Frontiers in African Business Research

Chika Ezeanya-Esiobu

Indigenous Knowledge and Education in Africa

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Los Angeles, CA, USA

ISSN 2367-1033 ISSN 2367-1041 (electronic)
Frontiers in African Business Research
ISBN 978-981-13-6634-5 ISBN 978-981-13-6635-2 (eBook)
https://doi.org/10.1007/978-981-13-6635-2

Library of Congress Control Number: 2019931866

This Springer imprint is published by the registered company Springer Nature Singapore Pte Ltd.
The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

Acknowledgement

The author is deeply thankful to the International Development Research Center Canada, for the role it played in making this book an open access resource.

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Indigenous Knowledge and Curriculum in Africa

Highly developed human capital is a product of high-quality education. High-quality education empowers individuals within a society to explore the peculiarities of their environment to obtain a mastery that will lead to innovation and advancement. Education in Africa has fallen far short of fulfilling these aims; Western intervention in Africa brought with it a repudiation of Africa's originality, and a belittling of the continent's authentic experiences, which ipso facto, meant that the Africans' environment, lived experiences, way of life, their cultural values, belief systems, and educational structure and curriculum (among others) were considered backward, unscientific, and barbaric. Following this misconception was concerted effort aimed at a superimposition of the European psyche over that of the African, often strategically orchestrated through the colonially established, or post-colonially controlled education systems. Indigenous knowledge systems, which are a product of the environment and should ideally form the foundation upon which the formal education system of any society is constructed, has been consistently and intentionally relegated to an inferior position.

The key normative agenda of this study is to produce intellectual insights into the nature of Africa's indigenous knowledge systems in order to assess the feasibility of their incorporation into the region's school curricula. This is because, as will soon be explained, one of the reasons for the absence of widespread innovative research and development in Africa is the result of the foreign paradigm upon which the development efforts in the region is premised. The assumption here, based on anecdotes, mass media information, and data from the few publications on indigenous African knowledge, is that the Africans' realities still encompass indigenous knowledge on various levels, although this knowledge receives little, if any, recognition from academic, research and development institutions.

The principal agenda of this work, therefore, is to explore the obvious disconnect between education curriculum in Africa and the continent's indigenous knowledge systems. There is need to focus attention on the relationship between a society's education and knowledge, and the sustainable human development strategies which it may adopt. In that regard, the book explores theoretical underpinnings supporting

C. Ezeanya-Esiobu, *Indigenous Knowledge and Education in Africa*,
Frontiers in African Business Research,
https://doi.org/10.1007/978-981-13-6635-2_1

the place of authenticity in teaching and learning, takes an extensive look at the historical roots of Africa's imported education curriculum and examines existing realities of education in Africa. The work will then seek to establish the fact that the inability of Africa's postcolonial leaders to transform the education sector is majorly responsible for the continent's continued socio-political and economic challenges.

The central thesis of the study will be built on G. R. Woodman's and B. Morse's 1987 observation that the difficulty of designing viable development strategies in Africa derives from the fact that the region's modern development thinking is not the direct descendant nor an adaptation of the principles of the indigenous communities over which the new nation states have imposed their rule (Woodman and Bradford 1987). This statement directs attention to the persistence of development problems in Africa and questions the region's paradigms of development, which are largely foreign. It has been established that education must not only be relevant to the needs of the people concerned and be appropriate to the social and material environments in which it is pursued (Hanushek and Ludger 2007), it must also be adaptive and cumulative—that is, respond to the exigencies of situations and be meaningful to the members of the society, taking into account their aspirations and concepts of development. In his 1999 volume, *Development as Freedom*, Amartya Sen, opines that real development occurs when a people are free to define their development based on societal dynamics. As will be demonstrated, Sen's thesis raises issues and directs attention to the sociological implications of education, that is, the relationships between education, politics, and power and the wider socio-cultural environment (Dewey 1959; Freire 1972; Brock-Utne 2000).

This research will question whether the incorporation of Africa's indigenous knowledge into the educational research and development process will not offer more viable approaches to its development than the present orthodox economic based approach. Thus, in line with what is now called *post-development* discourse, this study will provide a framework to explore the role of human agency and people's perceptions, their sense of trust, and their attitudes vis-à-vis the role of politics and power in the creation, imposition, and sustenance of knowledge and ideas. Questions this will generate will include

- What is the nature of indigenous African knowledge and what are its implications for the role of education in the region's development?
- In what ways are the principles and philosophies of indigenous African knowledge either in harmony or in conflict with those of the region's modern scientific ones as promoted by the educational system?
- In other words, in what way will the understanding of Africa's indigenous knowledge systems enable us improve upon its paradigms and models of development through the existing education system?

It must be stated that the current study is not primarily concerned with African government's budget allocation to education. Neither is it concerned with school enrollment, gender, and ethnic issues in school attendance, and the length of time

students stay in school, among other things. Its primary objective is to provide conceptual resources and to direct attention to the continuing *disconnect* between Africa's own knowledge systems and those imported and superimposed on the region through the education curricula, which the study considers a major source of the region's continuing development predicament.

Knowledge and Its Implications

Knowledge is a product of education; it is sets of information, facts, ideas, skills, expertise, and awareness or familiarity acquired by a person through education or experience for the theoretical or practical understanding of a subject (Oxford English Dictionary 2017). Knowledge will also refer to socially accepted understanding of a subject, which offers an individual or a group the ability to use it to attain a specific goal. It is the "result of empirical inquiry that solves the problem at hand" (cited by Rohmann 1999, 102). Lemke (1994, 15) notes that the term, "knowledge is often used to refer to a body of facts and principles accumulated by mankind in the course of time." As mankind is dispersed across the earth, what is knowledge to a particular group might be insignificant to another in a different setting. Environmental factors, language, and biological and cultural dispositions influence what every group classifies and values as knowledge. However, with military conquests and economic domination of one society by another, the knowledge foundation of the domineering power is oftentimes imposed on subjects as valid knowledge. Essentially, therefore, knowledge is a complex body of several socially constructed ideas, validated by the dominant intellectual persuasion at each point in time (Lemke 1994, 1).[1] The implication is that knowledge is "always biased because it is produced from a social perspective of the analyst, thus reflecting his or her inclination towards certain interests, values, groups, parties, classes, nations," among others (Jackson and Sorensen 2003, 248). Therefore, "knowledge is not and cannot be neutral either morally or politically or ideologically, since all "knowledge reflects the interests of the observer" (Foucault 1969).

For Kuhn in his 1962 classic, *The Structure of the Scientific Revolution*, knowledge as is known in the present era is Western scientific knowledge, accepted as the "knowledge" (Kuhn 1962). All other knowledge systems tether on the periphery, seeking significance and recognition. Western epistemology or modernism universalizes the Western experience as the knowledge, but knowledge conceptualization is usually a subjective exercise, rather than the modernist promoted objective exercise (Foucault 1969). To step away from the dominance of Western epistemology and to validate other epistemologies, scholars and researchers focus on meaning; "What

[1]Take scientific knowledge for instance, "experimental results are suspect until they have been replicated in other labs. Often, experimentalists test hypothesis generated by others, and for new hypotheses to be validated, they must be in consistency with the body of previous, replicated experimental data produced by a community of scientists" (Lemke 1994, 15).

does a text mean? How does a graph or diagram tell us something?" (Lemke 1994, 15). Since the meaning of a text is dependent upon our interpretation of it in correlation to other texts, it implies that neither data nor explanation is "fixed and stable in its own meaning, much less the basis for objective knowledge of an objective world" (Lemke 1994, 15). Therefore, no discourse can lay claim to "objectivity, whether a literary, philosophical, or scientific text" (Derrida cited in Rosenau 1992, 50). Derrida, "deconstructed" the "constructions of "real objects" of study or narration", in order to expose the "pretensions to objective knowledge" about the social world (Lemke 1994, 15). What this means is that in many instances, what is presented as knowledge is a singular story, text or discourse, which combines "words and images in ways that seem pleasing or useful to a particular culture" (Rosenau 1992, 55). With this in mind, the existence of one single, universal and supposedly objective yardstick for validating all knowledge, comes into question since what is referred to as knowledge is founded upon the linguistic, environmental and "other meaning-making resources of a particular culture, as different cultures view the world in very different ways, all of which "work" in their own terms" (Foucalt 1969, 45).

