Indigenous African knowledge systems and innovation in higher education in South Africa

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ABSTRACT
The importance of innovation in higher education is recognised in South African educational discourse. The South African White Paper on Science and Technology, issued in September 1996 and entitled, Preparing for the 21st Century, states that, “…the White Paper is built upon the twin concepts of ‘innovation’ and a national system of innovation’”. The National Plan for Higher Education (2001) recently unveiled by the Ministry of Education, also places great emphasis on innovation. Innovation is regarded as the key to knowledge production and processing, while the future of any nation is seen to be determined by its ability to convert knowledge into wealth and the social or public good. In this article we want to argue that innovation in higher education goes beyond the formal systems of innovation done in universities and industrial research and development laboratories. For proper development to occur in the South African context, we would maintain that indigenized African innovations and knowledge systems would also have to be taken into account in higher education curricula.

INTRODUCTION
In this article we want to argue that innovation in higher education goes beyond the formal systems of innovation done in universities and industrial research and development laboratories. For proper development to occur in the South African context, we would maintain that indigenized African innovations and knowledge systems would also have to be taken into account in higher education curricula.

AFRICAN INDIGENOUS KNOWLEDGE SYSTEMS

The concept: indigenous knowledge
There is an extensive body of literature on indigenous knowledge and development in Africa (see, for example, Grenier 1998; Hambly et al 1996; Larson 1998; Maher 2000; McCorkle 1994; Oduol 1995; Warren 1990, 1991, 1992a, 1992b). However, this literature on indigenous knowledge does not provide a single definition of the concept. Nevertheless, several traits distinguish indigenous knowledge broadly from other knowledge. Indigenous knowledge is unique to a particular culture and society. It is the basis for local decision making in agriculture, health, natural resource management and other activities. Indigenous knowledge is embedded in community practices, institutions, relationships and rituals. It is essentially tacit knowledge that is not easily codifiable.

Indigenous knowledge is seen as having certain distinct traits. Maher (2000:67 68) notes, firstly, that it is situated in a certain context it embodies the life experience, interactions and natural settings of the indigenous people. There is no claim to universality, because it is situated in a specific locality, but it is not necessarily isolated from the rest of the world it merely implies that it has practical application for the survival in daily life of the local community. Secondly, it is holistic knowledge, because it addresses all dimensions of human beings. Thirdly, it derives from diverse and multiple sources of indigenous knowledge such as:

- old knowledge that has existed for generations in the specific community like historical events, ancestral wisdoms and genealogies of the clan;
- empirical knowledge that has been learned through careful and daily observations, and
- revealed knowledge acquired through dreams, visions and spiritual institutions

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These commonalities by way of definition are enumerated by Warren (1991:24-25) who claims that:

Indigenous knowledge is the local knowledge that is unique to a given culture or society. Indigenous knowledge contrasts with the international knowledge system generated by universities, research institutions and private firms. It is the basis for local level decision making in agriculture, health care, food preparation, education, natural resource management, and a host of other activities in rural communities.

Flavier, De Jesus and Navarro (1995:10) state that:

Indigenous knowledge is the information base for a society, which facilitates communication and decision making. Indigenous information systems are dynamic, and are continually influenced by internal creativity and experimentation as well as by contact with external systems.

Easton, Nikiema and Essama (2002:3) point out that one result of the increasing experience with the development of indigenous knowledge is the increasing sophistication in understanding the various meanings and applications of indigenous knowledge. They distinguish three variant approaches to indigenous knowledge:

- **Indigenous knowledge as a heritage from the past** to be carefully conserved and respected, an approach displaying the kind of reverence for the accumulated wisdom of previous generations so poignantly expressed in the famous phrase from Amadou Hampate Bâ, “... each time an elder dies it is as if a library had burned down.”

- **Indigenous knowledge as an embodiment of a different and specifically African mode of thought** an “African” epistemology and, therefore, a means for rethinking development methods in areas such as health, agriculture, and natural resource management. Proponents of this approach point to the failure of current methodologies of development as evidence of the need for new concepts rooted in people’s cultural heritage.

- **Indigenous knowledge as a means and process for articulating what local people know, and involving them in the creation of the knowledge required for development**, and so transmitting to future generations the best that the present has to offer. Proponents of this approach insist that indigenous knowledge is as much a question of enabling local actors to produce new knowledge based on inheritance from the past and a clear-eyed assessment of current challenges as it is one of simply inventorying and storing up the traditions inherited from the past.

