore carried over into the African text and forms part of African thinking. African hermeneutics is therefore a contextual hermeneutics, aware of the legacy of colonialism, the history of African oppression and exploitation, but determined to recover African cultural roots. It is an understanding of Africa by Africans, for Africans. It differs from hermeneutics in the West, but not because the rules determining understanding in one context are not valid in another. It is a question of different emphasis, a different language and culture, a different self-understanding and world-view. To understand African rationality, one should depart from the African life-world and self-understanding.

Models of Rationality

To return to the question of rationality, one has to concede that there are many kinds and levels of rationality. Definitions of rationality may be experienced as reductionistic, unless one narrows them down to the level and kind of rationality you are speaking about. One could also expect theories of rationality[1] to correspond with the problems of their age. A historicist approach to rationality will emphasise that a theory or rationality should fit the history of its time.

There are many models of rationality peculiar to different communities. The rational approach, method and means that are chosen will depend on the specific aim one has in mind. In philosophy and science, rationality has been formalised to fit the subject. The scientific and philosophical paradigm of rationality has become archetypal for rationality in general. With such an entrenched view of rationality it is easy to consider cultural customs in a different context as irrational. Scientific rationality is linked to a specific scientific method and is considered to be universally valid. Activities of an ethnic and cultural nature, like religious rituals, art and literature, are not universal and depend on specific histories, identities, traditions, taste and values.

Life-world rationality remains the source of scientific rationality and should be restored to its initial importance. Although life-world rationality may differ from culture to culture many commonalities exist. Hampshire (quoted in Malherbe 1995:226) distinguished in a society the epistemologically, significant reasoning activities that are usually of an universal kind and those that do not aim at truth. Striving to attain knowledge is necessarily a matter of aiming at the truth and using rational means of doing so.

Malherbe (1995:227ff) distinguishes three main groups of epistemic activities and three corresponding models of rationality:

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[1] The rationality debate in an African context was introduced by *Peter Winch* in the 1960s in his critique of the anthropological work of Evans-Pritchard (Eze 1993:76ff). In his essay *Understanding a primitive society* he challenged Evans-Pritchard's idea that the Zande or Nuer assumptions about reality are mistaken because their ontological claims about witchcraft cannot be supported empirically. Winch indicated that it is not empirical verification that establishes what is in agreement with reality. It is language, inter-subjectively shared, which constitutes reality for a particular speech community. Reality is constituted in language. While Evans-Pritchard operated from a rationality model exemplified in the modern-science practices, Winch argues for a plurality of forms of rationality. Winch did not understand science as the only valid model of rationality. What makes a statement or belief rational or not is not whether it is scientific or not, but whether it has significance within a specific language game. Winch could, however, not answer the question as to how cross-cultural understanding is possible at all. The task of understanding an alien culture requires the creation of new genres (see Wittgenstein's family resemblanceş) in order to compare what may be incommensurable (Eze 1993:93-100).

- the causal law model associated with scientific activities – scientific explanation is tied to physical cause, empirical observation and a realist metaphysics;
- the revelational model operative in religion;
- the dialectical model seen in political and juridical debate.

Stenmark (1995:5ff) distinguishes *theoretical, practical and axiological rationality*. Theoretical rationality concerns what we should believe or accept, practical rationality what we should do and axiological rationality the values we hold. The axiom of reasonable demand accepts that one cannot demand something of a person that he or she cannot do. Idealised models of rationality reject the axiom of reasonable demand. Most conceptions of rationality in the past have been too idealised and, if taken literally, they imply that human beings are usually irrational in what they do. The notion of *evidentialism* holds that it is rational to accept a proposition, belief or theory only if there are good reasons to believe that it is true. Stenmark (1995:6-7) expands on this in what he calls *presumptionism*, which advocates that our belief-forming processes and their outputs (beliefs) should be *presumed* to be intellectually innocent until proven guilty. These beliefs need not be justified until it is rational for us to believe them. Our initial attitude to our beliefs should not be scepticism as the evidentialists claim, but trust.