The widely accepted idea that a single culture's world view holds true for the rest of the world has been described as a politically motivated propaganda for Europe's imperial ambitions, which has no proven intellectual basis. Oguamanam (2006, 19) describes "the Western culture as a local tradition, which has been spread worldwide through intellectual colonization." Some scholars assert that in the same way the European worldview has been temporarily superimposed over the ideals of other cultures, the upper social classes, "particularly middle-aged, masculinized males within European cultures, have dominated the natural and social sciences, as well as politics and business; the supposed universal worldview is even more narrowly just the viewpoint of one dominant social cast or subculture" (Lemke 1994, 31). Sandra Harding's (1993, 17) summation of the result of a social study of the sciences is that "all scientific knowledge is always, in every respect, socially situated." For Harding, the claim to pure science, severed from social origins, meanings, institutions, and practices, is a misnomer and does not exist. Harding's view is that the proper understanding of scientific knowledge involves the social and cultural processes surrounding it as well.

Science, Technology, Innovation and Indigenous Knowledge

Innovation, invention and creativity are the major drivers of growth and advancement in nations across the globe. A country that invests in creating an enabling environment for its human capital to operate at optimum usually receives yields by way of highly innovative products and services. At the foundation of innovation and invention is intimate knowledge of the environment within which the end product will be utilized.

Innovation generally entails the idea of doing new things. It is the whole process of renewing, changing, transforming or indeed creating more efficient and effective means, products, processes or ways of doing things. There is widespread convergence

around the fact that innovation is a major source of organizational or national wealth. It has been said that innovation rules the world; nations that are constantly innovative have been shown to develop at a much higher rate than nations that are rich in mineral, human or any other resources (OECD 2000). A good example is the United States, where it was assumed for over 200 years that economic growth came about as a result of input of capital and labor in the production process resulting in a greater output. However, Robert Solow, who would later win a Nobel Prize in Economics for his work, was one of few economists who discovered that only 15% of economic growth in the United States between 1870 and 1950 occurred as a result of increased input of labor and capital (Rosenberg 2004). That is, between 1870 and 1950, increased input of capital and labor "could only account for about 15% of the actual growth in the output of the economy. In a statistical sense, then, there was an unexplained residual of no less than 85%" (Rosenberg 2004). It was the unexplained residual of 85% that "persuaded most economists that technological innovation must have been a major force in the growth of output in highly industrialized economies" (Rosenberg 2004).

Today, innovation in science and technology remain a major force in determining the rate of economic growth recorded by nations. Nesta, the United Kingdom's innovation foundation, conducted a study, which established that between 2000–2008, 63% of the growth rate recorded in the United Kingdom could be attributed to innovation, while only about 37% could be linked to higher inputs of capital and labor (Nesta Foundation 2013). According to the Foundation, "research, that "ability to turn ideas into useful new products, services and ways of doing things is the wellspring of prosperity for any developed country" (Nesta Foundation 2013).

Technological innovation is the bedrock of the quest for improved economic growth in most nations across the globe. Innovation in several developed economies is a result of intentional, consistent and sustained investments in industrial and technological research by governments and the private sector (Grossman and Helpman 1993). Technology implies the application of scientific knowledge, and often entails invention, innovation or the creation of a new product or method (Conway and Waage 2010).

If investment in appropriate technology is key to innovation, it is important to understand the concept of appropriate technology. For technology to be considered appropriate it must be founded on certain fundamental principles, which include:

- Accessibility and affordability
- Ease of utilization and maintenance
- Meeting real needs of end users
- Effectiveness

Innovation in technology, therefore, should have the aforementioned attributes in mind. The implication is that there is a need for deep knowledge of the environment in which the product being developed is to be utilized. Researchers, inventors, and innovators who have an intimate understanding of their environment are often the ones who succeed in developing technology or other products, tangible and intangible, which impact the environment in deep and meaningful ways, oftentimes bringing about transformation and noticeable progress.

In a groundbreaking theory, Basu and Weil (1998) proposed that localized innovation is a strong and driving force in economic growth. According to the theory, new knowledge, although relevant for increased technological production, can only be applicable or appropriate when used in those "countries that produce according to technologies similar to the innovator's technology" (Los and Timmer 2003). The implication is that when a product is developed in a particular environment, the innovation needed to improve on that product or develop offshoots from that product is more likely to be generated in environments similar to where the original product was created. In essence, the idea of transferring technology is not sustainable since it is highly unlikely that imported technology will easily take root in a foreign environment and form a basis for more innovation in that territory. It is in this regard that appropriate technology needs to be situated in the preexisting technological knowledge or environmental reality of the innovator. This is where indigenous knowledge comes to the fore.

Indigenous Knowledge

Indigenous knowledge as a concept is as diverse as there are voices that utter the term. At the foundation of its several interpretations is an agreement that indigenous knowledge is an alternative to mainstream, Western styled, or "modern" understanding of knowledge. Indigenous knowledge explores the unique and shared knowledge of a population of people or community, which informs their collective worldview (Ellen and Harris 2000, 2−6). Indigenous knowledge is based on communal understanding and is embedded and conditioned by the culture of the locality in question. The development of indigenous knowledge is a byproduct of efforts to master the environment and has been a matter of survival to the communities. Indigenous knowledge has been further defined as

> Culturally informed understanding inculcated into individuals from birth onwards, structuring how they interface with their environments. It is also informed continually by outside intelligence. Its distribution is fragmentary. Although widely shared locally on the whole than specialized knowledge, no one person, authority or social group knows it all… It exists nowhere in totality, there is no grand repository (Sillitoe 2002, 9).

Greiner (1998, 1) asserts that indigenous knowledge is "the unique, traditional, local knowledge existing within and developed around specific conditions of women and men indigenous to a particular geographic area." Warren defines indigenous knowledge as "the local knowledge that is unique to a given culture or society; it contrasts with the international knowledge system which is generated through the global network of universities and research institutes" (Warren et al. 1995: xv). Kiggundu (2007, 42) defines the term indigenous knowledge as local knowledge that exists as a result of interactions with the environment by members of a community within a geographical area. Indigenous knowledge covers all fields of human endeavor including, but not limited to, agriculture, environment, pharmacology, health, trade and economics, political systems.

Indigenous knowledge is often said to be region specific and is more often than not orally transmitted through experience and long time intentional practice aimed at expertise and excellence and often transcends several generations. Indigenous knowledge is a byproduct of the very lives of its adherents and does not subscribe to rigid interpretations due to the changing nature of man's interaction with his environment. Indigenous knowledge is mostly held among a select group of people and often shunned by institutions of higher learning that cover the jurisdiction of the local communities which hold the knowledge, which usually prefer Euro-centered knowledge system.

Historically, indigenous knowledge has been arrogated derogatory descriptions such as "primitive," "backward," "savage," "rural," "unscientific," and so on. Non-western knowledge is often repudiated for its lack of "universality," a concept ascribed only to Western science (Kiggundu 2007, 49). Brush and Stabinsky (1996), describes indigenous knowledge as being culture-specific, whereas formal (Western scientific) knowledge is "de-cultured." In the academe and research, indigenous knowledge systems have been dismissed as archaic, old and symptomatic of backwardness. Indigenous people's way of life have in the academia and other research oriented and scholarly circles been tendered as simplistic, naïve and even primitive, "reflective of an earlier, and therefore, inferior stage in human cultural progress" and consequently of no relevance to the highly advanced and technologically oriented needs of modern society (Knudston and Suzuki 1992, 1). The result is that the academia emphasizes Western knowledge, and denigrates local knowledge.