The synthesis of these three approaches seems to have the greatest potential for stimulating widespread respect for indigenous knowledge. The language used in recent literature on indigenous knowledge reflects a compound approach which makes recourse to indigenous knowledge in building new models for development, rather than simply ensnaring it. There is also a greater sensitivity to the virtues of the third approach, which makes indigenous knowledge an active process, rather than purely a question of anthologies and museums, and ties it to an agenda of popular participation and decentralization.

Ellen and Harris (1996:34) suggest that the following highlights the special features of indigenous knowledge, which distinguishes it broadly from other knowledge. According to them indigenous knowledge is:

- local, in that it is rooted in a particular community and situated within broader cultural traditions; it is a set of experiences generated by people living in those communities;
- tacit knowledge and, therefore, not easily codifiable;
- transmitted orally, or through imitation and demonstration; codifying it may lead to the loss of some of its properties;
- experiential rather than theoretical knowledge;
- learned through repetition, which is a defining characteristic of tradition even when new knowledge is added; repetition aids in the retention and reinforcement of indigenous knowledge;
- constantly changing, being produced as well as reproduced, discovered as well as lost.

**African Indigenous knowledge systems and the tyranny of the Eurocentric episteme**

African societies have experienced various forms of domination in their histories such as slave trade, colonialism, neocolonialism and globalization. Central to this domination stands the negation and devaluation of African indigenous knowledge systems and the power of the European knowledge system. Although each African state has its own experience of this domination, there is Mah (2000:61-62) notes, “... a shared history of colonial and imperial imposition of external ideas and knowledge over much of the continent”. One of the consequences of this hegemonic display of power on the part of the Eurocentric episteme for indigenous Africa knowledge systems, was the fundamental erasure of the rich knowledge legacy of the African people. Eurocentric sentiment often locates innovative ideas and authentic knowledge only within its own political and cultural boundaries, while at the same time concluding that the ideas and knowledge derived from African people are non-scientific.

The West uses this hegemonic discourse as an
apparatus of control, to sustain an unequal relation
ship between what they would call “developed” and
“underdeveloped” countries. Central to the Western
development model stand the notions of “progress”
and “science”. The resulting Western discourse
essentialises the material and economic aspects of
human life. The acquisition of certain material things,
or lack thereof, determines whether people are seen as
progressive or nonprogressive, and, thus, the devel-
oment of concepts such as “First World” and “Third
World”. Mah (2000:64 65) observes that, the First
World serves as a model of progress the desirable
way of living while the Third World represents, “... a
degenerate enclave of people who cannot manage
their own lives”. Progress, in the hegemonic dis
course of the West, is only achieved through the
advancement of science, whose findings are regarded
as universal, value free and objective. As a result,
Mah (2000:65) argues that, this scientific way of
understanding the universe became the only way of
knowing and pursuing progress, and meant that
indigenous knowledges in non Western societies,
including Africa, were relegated to an inferior status.
According to le Grange (2000) non Westerners have
consequently, Been kept ignorant of their culture’s
scientific and technological achievements, because of
the strong position of Western science and technol-
yogy. And as a result, indigenous knowledge systems,
including an African episteme have to date, not been
included in any significant way, in the curricula of
institutions of higher education and have not been
allowed into public domains. Only the Western
episteme, which includes Eurocentric knowledges,
heritages, cultures, institutions, norms, and idiosyn-
crasies have been considered to be important in
public institutions of higher education. In the light of
this, Odora Hoppers (2001:74) observes, that Afri-
cans lost all self confidence to participate in a
conversation that marginalised that heritage and
legacy which was enshrined in an indigenous African
episteme.

The era of colonialism and slavery thus influenced
Africans negatively it was a time of self alienation,
during which, as Okolo (1985:6) argues, Africa’s true
values and modes of being were distorted and attuned
to white Eurocentric values. As a result, Africans lived
and acted inauthentically, untrue to their nature and
their world. In short, the being of Africans was
negated, removed from history as an active participant
through creative freedom and initiative.

However, during the postcolonial era, Africans have
become more and more interested in asserting the
truth about themselves and their world. Since their
independence from colonial rule, they see their
mission as being human, as well as African. Nkrumah
(in Okolo 1985:6) wrote in this regard: “The desire of
the African people themselves to unite and to assert
their personality in the context of the African
community has made itself felt everywhere.” In this
regard, Le Grange (2000:115) articulates the fact that
Africa has achieved scientific and technological
Sophistication in a myriad fields including astronomy,
metallurgy, agricultural science and medicine prior to
the western invasion of the African continent.