Rationality usually concerns a means-end rationality, where the only function of rationality is to further individual and collective goals. In this approach, ends and values are not of primary importance. In the words of Russell (quoted by Stenmark 1995:32), reason signifies the choice of the right means to an end and not the choice of ends. This technical kind of rationality strongly influenced the West. It lacks an axiological dimension where values, ends, desires, interests and so on are taken into account.

African Thinking in Light of the Other (West)

We clarify by way of comparison. The identity of one entity is established by comparing and contrasting it with another. To distinguish, discriminate and differentiate is characteristic of rationality. It is, however, important to compare apples with apples. One culture cannot really be known by comparing it with another. As Sogolo (1998:221) puts it: The mind of the African is not structurally different from that of the Westerner. The contextual contrast between Western thought and traditional African thought rests on false premises. The truth is that both are similarly marked by the same basic features of the human species. The difference lies in the ways the two societies conceive of reality and explain objects and events. This is because they live different types of life. And it is for this reason alone that an intelligible analysis of African thought demands the application of its own discourse, its own logic and its own criteria of rationality.

The intellectual crisis challenging African thinkers is that of finding what is peculiar to African culture in the colonial aftermath. Until now there seem to have been only two alternatives: Ethno-ideas or Western (professional) ideas. This choice affects all intellectual categories, whether philosophy, science or religion. A good example is philosophy where African thinkers identify themselves either as ethno philosophers (including sage philosophers who reflect African wisdom traditions) or professional philosophers (doing Western philosophy on African soil).

It is unfair to assume that Africans will produce a different philosophical or scientific method or come to the fore with revolutionary ideas in order to justify their roles as philosophers or scientists. What is specifically African comes to the fore in the way that philosophical, religious, and scientific ideas are taken into African cultures. Cultures are

made up of more than that which is encapsulated in scientific or philosophical thought. In a sense the problem relates to Africans identifying science, technology, philosophy and so forth with colonialism (the other). Science, philosophy, rationality and thought are human activities and not a Western monopoly.

The whole issue relates to the practice of unholy comparison and as we know that comparisons are odious. African culture has been typified as cyclical and closed[2] in contrast with Western culture, which was said to be linear and open. These distinctions are inadequate. Africa may be typified as simultaneously pre-modern, modern and postmodern. We could also say that it is simultaneously pre-scientific (traditional), scientific (mainly Western) and post-scientific (critical, integrating many worlds). The post-scientific here refers to the critical stance towards science where those aspects that are deemed of importance for African life are incorporated and the rest ignored. In the post-scientific, science is integrated into African culture in a way that does not threaten it. The post-scientific may seem to be quite accommodating towards the pre-scientific, but the two can never be identified. The post-scientific critically incorporates the scientific and adds a few new dimensions. The pre-scientific is often aware of the scientific, but has not lived through it. Although one may be able to find the pre-scientific, scientific and post-scientific in Africa, the pre-scientific is still notably present and will influence scientific development in post-colonial Africa significantly.

Science is not an exclusively Western phenomenon in the sense that scientific theories and laws are Western. In this sense there is also no such thing as an African or Japanese science. Science is not neutral, since it cannot be reduced to scientific laws, formulae, methods and theories. It is linked to technology, incorporated into world-views, relevant in societal value systems, implied in religious ideas. Science is, for example, viewed differently in a culture working with a linear progressive world-view to one operating with a cyclical world-view. Science belongs to all people, although different people interpret and use it differently. Science is not a transcendental entity that is incarnated in a specific culture in an unaltered manner. It usually becomes part of the cultural fibre of a society. Science itself does not purport to provide a framework within which an entire culture could be integrated. This was left to philosophy and religion, which indicated the importance and effects of science on world-view. Science and technology have a meaning and underlying values of their own, but their very essence makes it impossible for them to provide a firm point of attachment for existential questions. Today science and technology occupy a vast place in the life of modern societies, affecting cultures to their innermost being (see Ladrière 1977:147ff). This state of affairs also affects Africa although to a different degree and on specific levels.