Oftentimes, a comparison is made between indigenous knowledge and international scientific knowledge in a manner that favors the latter and ascribes to it the attribute of universality. The dichotomy that exists between indigenous knowledge in modern times and Western scientific knowledge does not suggest that the West is bereft of indigenous knowledge of its own. According to Oguamanam (2006, 14), scientific knowledge was constituted during the eighteenth and nineteenth centuries and absorbed certain European folk knowledge and practices. Owing to Westernization of knowledge, the term "scientific knowledge" has come to be synonymous with knowledge itself, but in the true sense of the word, science is only a variation of knowledge (Oguamanam 2006, 20). When trying to understand indigenous knowledge, scholars tend to compare it to Western knowledge. Evaluating indigenous knowledge in comparison to Western science, according to Oguamanam (2006, 17), presupposes an "overarching comparator in the form of universal reason or science, which is ontologically privileged." Such comparison places Western science in a higher pedestal as a superior form of knowledge, which other knowledge forms must seek to measure up to. The comparison between Western and indigenous knowledge is not necessary, as the baseline of universal reason exist in all traditions, enforced by shared human economic need and cognitive processes, although "activated and expressed in different cultural contexts" (Oguamanam 2006, 15).

What exists between the Western form of knowledge and indigenous knowledge is a difference in approach, which gives each a distinct identity of its kind, but does not justify the exclusive appropriation of validity to the Western knowledge system. The differences are philosophical in nature, arising from the discrepancies in socio-

cultural processes and worldviews. Oguamanam (2006) provides insight into some of the differences, which are

1. The transmission of indigenous knowledge is mostly orally based, that is, through folklores and legend, or through imitation and demonstrations. Western science transmits knowledge through writing.
2. Indigenous knowledge is gained by observing and participating in simulations, real-life experiences and trial and error. Western knowledge is taught and imbibed in abstraction.
3. Indigenous knowledge is founded on the spiritual; the notion that the world and its components have life force and are infused with spirit, and this includes both the animate and inanimate objects such as fire and trees. Western knowledge severs the animate from the inanimate and treats all as physical entities.
4. Indigenous knowledge views the world as interrelated; it does not necessarily subordinate all other life forms to mankind as they are all interrelated and interdependent parts of one ecosystem. Western science views mankind as superior to nature and "authorized" to exploit it maximally.
5. Indigenous knowledge is integrative and holistic in nature, rooted in a culture of kinship between the natural and supernatural. Western science is "reductionist and fragmentary, reducing and delineating boundaries to the extent that every relationship is treated as a distinct whole."
6. Indigenous knowledge values intuition, emphasizes emotional involvement and subjective certainty in perception. Western science thrives on logic and analysis, abstracted from the observer, and the replication of measurement to determine results.
7. Indigenous knowledge is based on a long period of close interactions with the natural environment and phenomena. Western knowledge thrives on the mathematical and quantitative (Oguamanam 2006, 15−16).

The existing dichotomy between scientific and indigenous knowledge has been argued in certain scholarly circles as a seemingly inevitable one due to the apparent differences in the culture of research and intellectual inquiry that separates both systems. However, there have been calls for a more positive comparison that seeks to highlight the strengths of both systems towards a complementary, rather than contradictory usage.

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Chapter 2
The Case for an Indigenous Knowledge Based Curriculum

The relevance of education is founded on the assumption that, at every point in time, it will be built around the human experiences of the learner. Distinct from training, which thrives on repetition without much emphasis on philosophical understanding, education should be motivated by the need to understand how and why things are. Education must, therefore, focus on helping the learner think clearly and without inhibition or undue dependence on abstract images. As much as possible, formal education should be a reflection of life itself, the function of education, then being to "direct, control and guide personal and social experiences" (Ozmon and Carver 1986, 114). As most human experiences are not certain or predetermined, education should assume an experimental direction, ready to engage in exploration and discovery of answers to emerging challenges that plague human existence. Nothing ought to be cast in stone as far as the human experience—which education embodies—is concerned. Education, in its entirety, should not be based on some perfected system of truth, but should strongly encompass a system of knowing that is rooted in experimentation, existing and emerging reality. Students should be exposed to as much as possible of the real world and not just to a fraction of it. Along that line, interdisciplinary approach to education is ideal since in reality life is not compartmentalized into different disciplines. The unfortunate result of the over-fragmentation in the form of disciplinarity, which has characterized formal education, is that undue attention is placed "upon subject matter rather than on the contents of the child's own experience" (Dewey 1916, 10).

Education ensures continuity of life in any society. As individuals in a society get old and die, a new generation is birthed that needs to be inculcated into the values, mores, culture, and the way of life of society. For Dewey, human beings "are born not only unaware of, but quite indifferent to, the aims and habits of the social group and have to be rendered cognizant of them and made to become actively interested; education and education alone, spans the gap" (Dewey 1916, 3). Education ensures continuity in society, and this is achieved through transmission of values, anchored on effective communication; "society not only continues to exist by transmission, by

C. Ezeanya-Esiobu, *Indigenous Knowledge and Education in Africa*,
Frontiers in African Business Research,
https://doi.org/10.1007/978-981-13-6635-2_2

communication, but it may fairly be said to exist in transmission, in communication" (Dewey 1916, 3).

Education should assist individuals within a society to understand their lived reality. Individuals must learn from experiencing real life in order to develop freely and be able to contribute to the development of society. Memorization, abstract learning, drill and the "learning of fixed subject matter", therefore will not be very beneficial to the individual seeking to explore and understand the realities of his own lived experiences. As Dewey notes

> The curriculum should be conceived, therefore, in terms of a succession of experiences and enterprises having a maximum of likeness for the learner with a view to giving the learner that development most helpful in meeting and controlling life situations… the method by which the learner works out these experiences, enterprises, and exercises, should be such as calls for maximal self-direction, assumption of responsibility, of exercise of choice in terms of life values (Dewey 1916, 13).

The role of the school should be to serve as a coordinating spot for all of the knowledge presented in the different education platforms, which the individual encounters in his everyday living. Education is life itself, and not a prerequisite to life.

Education can and should also act as a change agent in a society. Scholars have proposed that the chaos and crises being experienced by society today can only be addressed with education as a tool of social activism (Ozmon and Carver 1986, 144). Educators should engage society actively, for mere knowledge is useless if not backed by action. George S. Count, in his seminal work, *Dare the Schools Build a New Social Order* (New York: John Day, 1932), contends that educationists must take an active role in social transformation, in a radical approach that was new to the academia. Count opines that it is the job of educators to ensure that the curriculum is fashioned in such a way as to constantly question given assumptions of society and institute practical ways of enforcing change. For Count

> Education …must… face squarely and courageously every social issue, come to grips with life in all of its stark reality, establish an organic relation with the community, develop a realistic and comprehensive theory of welfare, fashion a compelling and challenging vision of human destiny, and become less frightened than it is today… (Counts 1932, 2).

For Counts,

> That teachers should deliberately reach for power and make the most of their conquest is my firm conviction. To the extent that they are permitted to fashion curriculum and the procedures of the school, they will definitely and positively influence the social attitudes, ideals, and behavior of the coming generation. In doing this they should resort to neither subterfuge or false modesty… (Counts 1932, 3).

Education should assist its beneficiaries in setting goals. Since modern culture presents man with conflicting values and ideas, it is the job of the teacher or educator to "establish clear goals for survival" (Ozmon and Carver 1986, 139). The educator plays a crucial role in ensuring that individuals within society are not carried away by popular culture, by constantly displaying the picture of the "truth" in front of society. This truth is nothing new but is the historically subscribed to values, which society has lost as a result of the encroachment of modernization exemplified by science, technology, and industrialization.