In article 29 of the United Nations Declaration on the
Rights of Indigenous People the above is emphasised:

Indigenous people are entitled to the recognition
of the full ownership, control, and protection of
their cultural and intellectual rights ... They have
the right to special measures to control, develop
and protect their sciences, technologies, cultural
manifestations, including human and other genetic
resources, seeds, medicines, knowledge of proper
ties of fauna and flora, oral traditions, literatures,
designs, and visual and performing arts

Such measures are necessary, because as Salmon
(1996) points out, Western scientists often use
indigenous knowledge in such a way that it is
separated from its source. Original knowledge is often
used and changed in such a way that it is in fact
shelved, with the additional effects of deauthorisa-
tion or plagiarism of knowledge held by individuals,
and the invisibility of the indigenous people from
whom the knowledge originally came. The original knowl-
edge in the hands of Western scientists, thus, changes
to a commodity. All in all, it represents a veiled
oppression of indigenous cultures and could be called
intellectual marginalisation. Because of this, Odora
Hoppers (2001:77) argues for the protection of
cultural and intellectual property rights of indigenous
knowledges and technologies, which she claims
means:

... the creation, or reinforcements of mechanisms
to protect indigenous knowledges and technolo-
gies from untrammelled exploitation by external
forces. It is also to acknowledge that indigenous
peoples are the guardians of their customary
knowledge and have a right to control the
dissemination of that knowledge. Such cultural
and intellectual property rights incorporates col-
lective (as well as individual) ownership, retro
active coverage of historical as well as
contemporary works, protection against debase
ment of culturally significant items, respect for co
operative rather than competitive framework, and
the establishment of multi generational coverage
plans. This also includes the rights to preserve
customary and administrative practices and the
development of a code of ethics for external users
when doing recordings of traditional knowledge.
Legislation should thus be put into place to protect
the cultural heritage of indigenous peoples.
INDIGENOUS AFRICAN KNOWLEDGE SYSTEMS AND HIGHER EDUCATION IN SOUTH AFRICA

In the continuing debate in South Africa concerning the role that higher education should play in a democratic, non racist and non sexist society, it has become evident that the dominant issue governing many proposals for higher education transformation is social transformation. With regard to the question of social transformation, the principal task of the higher education sector is seen as contributing to the establishment of a democratic society in serving the needs of the state and the economy in the creation of wealth. Central to this transformative mission is the importance of innovation in higher education. The South African White Paper on Science and Technology, issued in September 1996 and entitled, Preparing for the 21st Century, states that, ... the White Paper is built upon the twin concepts of ‘innovation’ and a ‘national system of innovation’ . The National Plan for Higher Education (2001) recently unveiled by the Ministry of Education, also places great emphasis on innovation. Innovation is regarded as the key to knowledge production and processing, while the future of any nation is seen to be determined by its ability to convert knowledge into wealth and the social or public good.

However it is at this juncture that we would like to argue that innovation in higher education goes beyond the formal systems of innovation done in universities and industrial research and development laboratories. For meaningful development and social transformation to occur in the South African context, we would maintain that indigenised African innovations and knowledge systems would also have to be taken into account in higher education curricula.

The recognition and acknowledgement of the rights of indigenous knowledges and the role that they should play in educational discourse in South Africa are documented in a growing corpus of literature (see, Higgs & van Niekerk 2002; Hambly & Onweng 1996; Larson 1998; Odora Hoppers 2001, 2002; Ramose 1998; Seepe 2000, 2001).

In September 1998, a National Workshop on indigenous knowledge systems in South Africa was held at the University of North West to set the scene for the introduction of a program for Indigenous Knowledge Systems (IKS) in South Africa. On this occasion (National Workshop,1998:1), the overarching goal of the program for Indigenous Knowledge Systems (IKS) was formulated in the light of its possible contribution to the African Renaissance as follows:

... to unearth, promote and protect the African heritage to shine a light on that which has in the past been dismissed and denied. Our country needs to develop an indigenous knowledge system which supports local economic development and enhances its rich cultural, technological, artistic, linguistic and traditional healing heritage.

It was, however, also recognised that this goal was not to be exclusive in its concern with an African Renaissance, but was also to be directed at the promotion of a synergy between modern knowledge creators and institutions of indigenous knowledge systems, so as to facilitate a dialogue between indigenous knowledge systems and Western based systems of knowledge, especially in the realm of culture, science and technology.

Subsequent to the National Workshop, the Portfolio Committee of Parliament in 2000, instructed the Department of Arts, Culture, Science and Technology to embark on the formation of a draft policy and Bill on the recognition, promotion and protection of indigenous knowledge systems in South Africa.