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[2] The argument goes that the chances of people living in traditional cultures adopting alternative ways of interpreting the world are limited since traditional cultures are closed to alternative views where scientifically oriented cultures are open. In traditional cultures there is no developed awareness of alternatives to the established body of theoretical tenets, whereas in scientifically oriented cultures, such an awareness is highly developed. In a closed society, the sacredness of beliefs, and anxieties about threats to them leaves a man no option but to accept what everybody gives assent to, because he has no choice, any more than of what language he speaks. Even were he to be a sceptic, he could express his doubts only in terms of the beliefs held by all around him. A member of a traditional tribe will almost never confess ignorance about the answer to some question that the people themselves consider important. This is because no alternatives to the established theoretical system exist and any hint that this system is failing to cope must be a hint of irreparable chaos and so must arouse extreme anxiety (Horton 1993:222-223, 243). Perhaps this is also not so peculiar to African communities. It may be as difficult in a specific Christian community to practice a moral or hold a belief dramatically different from that of your community without being ostracised.

African Rationality

In the light of our discussion so far, we will elaborate on some theses on African rationality:

- African rationality is holistic;
- African rationality is influenced by post-colonial reactionism;
- African rationality is embodied rationality;
- African rationality cannot be separated from the physical and social environment;
- African rationality is considered by some to be ethno-rationality.

African Rationality is Holistic

Rationality should be appraised in a holistic way. It is co-determined by all the factors present in a specific human context. The broad cultural setting in which rationality operates includes the religious, linguistic, political, economic, technological and scientific contexts. To view rationality from a specific epistemological, logical or linguistic perspective may be one-sided and lacks the broader horizon necessary for explaining a particular manifestation of rationality. African rationality is holistic and gives equal weight to means and ends. For Africans there are no ontological gaps between existing entities; the Western natural-supernatural dualism is foreign to them. God, humankind, extrahumans and subhumans are all regarded as integral parts of a single totality of existence. God's actions are not experienced as extraordinary.

African Rationality is Influenced by Post-Colonial Reactionism

It cannot be denied that the *identification of science with Western civilisation* contributed to a *feeling of superiority towards other cultures*. Hume, Kant and Hegel believed that the history of the Western world was the incarnation of reason as such, and characterised non-European forms of life as irrational. This attitude was only challenged in the post-colonial era by anthropologists, African thinkers and theologians trying to indicate the rational nature of African life. Identifying science and rationalism exclusively with Western culture invites African thinkers to show or develop the specific nature of African rationality, and the urge to rid Africa of Western culture and domination.

African thinkers are in the process of *finding their roots* in post-colonial Africa. On the one hand there is a reaction to the uncritical acceptance of Western culture, and on the other it is impossible to retrieve a bygone culture. African intellectuals are in an archeological process of excavating a lost pre-colonial culture. Some do not search so far and find in present-day traditions, in their stories, rites, songs, dance and customs, sufficient material, which is symbolically and conceptually transformed and applied to current problems. Africans coming of age in a post-colonial era formulate African thinking in such a way that it answers the limitations of Western traditions, especially the negative legacies of modernism.

To free oneself from *cultural domination* it must be established what is proper and what is foreign and harmful to a culture. Freeing oneself from foreign influences is not easy and cannot be done because someone makes the decision. It has to be a spontaneous movement from all sectors of life. The process of freeing oneself from foreign influences implies unanimity on what to keep and what to let go – and such agreement is seldom found. People usually free themselves from systems enforced upon them, eventually, as was the case with apartheid. The question is whether science and technology are foreign to Africa or not. If not, can science and technology be accepted without the implicit Western cultural package that accompanies them?

African Rationality is Embodied Rationality

Westerners have become used to the stereotype that the body lies on the side of nature and the spirit on the side of culture; that the body lies on the side of the primitive and the spirit on the side of the civilised. Contrary to this view, the body is being reappreciated today as a cultural and historical phenomenon, as well as a biological and material one. The body is not simply an object, it is a subject, and culture resides in the physical processes of perception (Csordas 1999:143-147).

Africans think with the mind and body, integrating all aspects of life. For Senghor (quoted by Pasteur and Toldson 1982:21):

> Europeans think with their head, by concepts and schemes logically connected. Africans think with their soul ... with their heart ... formed intuitively in the style of the feeling-thinking subject, that is to say, in feeling, sensitivity is thought.

For Sarpong (1991:287), the ordinary African is not logical in the Western sense. By and large he has no interest in cause and effect, but in actual happenings. Neither does he reason along strict syllogistic lines. This does not mean that he is not a thinker or that he is unthinking. In fact, he is a philosopher, philosophising in the concrete and not the abstract.