Unintended Aims of Formal Education

Also referred to as the hidden curriculum, there are certain outcomes that are not often intended, but which are inevitably part of what is placed within the individual subjected to the schooling process. This hidden curriculum includes the pedagogical structures and procedures, the messages which the teacher tacitly transmits to the students, which although not a part of the formal curriculum, are heavily influential in determining the learning outcome of the students. For Doug White, there is no curriculum educational program or policy that is "ideologically or politically chaste", as curriculum as a concept is inherently and directly linked to social, cultural, gender, power, and class issues. There is a need for exceptional vigilance, for the eyes of individuals to be enlightened to specific assumptions that code what is otherwise passed as proven knowledge. This affords the students the opportunity to develop a discourse free from distortions, enabling the learner to "appropriate the most progressive dimensions of their own cultural histories…" (Darder et al. 2003, 46). Education should, therefore, empower the learner to ask historical questions and examine assumptions and "accepted meanings and appearances" (McLaren in Darder et al. 2003, 62). Without an emphasis on such critical thinking in education, the school will serve more as an instrument for the perpetuation of the ideas of the dominant class. Education is then able to orientate students into society as liberated individuals who are able to understand the many sides to a problem that the society faces without necessarily being dogmatized to sing the elitist capitalist tunes.

Essentially, therefore, curriculum in the present-day academic context entails much more than study programs, classroom texts, or syllabi, but indeed represents the "introduction to a particular form of life;" serving in part "to prepare students for dominant or subordinate positions in the existing society" (Giroux and McLaren 1986, 228). The curriculum emphasizes some knowledge forms over others, thereby granting affirmation to a section of people above the rest. Educationists, therefore, must be critical about the constitution of textbooks, course materials, and curriculum content in relation to the social constitution of the learners. How does the curriculum affirm the knowledge forms, values, and ideals of a segment of the society while ignoring, de-emphasizing or even ridiculing that of another? The curriculum is able to achieve this in a way that seems unobtrusive and is never explicitly stated, through the "hidden curriculum" (McLaren, in Darder et al. 2003, 75).

No curriculum is devoid of partisanship or ideological persuasion, and "the concept of the curriculum is inextricably related to issues of social class, culture, gender and power" (McLaren, in Darder et al. 2003, 76). The school environment, instructional materials, styles, examples, teacher requirements, grading procedures, and every other thing involved in the academic environment transmits certain messages to the learners. These messages are filled with expectations which are geared towards a particular mindset, affirming one gender, race, culture, practice, system over the other. There is no universally neutral curriculum, and every attempt at forging one results in what Doug White would refer to as the "multinational curriculum." White asserts that

> The multinational curriculum is the curriculum of disembodied universals, of the mind as an information-processing machine, of concepts and skills without moral and social judgment, but with enormous manipulative power. That curriculum proposes the evaluation of abstract skills over particular content, of universal cognitive principles over the actual conditions of life" (Doug White, "After the Divided Curriculum," *The Victorian Teacher 7 (*1983*, March).*

The end goal for every educator should be to unearth or identify the "structural and political assumptions upon which the hidden curriculum rests and to attempt to change the institutional arrangements of the classroom so as to offset the most undemocratic and oppressive outcomes." (Mclaren, in Darder et al. 2003, 76).

Colonialism and the Hidden Curriculum

Colonialism and other forms of oppression are some of the surest ways of covertly structuring a curriculum to reflect and perpetuate the colonizing power's epistemology. Peter Pericles, in making a case for a redefinition of pedagogy in the United States amongst the nonwhite student population, contends that basic questions must be asked in order to arrive at the relevance of what is presented as universal education for certain segments of the American society. Questions like; "what are the value and place of nonwhite peoples in an Anglo-European nation and society? What should be the role of education for poor, indigenous, nonwhite children?" (Peter Pericles in Trifonas 2003). Responding to Pericles, Trifonas (2003) argues that the history of nonwhite America is found in capitalist oppression. Their subjugation has, from the beginning, served as a means to accumulate more wealth by the Anglo-European class. Whatever education made available to this class of people must be examined within this historical framework of internal colonialism and later neo-colonialism.

> A basic premise of our call for a decolonizing pedagogy is that the dominant economic, cultural, political, judicial, and educational arrangements in contemporary American society are those of an internal neo-colonialism produced by the mutually reinforcing systems of colonial and capitalist domination and exploitation that have organized social relations throughout history of what today constitutes the United States (Trifonas 2003, 13).

Trifonas defines colonialism in the United States as the era of legalized domination by the Anglo-European race during the seventeenth, eighteenth, and nineteenth centuries. The abrogation of these institutionalized colonial structures through such "landmark legislations" as the Emancipation Proclamation, the Civil Rights Act, Brown versus Board of Education, the Indian Self-Determination and Education Assistance Act, and others heralded the era of neo-colonialism (Trifonas 2003, 16). Although slightly altered in terms of appearance, Trifonas insists that the core of oppression and domination has been retained, and manifests itself through several institutions, one of them being education. He contends that the continued maintenance of the exploitative features that characterized America's social past, in many more ways than one, is responsible for the present social reality of the country, stating

that "several years after the formal end of internal colonialism, The United States remains sharply divided along the very same lines that characterized the nature of the colonial system" (Trifonas 2003, 16).

Trifonas (2003) believes, however, that the existence of colonialism at some point in the history of the United States, with the nonwhite population at the receiving end, does not call for a *requiem* to the social advancement of that group of people. Quoting Marx and Engels, he opines that "human existence and society are produced by people and can be transformed by people." (Trifonas 2003, 16). Through *praxis* which is the process of "guided action aimed at transforming individuals and their world," it is possible to reverse the existing social reality of the formerly colonized people. *Praxis* is made possible by teaching the formerly colonized people the process of critical thinking or a "critical consciousness of social existence" (Trifonas 2003, 19). The education of formerly colonized people cannot be the same as it was during the era of colonization, in order to transform their world from that of mental dependence on the colonizer to liberation and independence.

Trifonas argues that, to ensure real independence through the right kind of education, classroom content must integrate "particular curriculum content and design, instructional strategies and techniques, and forms of evaluation" (Trifonas 2003, 20). This is necessary, as colonialism is entrenched in the mental process of the colonized through the "curricula content and design, the instructional practices, the social organization of learning, and the forms of evaluation that inexorably sort and label students into enduring categories of success and failure of schooling" (Trifonas 2003, 21). Specifically, Trifonas calls for the liberating pedagogy to pay detailed attention to history as a social tool to examine the present (Trifonas 2003, 33). Given theories and assumed conceptual frameworks should constantly be reexamined by teachers and students, with a view towards ridding them of hidden neo-colonial underpinnings. This attempt at curriculum review is a continuous process, and is relative to the environment. In essence, the content of a decolonizing pedagogy in Nigeria might differ remarkably from that of India, but the bottom line is that both are open to a process of modification and expansion, according to environmental dictates.

The call for a reassessment of the curriculum does not indicate a repudiation of the "traditional curriculum necessary for academic success within the present system of schooling" (Trifonas 2003, 34). There is the recognized need for students to be exposed to a form of universal curriculum, which when mastered ensures academic success through an understanding of the environment, society, and ensuring creativity and innovation. The decolonizing pedagogy will encompass all of that, and much more, by giving the learners a sense of self-awareness, which the supposedly "universal curriculum" lacks (Trifonas 2003, 35).

In *Pedagogy of the Oppressed* (Seabury Press: New York, 1968), Paulo Freire argues that the major aim of education should be to achieve critical consciousness, for both teachers and learners to be able to question assumed realities, for "teachers and students co-intent on reality, are both subjects not only in the task of unveiling that reality and coming to know it critically, but in the task of re-creating that knowledge" (Freire 1968, 56). Knowledge is achieved through continuous invention and

reinvention, through constant inquiry into the nature of "reality." Richard Shaull in the introduction to Freire's text notes that;

> There is no such thing as a neutral educational process. Education either functions as an instrument which is used to facilitate the integration of the younger generation into the logic of the present system and bring about conformity to it, or it becomes "the practice of freedom," the means by which men and women deal critically and creatively with reality and discover how to participate in the transformation of their world (Freire 1968, 15).