The impact of these sentiments and formal attempts at providing indigenous knowledge systems in South Africa with a distinctive space of their own has far reaching implications for the higher education sector. One could say that such an impact would play itself out in a new philosophy of education which would recognise and acknowledge the experience of indigenous knowledge systems with their concomitant innovations. But, Odora Hoppers (2001:80) notes that such innovations in the curriculum of the academy will involve intensive research, re thinking and critical scrutiny of existing paradigms and epistemological foundations of academic practice; also the identification of limitations on creativity when only working in specific frames of reference. But in order to bring this about, we would argue that, there should be a move towards new ways of thinking and feeling about the importance of local indigenous knowledge systems in South Africa, in regard to their history, economics and social status. The challenges inherent in such a fundamental re orientation vis a vis the importance of local indigenous knowledge systems for contemporary practice, are outlined by Odora Hoppers (2002:9 10) as follows:

- to interrogate the modes of knowledge generation and the regulations governing legitimation and the accreditation of scientific knowledge
- to enquire as to how the study and validation of indigenous knowledge systems can assist directly in the economic and socio cultural empowerment of communities
- to explore deeper the interface between epistemology, diversity and democracy
- to engage in the critical evaluation and validation of indigenous knowledge systems in order to facilitate its active re appropriation and authentication in present day research
- to subject to direct interrogation, the historical,
scientific, and colonial discourses which disem
powered African societies since the advent of
colonialism
- to address the fundamental intolerance of modern
  science towards the legitimacy of folk or ethnic
  knowledges
- to move the frontiers of discourse and under
  standing in the sciences as a whole, and to open
  new moral and cognitive spaces
- to develop a clearer sense of the ethical and
  judicial domain within which science works, and
  to begin to understand the political economy of
  “Othering”

Engaging with indigenous knowledge systems, there
fore, implies as Odora Hoppers (2002:11) concludes,
a sensitisation and empowerment of individuals,
systems and institutions. In short, it means:

... going beyond the appraisals of the work of
individual scientists, beyond the output of parti-
cular research teams and the competitive acumen
of individual research institutions, and reaching the
point where it is possible to ask questions that can
serve to re centre Africa and the Third World.

With reference to such a “re centring” process in
higher education, Seepe (2000:60 67) argues that
transformation and innovation in higher education in
South Africa, are much more than the changing of
management structures or racial composition of staff
and students. Rather the process asks for an inter-
rogation of curricula in higher education in terms of
their relevance and appropriateness for the knowl-
edge embedded in indigenous technologies and
cultural practices.

In order for the higher education sector to bring about
this indigenous epistemic re orientation in curricula
development and implementation, we would suggest
that the following strategies be adopted:

- the promotion and incorporation of indigenous
  knowledge into the development of curricula
  projects in higher education through explicit
  procedures involving traditional practitioners in
  the design of intervention methods and in tactical
decision making;
- the systematic development, preparation and dis-
  semination of tools and methods in higher educa-
  tion for this kind of participatory approach to local
development;
- the creation of centres/institutions for indigenous
  knowledge in the higher education landscape that
  will be responsible for the collection of indigenous

knowledge, and at the same time be a place of
encounter between higher education agencies and
traditional practitioners in negotiating the nature of
intervention methods in the process of curricula
development and the implementation of programs of
local development;
- the design, testing and implementation of materials
and methods for the training of those in relevant
higher education sectors, so as to initiate them in a
more comprehensive usage of local knowledge,
and at the same time assist them in discovering
ways to synthesize the new and the old.

Indigenous knowledge is used at the local level by
communities as the basis for decisions pertaining to
food, security, human and animal health, education,
natural resources management, and other vital activ-
ities. Indigenous knowledge is, also, a key element of
the social capital of the poor and constitutes the main
asset in their efforts to gain control of their own lives.
Indigenous knowledge, like any other knowledge,
therefore, needs to be constantly used, challenged
and further adapted to evolving local contexts. In the
light of this, the higher education sector needs to
support local and regional networks of traditional
practitioners and help disseminate useful and relevant
indigenous knowledge so that communities can
participate more actively in ongoing development
processes. And furthermore, the higher education
community needs to develop innovative mechanisms
for the promotion of, and research into, indigenous
knowledge.

CONCLUSION

We have argued that, indigenous knowledge systems
should be integrated in the transformation of the
higher education landscape in South Africa, in the
development and implementation of higher education
curricula. The reason for this is because we believe
that there should be a move towards new ways of
thinking and feeling about Africa, its history, eco-
nomic, social and political status within th context of
the global community. Such a deconstruction, would
as Ntuli (1998:17) notes, “… unleash a thorough
interrogation of our own Eurocentric scholarship and
the entire panoply of Eurocentric scholarship, in order
to shake it from its contented hegemonic pose into an
arena of meaningful contestation”. Such is the
challenge that confronts the higher education sector
in South Africa and the attempts being made at its
transformation by way of a national system of
innovation.
REFERENCES


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