African Rationality cannot be Separated from the Physical and Social Environment

African rationality is a relational and integrating rationality. It should be evaluated in terms of African *ubuntu* ethics, which operate on the principle of I am only because we are, and since we are, therefore I am. This accords with the social principle (intersubjectivity) of rationality according to which a belief is rationally acceptable only if it has been exposed to or tested against the judgements of a community of relevant expertise. In these terms, Robinson Crusoe alone on his island could exercise judgement, but he would not have been able to achieve rationality. This is not because of some failing in his faculties, but rather for a reason akin to the reason why he could not play baseball, even though he could throw balls in the air, hit them with a bat and run bases (Stenmark 1995:142, 146).

Where theoretical thinking in Western science is usually phrased in impersonal idiom, African society tends to couch it in a personal one.

African rationality accords with the dialogical model of rationality. In the dialectical model, reason is equated with reasoned argumentation and truth is attained through adjudication between opposing claims. This old Sophist tradition is exemplified in dialogue, in which the mutual justifying and exchange of ideas continues until resolution is reached. This is similar to African consensus politics. In this process one has to state and defend opinions, and expound ideas. The presupposition is that you have to recognise when the opposing point of view has been proved instead of your own. This dialogical model of rationality is typical of African traditions where public, democratic debate is used as an instrument for resolving differences and clearing issues. In the administration of justice, punishment of the offender was not a priority, but rectifying the wrongs and making restoration where necessary was. Punishment for disturbing tribal balance was of a constructive or a corrective nature. There are many variations on this dialogical theme and examples of institutions of rational debate in South African communities include the kgotlas of the Sotho people, the kgoros in the Northern Province and the indabas of the Zulu communities (see Malherbe 1995:229-232).

African Rationality as Ethno-rationality

Is science neutral or culturally bounded? Does Western rationality differ from African rationality,[3] or is it rationally neutral? Rationality is a broader concept than science, incorporating more than a specific cultural or academic development. It is much more interwoven with cultural aspects than is the case with science. People of different cultures or ethnic groups may have different theories for explaining the same natural phenomenon. This relates to the cultural, linguistic, philosophic and religious contexts in which phenomena are viewed.

The distinction between modern science and ethno science is a construct. It presupposes that ethno science as a local science should abandon claims to universality, objectivity and rationality. These are traits only of modern science (Harding 1997:45, 51). All claims to scientific and technological knowledge are culturally local, constituted through the cultures and practices of the knowledge projects of which they are part (Harding 1997:61).

African thinking (rationality), as ethnothinking, recognises that African thinking (rationality) is autonomous, legitimate and rooted in Africa. It remains doubtful whether ethnophilosophy, or ethnoscience, will significantly impact on science or philosophy on a global scale. Such an impact is not, however, a precondition for it being practised.

Cognitive Science and the Physical Roots of Rationalism

From the side of cognitive science the question of rationality and understanding can be viewed in an unprecedented way. Cognitive science, which was established in the 1970s studies conceptual systems. Conceptual systems may be viewed as the cornerstone of rational functions. They include memory and attention, thought and language. Cognitive science states that reason is not disembodied, but arises from the nature of our brains and physical experiences. Reason builds on and makes use of forms of perceptual and motor inference. Reason is a bodily function. Much of conceptual inferences are sensorimotor inferences. Reason is not seen as universal in the transcendent sense. It is largely unconscious, metaphorical and emotionally engaged (Lakoff and Johnson1999:4, 10, 20). Human categories are conceptualised in prototypes. Each prototype is a neural structure that permits us to do some sort of inference or imaginative task, relative to a category. To make sharp distinctions we develop essential prototypes, which conceptualise categories as if they were sharply defined (1999:19-20).

Cognitive science has stressed the importance of the embodied mind – a stance that helps us in overcoming the split between ontology (what there is) and epistemology (what we can know), and links mind and world.[4] We can only experience through embodiment. Our conceptual systems are grounded in our physical experience. We reason by means of our embodied imaginative rationality (Johnson 1999:81). This cannot mean (see Johnson 1999:86, 90) that reason emerges exclusively from the corporeal logic and inference structure of our physical sensorimotor experience. Neither does it fall from above like a transcendental gift. It is rather a complex interaction between many physical (including brain) functions and the mind (including the context of the specific thought processes).