Freire, in a term he referred to as the "banking concept of education" argues that "education has been used for the maintenance of the oppressive status quo; knowledge is a gift bestowed by those who consider themselves knowledgeable upon those whom they consider to know nothing. Projecting an absolute ignorance onto others, a characteristic of the ideology of oppression, negates education and knowledge as processes of inquiry" (Freire 1968, 58). Freire notes that "authentic education is not carried on by "A" for "B" or by "A" about "B," but rather "A" with "B," mediated by the world—a world which impresses and challenges both parties, giving rise to views or opinion about it" (Freire 1968, 82). The education system that exalts abstraction, cognition and intellectualism above an inquiry into reality turns the learners into mere recipients—passive individuals who sit to receive from those who already have knowledge of the truth. The educated man in this context becomes the man who has adapted to the world as is explained to him. To Freire, this sort of education "is well suited to the purposes of the oppressors, whose tranquility rests on how well men fit the world the oppressors have created, and how little they question it" (Freire 1968, 63).

Freire argues that the present form of education obtainable across formerly colonized territories is anti-creativity, as it "attempts to maintain the submersion of consciousness". Ideal education, however, should strive towards "the emergence of consciousness and critical intervention in reality" (Freire 1968, 68). In order to foster the freedom to be innovative and herald development, education must cease to be presented as abstract, universal, and independent of the learner's surroundings and existing realities. For Freire, it is crucial that education or curriculum represent "situations familiar to the individuals whose thematic are being examined, so that they can easily recognize the situation (and thus their own relation to them)… it is inadmissible to present pictures unfamiliar to the participant" (Freire 1968, 107). The most important part of education, therefore, is the ability to make learners feel like masters of their own thinking by enabling them the freedom to analyze their own world experience and not that of another.

India's post-independence reconstruction of its educational curriculum was rooted in an understanding of the effects of colonialism on the education system of the country. In *Towards New Education* (Ahmedabad: Navajin Press 1956), Mahatma K. Gandhi, father of India's independence reflects on the imposition of Western ideals and values over India in the education offered by the British in the colonial era. Gandhi condemns British education policy in India, which unlike the indigenous Indian education, emphasized mechanical learning instead of character development; "we become lawyers, doctors and school masters not to serve our countrymen, but to bring

us money" (Gandhi 1956, 22). Colonial education focuses on producing people for British styled living and does not encourage the building of an authentic progressive Indian society. Citing the example of Baroda, a predominantly agrarian society where although British education (mainly reading and writing at the elementary level) has been taught to its inhabitants for over 50 years, there has not been any noticeable improvement in the productivity and standard of living of the farmers,

> The sanitation of their villages is as primitive as in the other parts of India. They do not even know the value of manufacturing their own cloth. Baroda possesses some of the richest lands in India. It should not have to export its raw cotton. It can easily become a self-contained State with a prosperous peasantry. But it is bedecked in foreign cloth – a visible sign of their poverty and degradation… The fact is the education in Baroda is an almost slavish imitation of the British type. Higher education makes us foreigners in our own country… There is no originality or naturalness about it. It need not be at all original if it would only be ab-original (Gandhi 1956, 5).

Mahatma Gandhi rejects the nationwide curricula that emphasized such "universal" subjects such as physics, chemistry, and mathematics and completely ignored India's greatest industry of "spinning and weaving" (Gandhi 1956, 23). While not making a case for India's education to be turned to mere spinning and weaving institutes, he insists that such indigenous knowledge and industry must be combined with the universal courses in order to produce creative, innovative and well-grounded citizens who are in touch with their environment and the wider society.

Speaking of what is termed national education in India, Mahatma Gandhi asserts that "the curriculum and pedagogic ideas which form the fabric of modern education were imported from Oxford and Cambridge, Edinburgh and London. But they are essentially foreign, and till they are repudiated, there never can be national education" (Gandhi 1956, 26). Gandhi rejects the British entrenched education, which upturned the ancient educational system in India founded on the tradition of pride and service. Education to be considered sound must be able to ensure continuity from one generation to another. No generation should, due to education, lose touch of the investments, knowledge bank, and core values of its predecessors. British education, Gandhi contends, has succeeded in doing this by breaking the continuity of India's existence.

> The system must be scrapped; enquiry must be made promptly as to what constituted the elements of education before Indian Universities were constituted, before Lord Macaulay wrote his fatal minutes. Promptness is essential, because the race of old teachers is nearly extinct and the secret of their methods may die with them. The resuscitation of those curricula may mean the disappearance of political history and geography… we dare aver that they strike us as infinitely more efficient and satisfactory than the latest thing to come out of Europe" (Gandhi 1956, 28).

Gandhi decried the unrelated nature of the textbooks that the students were using to their own real-life experiences. The colonial curriculum did not imbibe any sense of pride in the student's history and surroundings, such that the more he studies, the farther removed he is from his identity until "he becomes estranged from his surroundings" and "he feels no poetry about the home life, the village scene are all a sealed book to him, his own civilization is presented to him as imbecile, barbarous,

superstitious and useless for all practical purposes. His education is calculated to wean him from his traditional culture" (Gandhi 1956, 29).

Mahatma Gandhi avers that mass or universal education is not suitable for the Indian child. For the most part, it is comprised of unnecessary information that ends up crushing all originality, creativity, and innovation in the learner, turning them into automated machines, designed to regurgitate canonical knowledge, abstracted from their everyday realities.

Gandhi blames the foreign medium of expression utilized in India's education system. According to him, English language as a medium of expression has stifled spontaneity, the precursor of creativity, in the Indian classrooms. The students have become adept at memorization, become imitators and gone very far from being creators. Indian children have been turned into foreigners in their own land, as the students spend years trying to master the foreign language instead of investing those years in developing their intellectual capacity (Gandhi 1956, 48). Gandhi relates a personal story of being punished in class for speaking Gujarati, his mother tongue, and spending four years in the classroom learning Arithmetic, Geometry, Algebra, Chemistry and Astronomy in the English language, instead of the one year it should have taken him to learn those same subjects in Gujarati.

In *True Education*, (Ahmedabad 1962), Gandhi compares the Dutch medium of instruction, which the black of South Africa are educated in, and the English which the Indians are educated in. In both cases he submits that the resultant effect is the same; students from both societies graduate to become mere imitators of their foreign masters, highly constrained from churning out original ideas, although they may be as well educated, if not more, than their English counterparts. He contrasts this with the situation in Japan where the use of mother tongue as the medium of instruction in the schools has brought about an awakening in the people, leading to originality and huge strides in science and technology education (Gandhi 1962, 13).

Gandhi regrets the lack of attention paid to indigenous knowledge in the assembling of the curriculum of learning in Indian institutions. Instead, the British disparaged Indian literature, dismissing it as being overtly superstitious in nature, and its civilization as demonic. He accuses the colonialists of being more interested in producing lawyers, doctors, and clerks who would help the ruling English officers in discharging their duties to the Queen of England. In the teaching of History and Geography, Gandhi recollects being made to memorize "the counties of England" and was taught nothing about India or the continent of Asia. In History, he was taught the English history of India, starting with the arrival of the first Englishmen in the country and the subsequent colonial triumph. Both subjects, he loathed extensively, for the abstract nature of the former and for the demeaning of India in the latter. In Arithmetic, the ancient Indian methods of calculations still in use outside of the classroom were ridiculed, while the English way of calculation was forced upon the students (Gandhi 1962, 28). In Science, the outdoor nature of learning such subjects as astronomy was not emphasized, although the Indian weather was nothing like the English weather which often constrained students to stay indoors. In Health Sciences, indigenous Indian medical remedies were disparaged by the colonial education curriculum, although no immediate alternative was available. People died in

record numbers without the advantage of the remedies which their forefathers utilized in times of ill health. In Physical education, rather than encourage the study and the training in the inexpensive but highly entertaining indigenous games such as "*gend-balla, gilli-danda, kho-kho, sat-tali, kabaddi*", etc., Indians have been taught to idolize tennis, cricket, and football, sports very expensive to engage in and which the Indian physical education teachers lacked appropriate understanding of the rules of the game (Gandhi 1962, 30). Another debilitating factor is the subjects that are not being taught at all in the schools, such as agriculture. Although 85–90% of Indians were engaged in agriculture, the system of education did not encourage this very important field of learning. Agriculture had no place in the colonial school syllabus in both primary and post primary education. The same can be said of the weaving industry which is conspicuously omitted from the curriculum. Music is another area very important in the culture and life of Indians, which was not given any form of recognition in the colonial Indian system of education (Gandhi 1962, 32).

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Chapter 3
A Faulty Foundation: Historical Origins of Formal Education Curriculum in Africa

An understanding of the present-day education curriculum in Africa- and its effects on Africans- must be rooted in an understanding of the different epochs the broader education sector in the region has passed through. The characteristics of these epochs will enlighten the interested student and enable a deeper analysis of the different factors and actors currently at play in education curriculum in Africa, south of the Sahara. This chapter will attempt a summarized review of selected historical literature on education in Africa with an emphasis on the evolution of the curricula.

Education in Africa: From Ancient Times to the Dawn of Colonialism

Several studies have established that contrary to widespread beliefs, formal, and informal education were actively in existence in Africa prior to the commencement of colonialism. At the formal, nonformal and informal levels, Africans in various parts of the continent were consistently involved in the business of transmitting knowledge to the younger generation. Walter Rodney asserts that "the colonizers did not introduce education into Africa, they introduced a new set of formal educational institutions which partly supplemented and partly replaced those which were there before" (London, Bogle L'Overture 1972, 263). In ancient times, education across Africa differed across ethnicities, all of which operated within various forms of economic, political, and social systems. Yet, there was identifiable unity in the culture of learning and in the way of knowledge transmission among these groups. The identifiable cultural homogeneity reflects in the traditional education which was available to the younger generation across black Africa. For instance, a great deal of importance and solemnity was attached to the passing on of knowledge from one generation to another. Education in most of traditional black Africa was also not done in isolation, but involved a collection of individuals, such as, age grade (Moumouni

C. Ezeanya-Esiobu, *Indigenous Knowledge and Education in Africa*,
Frontiers in African Business Research,
https://doi.org/10.1007/978-981-13-6635-2_3

1968, 15). These groups of individuals were taught progressively as they grew in age and maturity, with their education emphasizing both the physical and metaphysical realities.

Abdou Moumouni in *Education in Africa* (Praeger: New York 1968), notes that although parents, nuclear and extended family members considered it their primary responsibility to ensure that their wards were well socialized according to the requirements of the society, traditional education in Africa also relied extensively on community effort. The high importance attached to education makes the popular African saying that "it takes a village to raise a child." One thing this ensures is that even children born to less privileged parents have as much opportunity to transcend their economic disadvantage by being taught by both the rich and the poor alike. Moumouni concedes that community oriented efforts give the appearance of an unstructured system that leaves such an issue as important as education to the whims and caprices of individuals within society, but he insists that far from being undecided and incoherent, education in Africa is so structured that, from the time of birth until adulthood, the individual is subjected to a well thought out plan of inculcation of values, discipline, education and all that is needed to ensure an adult who will be useful to the overall growth and development of society (Moumouni 1968, 16).

In the precolonial African education system, the baby is allowed to latch on to the mother from birth for as long as 6 years. It is beside the mother that the baby gets the full assurance of love and care, strong foundations needed to ensure a strong but empathic adult. The African woman is renowned for her unparalleled commitment to the health and well-being of her child, going to great lengths to ensure that he is strong, healthy, and well-behaved (Moumouni 1968, 16). At around the age of six, the boy child is completely weaned off his mother's care and attention, with the father assuming the main responsibility for his education. The girl child remains under the primary care of her mother. At this stage, the child is gradually introduced into the life of adults, and is called upon frequently to perform various tasks for adults within the community. The child also participates in games and role-playing which among other benefits, develop him intellectually, psychologically, and socially.

Education in Africa, it must be noted, is not distinct from life itself (Moumouni 1968, 18). There is minimal emphasis on abstract learning or formalism as distinct from the day-to-day situations that individuals encounter. In this informal manner, the basic foundation of societal values, knowledge and culture are transmitted to the child. The young girl by assisting the mother to cook certain dishes, and going to the market to buy and sell, soon learns how to be both a good home keeper and an astute trader, independent of her mother. The little boy who starts out by assisting his father to farm the family plot of land, and who goes hunting for grasscutters and other smaller animals, soon learns how to farm a sizable plot of land all by himself and how to hunt for bigger game (Moumouni 1968, 20). Moumouni emphasizes this when he states that, "it is by accomplishing productive tasks that the child and adolescent familiarize themselves with adult jobs and are initiated into the different social aspects of their future lives" (Moumouni 1968, 19). Precolonial African education therefore, involves the child being a part of a solid and oftentimes complex relationship—aimed at imparting knowledge—with the members of his community (Moumouni 1968, 20).

The education of the African child was essentially pragmatic, "virtue was inculcated more through exercise than through precept" (Abraham 1969, 70). Elders in Africa are renowned for being custodians of knowledge and wisdom, making them the indispensable chief architects in shaping the minds of the younger generation. William Emmanuel Abraham in *The Mind of Africa* (University of Chicago: Chicago 1969), writing about the Akan of Ghana, states that "the words of one's elders are greater than amulet" (Abraham 1969, 70). Among the numerous sayings of the Akans that show this reverence for age and the wisdom it comes with is that "there was an old man before a lord was born" (Abraham 1969, 71).

As the child approaches puberty in several parts of Africa, education assumes a more formal approach. In preparation for being a fully-fledged adult in the society, the boy child passes through initiation rites at around the age of 15 or 16 (Moumouni 1968, 25). In most cases, he is taken away to a camp, several miles from the village, where he is taught secrets about the community, which the uninitiated would never be privy. A good and popular example "was the initiation school held by the *Poro* brotherhood in Sierra Leone" (Rodney 1972, 262). The young men live in groups of about 50 and are constantly instructed by the elders of the village for as long as the ceremony lasts. The young man also undergoes the painful act of circumcision after which he emerges as a real man, ready to get married and start his own family. During the period of seclusion, a strong feeling of camaraderie and trust is built among the group, which binds them together for the rest of their lives. Moumouni asserts that the process of initiation places adequate emphasis on "physical exercises, sexual education, awareness of responsibility and the harmonious acceptance of the child into the community" (Moumouni 1968, 30).

Moumouni identifies four distinct characteristics of traditional or precolonial African education, which distinguishes it from that obtainable elsewhere.

(a) The early emphasis on the development of the child's physical endowments: This is usually achieved through games such as jump rope, races, swimming, acrobatics, and other sports competitions, which might be considered intense for the child. The true test of the child's transition into adulthood for the boy requires weeks, and sometimes months of physically tasking exercises. The overall aim is to develop the child's body, "agility, endurance, physical resistance and ability to use his body in different circumstances and for different purposes" (Moumouni 1968, 21).

(b) The high regard accorded to character building and development: The individual as a moral agent plays a central role in traditional African education. Issues of honesty, integrity and mannerism are taken seriously in the training which the child receives both at home and from the community. A high degree of ethical conduct is expected from the individual by society in all of his dealings. "Sociability, integrity, honesty, courage, solidarity, endurance, ethics and above all the concept of honor are, among others, the moral qualities constantly demanded, examined, judged, and sanctioned, in ways which depend on the intellectual level and capacities of the child and adolescent" (Moumouni 1968, 22).