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[3] General characteristics of what is African, or for that matter, Western, don't exist. Counter examples can always be found to disprove any claim. When referring to African rationality, the only thing the various peoples and cultures have in common is that they occur on the continent of Africa.

[4] Lakoff and Johnson (1999, 102ff) distinguish the three levels of embodiment namely neural embodiment, embodiment on the phenomenological level (our awareness of mental states and environment) and the cognitive unconscious level (unconscious knowledge and thought processes).

Although the structure of our concepts and categories is co-determined by our physical sensorimotor experience, this is insufficient to account for creative thought, which is linked to such things as environmental interaction.

Embodied rationalism acknowledges a central insight of relativist thought, that is, that in many cases, concepts do change over time, vary across cultures, have multiple inconsistent structures and reflect social conditions. Embodied realism recognises that human language and thought are structured by, and bound to, embodied experience. Even physicists who investigate a mind-independent world can only describe and conceptualise it in terms of embodied human concepts (Lakoff and Johnson 1999:94-96, 233).

The human mind cannot exist separate from the body. Our mental processes are conditioned immeasurably by the body's vast input into the brain and by the complex way in which the brain processes this input. The human body is a cultural and historical phenomenon as well as a physical one. Merleau-Ponty (quoted by Csordas 1999:147) has indicated that culture does not reside only in objects and representations, but also in the physical processes of perception through which those processes come into being. Lakoff and Johnson (1999:53) propose an embodied realism in which we are coupled to the world through our embodied interactions. This approach overcomes a strict subject-object dichotomy.

The upshot for cognitive science of the problem of rationality is that rationality is approached from a totally different angle to before. Instead of grappling with cultural differences we can now focus on the human commonality of embodied rationalism. This is a bottom-up rather than a top-down approach to rationality. The top-down approach focuses on cultural differences and often stumbles upon many incomprehensibilities. The bottom-up approach takes physical experiences as a point of departure – something we all have in common. Physical experiences, captured in metaphors, determine rationality, language and concepts used. Although they may be applied differently in other cultural contexts, they all have the same physical source.

The sensorimotor processes through which thought is mediated are similar for all humans. The idea of embodied rationalism, albeit in a different form, is not foreign to Africa. As we have seen, Africans are much more at ease with the physical than was traditionally the case in the West. Africans do not know the Western mind-body dualism; neither do they denigrate the body or deify the mind at the expense of the physical. Africans take the body more seriously than Westerners. They are in harmony with their body and with the natural environment and make more conscious use of bodily metaphors in their language.[5] As an intersection between nature and culture, the body may indeed become a phenomenon of both the natural and the human sciences.

Cognitive science denies that reality, divided into categories, exists independently of human minds and bodies. We impose a rational structure on the world. The relativisation of the idea of a transcendent, fixed rational categorisation of the world leaves room for

[5] African metaphors occur abundantly in African proverbs. Many proverbs, relate to the human body and physical, sensorimotor experiences. A few are mention without elaboration:

- *Mosadi-tshwene o jewa mabogo* (A woman, how ugly, can always be of worth);
- *Matlho ke diala ga a je sa motho* (Eyes can see (look), but do not harm) The implication is that other bodily parts can do harm;
- *Lefoko ga le boe, go boa monwana* (A pointed finger can be retracted by not words after they have been spoken);
- *Ga go nko e etswang lemina* (The nose is not running) Nothing is happening. When the nose runs, at least there is some action.