(c) Education in precolonial Africa encompassed both physical and intellectual activities at every stage of the child's training. Through the use of age groups, age and sex relevant knowledge is transmitted to the younger generation (Moumouni 1968, 25). In the Yoruba state of Keta in the nineteenth century, there was in existence, a school of history, where a learned elder and master of Keta history "drilled into the memories of his pupils a long list of the kings of Keta and their achievements" (Rodney 1972, 263). In Muslim communities there existed a large number of institutions of higher learning, such as found in Timbuktu, which provided knowledge in Arabic. Of note is that the mastery of language was greatly emphasized, a state not unconnected with the oral nature of education in precolonial Africa. The mastery of the knowledge of proverbs, idioms, riddles, narration, stories and legends made eloquence in their recitation a much treasured talent. Lawuo (1978) suggests that certain games such as, "dara" or "dili", "wouri" or "awele" "are real exercises in mathematics, which involve geometry, combinations, and the properties of numbers," and these games played in traditional Africa were educational in nature and, at the same time, intellectually stimulating.

African proverbs are deep philosophical truths compressed in one single statement. The unwritten nature of African intellectual experience made the use of proverbs expedient in precolonial times, such that from one single proverb, a whole textbook of philosophical musings could be written were it to be in a society where writing was extensively utilized. A proverb of the Igbo people found in today's south eastern Nigeria which says that one must "search for the black goat while there is still daylight," carries with it the deep philosophical truths about doing things at the right time. So re-echoes the biblical philosopher Solomon when he says in *Ecclesiastes* that there is time for everything under the sun. Proverbs are widespread across all African societies, and their themes bear strong resemblance to one another from place to place. The Yoruba imply that the world has turned upside down, with the saying that "when an egg drops into an earthen pot, it is the pot that breaks." The Akan harbor similar sentiments when they say that "the lizard which dropped from the top of the coconut tree, nodded his head up and down, and asked the earth if it felt dizzy" (Abraham 1969, 94).

Most African folklore also transcend the entertainment realm, to hold deep and stimulating philosophical truths. Across pre-colonial Africa, the education of the child involved hours of sitting under the moonlight listening to folklores told by the elders in the compound. These stories were undoubtedly both recreational and educative, cutting across disciplines, including; philosophy, literature, law, psychology, music, drama, arts, and sociology to mention few.

> Some of the stories were designed to emphasize the superiority of brilliance over steadiness. For example, the African Tortoise won his race against the Hare not by toiling upward in the night while his companion slept, but by planting in the shrubs along the route several tortoises like him, the last of whom stirred himself to the tape at a suitable time (Abraham 1969, 96).

The need for astuteness, clan unity and the value of cooperative efforts, among other sociological attributes are embedded in this story (Abraham 1969, 96).

Very little attention has been paid to the intellectual expression of African art, which forms part of the education structure of Africa. European curators have drawn from the aesthetic emphasis of European art to interpret African art, although the latter was fashioned mostly for their intellectual, philosophical, and spiritual uses. As most of the education in precolonial Africa was based on orature, Africans tended to express their "philosophic-religious ideas through art, through the timeless, immemorial, silent, and elemental power so characteristic of African traditional art" (Abraham 1969, 111). African traditional art most often assumes a distorted form and is hardly life-like in its representation. This abstraction often masks a depth of thoughts and theoretical persuasions which most often seek to understand the physical as well as the metaphysical realm. Unfortunately, undiscerning European art critics, by comparing African art with European art, which is primarily for decoration and entertainment, have dismissed African art as being incapable of realistic expression. Abraham opines that in doing so, the Europeans "miss the point of African art. If they seek life-like representation, they should turn to secular art, the art which was produced for decorative purposes or the purposes of records, rather than moral art, the art whose inspiration is the intuition of world force" (Abraham 1969, 111).

Precolonial African education emphasized practical exercises in orature, music, art, history and general knowledge, among others. Moumouni contends that, "precolonial African education responded to the economic, social and political conditions of precolonial African societies and it is in relation to these conditions that it must be examined and analyzed" (Moumouni 1968, 28). He further asserts that traditional African education

> was fully capable of supplying the necessary elements to maintain in all its essentials the level attained by African society - before the slave trade - in the economic, social, technical and cultural spheres. In this sense, one can say that it fulfilled its objectives … even today, the technical achievements, political and economic organization, work of art, the striking personality of older Africans and the intact vitality of the peoples of Black Africa bear witness to this fact (Moumouni 1968, 28).

Precolonial African education adequately supplied the blacksmiths, weavers, shoemakers, and other artisans needed to stimulate the economy of the societies in question. Politically, socially, and culturally, the successes of the several empires and acephalous societies such as kingdoms in Benin, Ghana and Mali or the Igbo of today's southeastern Nigeria demonstrate the effectiveness of traditional African education.

The incursion of Christian proselytes into Africa, occasioned by the end of slave trade was to drastically upturn the status quo in the education system of sub-Saharan Africa. According to the renowned Tanzanian professor of history

Z. E. Lawuo, in "The Beginnings and Development of Western Education in Tanganyika: The German Period" (in, Ishumi et al., *The Educational Process.* Dares Salaam 1978, 47–65), the European slave traders only acceded to the call for the abolition of slavery when they made the discovery that it would better benefit them if they allowed the African to stay in their land to plant the crops needed by Europe. To optimally exploit the economic benefits from Africa, the Europeans considered it necessary to change the culture, beliefs, and value system of the African to make him more subservient, and to seal it finally with political colonization. Lawuo contends that the appearance of the missionaries in Africa, together with the Western education they brought, was a direct response to these economic aspirations of Europe;

> Christian missionaries used education as their tool for gaining converts and making entry into new areas to pave the way for Western socio-economic and political structures. According to David Livingstone, who first came to Africa as a missionary sent out by the London Missionary Society, the most important duty of the European Christian Missionary in Africa was to integrate the African into European economic structures. Africa, he declared, should not be allowed to industrialize, but instead it should serve as a plantation for the metropole, growing the crops demanded by industrial Europe (Lawuo 1978, 50).

The task of the Western missionary was therefore twofold, one of Westernizing and another of Christianizing the native. This he tried to achieve through socialization and acculturation packaged in the gospel and in the education that was administered to the natives (Mazrui 1979, 32). In "Churches and Multinationals in the Spread of Modern Education: A Third World Perspective," eminent Africanist scholar Ali Mazrui posits that, "the technological triumph of the western world gave its system of education almost universal prestige. Cultures which previously trained and socialized their children in radically different ways, saw themselves drawn irresistibly towards the western approach to education" (Third World Quarterly, Vol. 1, No. 1 Jan 1979, 30–49). Mazrui argues that paradoxically, the missionary school was the principal medium for transiting Africa from a backward, uncivilized barbaric society to a Western-styled, but now secularized civilization. Missionary education, focused on transmitting the "archival" Christianity-based society to Africa which was a fanatical version of the religion "which most Westerners had already rejected in the course of their own modernization (Mazrui 1979, 32). This desire to plant religiosity at the center of social life, however, did not deter the missionaries from seeking to transplant the modern anti-Christian culture to Africa at the same time "devoutism" was upheld. The ultimate aim was to "produce from the schools, African men and women with modern secular skills necessary for the new society of the twentieth century" (Mazrui 1979, 32).

The resultant "cultural schizophrenia" greatly undermined African culture and values as the now Christianized native left the school vowing to destroy whatever is anti-Christian or indeed anti Western in its minutest representation. Further, the Christian values being dispensed in schools as part of the education package extolled the "virtues of obedience instead of the ethos of initiative," "the fear of God instead of love of country," "the evils of acquisition instead of the strategy of reconciling personal ambition with social obligation" (Mazrui 1979, 35).