different structures, pertaining to different cultures. Lakoff and Johnson (1999:77) identify a basic level of concepts that arises partly from our motor schemas and our capacity for image formation. Our brains are structured to project patterns from sensorimotor areas to higher cortical areas. The basic level is the highest level at which we have mental images that represent the entire category. It is the level at which most of our knowledge is organised. Metaphysical realism seems to work on this level (Lakoff and Johnson 1999:27-29). Lakoff and Johnson (1997) also distinguish colour and spatial-relations concepts, which link up with the basic level concepts (see Lakoff and Johnson 1999:23ff, 30ff). Since these concepts are about what the body does, that is, perceive and move, they infer that the body actually shapes these concepts. The biological perspective and the focus on the importance of our sensorimotor systems explain why our concepts sit so well with the way we function in the world (Lakoff and Johnson 1999:39, 43). We acquire a large system of primary metaphors automatically and unconsciously simply by functioning in the most ordinary ways in the everyday world from our earliest years and so we all think using hundreds of primary metaphors (Lakoff and Johnson 1999:47, 59). The cognitive unconscious is intentional, representational, propositional, truth characterising and causal (Lakoff and Johnson 1999:116-117).

Lakoff and Johnson give some examples of primary metaphors: affection is warmth (she greeted me warmly); important is big (this is a big day); intimacy is closeness (we had been close for years, but were beginning to drift apart); bad is stinky (this movie stinks); difficulties are burdens (I'm weighed down by responsibilities); categories are containers (are tomatoes in the fruit or vegetable category); similarity is closeness (these colours aren't quite the same but they are close); help is support (support your church); time is motion (time flies); change is motion (my car has gone from bad to worse lately); purposes are destinations (he's progressing well, but he isn't there yet); knowing is seeing (I see what you mean); understanding is grasping. In all these examples the sensorimotor experience is the source network and the subjective judgement is the target network. The inferences flow from the sensorimotor domain to the domain of abstract subjective experience via neural connections (Lakoff and Johnson 1999:56).

Primary metaphors are the building blocks for more complex metaphors like the one, life is a journey. The neural connectivity of the brain makes it natural for complex metaphorical mappings to be built out of pre-existing mappings, starting with primary metaphors. (Lakoff and Johnson 1999:64). The primary metaphors, *A relationship is an enclosure* and *intimacy is closeness* can be combined to form the complex metaphor *an intimate relationship is a close enclosure*. Given that lovers are travellers in this metaphor, the most natural close enclosure is a vehicle of some sort. The complex metaphor that results from this is, love is journey. Love is a journey; the lovers are travellers; their common life goals are destinations; the relationship is a vehicle; and difficulties are impediments to motion. This conceptual metaphor is reflected in the following conventional expressions: Look how far we've come; it's been a long bumpy road; we can't turn back now; we're at the crossroads; we're heading in different directions; we may have to go our separate ways; the relationship is not going anywhere; we're spinning our wheels; the marriage has run out of gas; our relationship is off track; the marriage is on the rocks; our ship is sinking; we're trying to keep the relationship afloat. These idioms are metaphoric idioms. They come with a conventional mental image and knowledge about that image. They map the source domain knowledge onto the target domain knowledge (Lakoff and Johnson 199:68). These conventional mental images are shared by a large proportion of the speakers of a language.

The importance of this is that the recognition of the embodied mind, cognitive unconscious and metaphoric nature of thought can be used to replace the conventional disembodied scientific realism with embodied scientific realism. Embodied realism rejects a strict subject-object dichotomy since we are coupled to the world through embodied interactions (Lakoff and Johnson 1999:93). Embodied realism recognises that in many important cases, concepts do change over time, vary across cultures, have multiple inconsistent structures, and reflect social conditions (Lakoff and Johnson 1999:96). Consequently embodied truth is not absolute objective truth. It accords with how people use the word true, namely, relative to their understanding. Embodied truth is also not purely subjective truth, since embodiment keeps it from being purely subjective. As we have similar embodied basic-level and spacial-relations concepts, there will be an enormous range of shared truths. Social and cultural truths should also be seen in this context.

Conclusion

Cognitive science does not discriminate between cultures. Neither is it determined by moulded concepts like those of Euro- or Afro-centrism. It challenges traditional ways of doing cultural anthropology. Cross-cultural communication, seen in this light, is not an unattainable ideal. On this level of thought we can begin to speak about universals without discarding the contextual and contingent. What needs to be done is to investigate the ways conceptual metaphors operate in different cultures; how they influence perceptions and world-views; how they are reflected in research. It is a well-known fact that Africans have a magnitude of proverbs for living, most of which contain physically grounded metaphors. These could contribute to the corpus of examples of how physical experiences influence the way we think and do science.

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