Colonial Education

Soon after the missionaries established education in Africa, European powers, seeking more profit through the global expansion of capital, formally colonized most of sub-Saharan Africa by the late nineteenth and early twentieth centuries. Charles H. Lyons in "The Educable African: British Thought and Action 1835–1865" (in Battle and Lyons (eds) *Essays in the History of African Education.* Columbia University: New York, 1970) contends that the export of education to "sub-Saharan Africa coincided with the rise of pervasive racism in Great Britain," which was an outgrowth of the "simplistic empiricism of the enlightenment." The "early Victorian science which was birthed during this period was preoccupied with determining human intelligence through a study of "cranial capacity,[1] phrenology, and comparative head shapes" (Lyons 1970, 1). At that time, Charles Darwin's publication of his *Origin of Species* which traced modern homo sapiens to the evolution process and emphasized such terms as "natural selection" and "ascent from lower species," strengthened the argument in favor of the superiority of the caucasian race above all others (Lyons 1970, 12). Lyon submits that "selective use of Darwinian rhetoric, then, was an effective way to give credence to what was before just supposition and to chastise the humanitarians who were progressively losing support in an increasingly science-conscious Victorian society" (Lyons 1970, 12).

The early champions of education in Africa, the missionaries who were humanitarians, did not accept this biased view of a racial difference in intellectual capacity, but maintained the secular view that "the black man was either an actual or potential intellectual equal of the white" (Lyons 1970, 4). In this battle for the mind of the black man, religion and the missionaries who brought education to Africa with the submissions that, "the same God made them all, both black, white, yellow or red; in His image and likeness He created them all," increasingly lost ground to pseudo-science. The colonial government believed in the objectivity of science against the emotionalism of religion, and therefore the scientific reports which extolled evolution and the difference in species formed the basis for the making of the colonial government education policy (Lyons 1970, 7). The authority of the missionaries in the education of the natives of sub-Saharan Africa was soon displaced by the colonial authorities, ably leaning on the intellectual acumen of the racist anthropologists and ethnologists for their colonial policies.[2]

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[1] Lyon observes that "in the Anthropological Society of London, for example, President Hunt relied on evidences of comparative "facial angles" to show that the black African was decidedly inferior, intellectually, to the European" (Lyons 1970, 8).

[2] Several members of the Anthropological society would assert at that time that, "the brain of the black African looked very much like the brain of a European in its infant age. At puberty, all development in the brain of the Negro ceased and it became more ape-like as it grew older" (Lyons 1970, 9). Others would contend that "black children had not such retentive memories as white children and that… they came to a state of status quo at about 16, and after that slowly forgot all that they had learnt." The Anthropological Society's vice-president Richard Burton, had said much the same thing in an earlier publication in 1860, when he observed that "the African preserves the instinct of infancy in later life… He astonished the enlightened Da Gama some centuries ago by

The first missionary group to establish formal Western-styled education in British West Africa did so towards the end of the eighteenth century, when the Society for the Propagation for Gospel established a mission school in Gold Coast (Lyons 1970, 14). The Anglican-sponsored Church Missionary Society (CMS) established the first school in Freetown Sierra Leone in 1806 and, about 5 years later, the Wesleyans. By 1841 there were at least "6,600 African students of one sort or another in schools in Sierra Leone, and another thousand or so in the Gambia and the Gold Coast" (Lyons 1970, 14).

As the schools grew in student population, there was the ever-increasing need for more teachers from the home country of the missionaries. F. H. Hilliard, in *A Short History of Education in British West Africa* (London: Thomas Nelson 1957, 1–7) asserts that the increased teacher population coupled with increased remuneration and terms of service soon went beyond the scope of the charity money which was trickling in for the missionary organizations. Soon the British Government was significantly assisting in meeting the financial obligations of the missionary schools, although the program content remained entirely religious in approach.

In 1842, the British Parliament appointed a Commissioner, Dr. Richard R. Madden, M. D. to "investigate among other things, the conduct of mission education in West Africa, and to make recommendations for its improvement." Richard Madden in "Report of Her Majesty's Commissioner on the State of British Settlements on the Western Coast of Africa: Climate and Its influence on Health" (in "Report of 1842," XII, 430), submits that the intellectual faculties of the African thrives most when he is between the ages of 5–12 and from then on it begins to experience a decline. According to him, the harsh climatic environment forces the "premature development" of the brain of the African in his early years, and unfortunately, those were the years spent in "memorizing sums and letters, things he will rapidly forget in later years." In submission, Madden called for the drafting of a curriculum rich in mechanical, and farming courses, rather than one geared toward intellectual development; "do not teach the child to follow intellectual pursuits which he can never master; instead, teach the young to work" (in "Report of 1842," XII, 430).

Other commissions later set up gave submissions that did not differ drastically from that of Dr. Madden. The reports of the several instituted colonial education commissions were filled with racist jargon, which drew from the prevailing views of the incapability of the black man to assimilate, retain, and process knowledge (Lyons 1970, 13). The crux of the argument was that literary education should be de-emphasized and trainings in petty industry, farming, and mechanical work be given precedence as early as possible. Lyons opined that this stance is also not unconnected with the desire of the government to ensure that "the number of educated Africans correspond to the small number of clerical positions available" (Lyons 1970, 17).

Owing to the increased interest of the colonial government in African education, the governors of the Gambia, the Gold Coast, Sierra Leone, and later Lagos became increasingly interested in the educational structure and content within their respective

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rejecting with disdain jewels, gold, and silver, whilst he caught greedily at beads and other baubles, just as a child snatches at a plaything" (Lyons 1970, 9).

colonies. This heightened interest and curiosity led them to scrutinize the activities of the missionaries, and in more cases than not, to declare that the education the missionaries rendered was inappropriate and not suited to the intellectual disposition of the natives. In 1849, for instance, the Acting Governor-General Pine of Sierra Leone condemned in very strong terms, the missionary program of education within the settlement, dismissing it as too bookish and "unsuited to the requirements of the people," considering their low intellectual aptitude and culture. Pine warned the missionaries to desist from unnecessary emphasis on "abstract learning" and to focus on training in "a practical knowledge of agriculture and mechanical arts for which Africans were more fitted" (Benjamin W. Pine, Acting-Governor of Sierra Leone, *Annual Report for 1848, Parliamentary Papers,* 1849, XXXVI, 306). His successor Governor Norman Macdonald continued along the same line when he stated expressly that the curriculum in West African education should be completely overhauled and reworked to a simplified version that will ensure that the boys are thoroughly educated in the form of education that "will enable them hereafter to gain an honest living in that humble sphere of life in which the lot of them is cast." In his published *Annual Report for 1851,* The Governor singled out Sierra Leone's Fourah Bay College and new Grammar School for special rebuke. He strongly urged Her Majesty's government to persuade the CMS to adopt a more sound and useful course of education, one best suited to the mental capacities of the youth" (Norman Macdonald, Governor of Sierra Leone, *Annual Report for 1851, Parliamentary Papers,* 1852, XXXI, 183).

The missionaries would not easily accept the denigration of their converts by the colonial authorities. Although they generally agreed that the African was in comparison to the Briton, less industrious, the missionaries differed from the scientists, by attributing this to the extreme heat of the tropics in addition to the abundant supply that nature had offered the African, making the need to work for survival less of a priority. The missionaries believed that the African must be made to imbibe the protestant ethic that placed hard work next to holiness, in order to get him to work as hard as the Britons. The colonial governments disagreed entirely with the missionaries' viewpoint, dismissing it as futile. T. J. Hutchinson, The British Consul for the Bights of Biafra and Benin in the 1860s, in his article "On the Social and Domestic Traits of the African Tribes" (*Transactions of the Ethnological Society of London (TESL),* 1861, 316–326) in his remarks on the education of Africans, would assert that no amount of mission education could ameliorate the inborn slothful dispositions of the African. He emphasized the unproductive nature of missionary education, saying that with that kind of education, "ages must elapse before any educational principle in its simplest form can produce an amendment on temperaments such as the African possesses" (*TES*, 1861, 316–326). For teaching the natives Latin, Greek, Hebrew, literature, geometry, arithmetic, physics and the same form of education obtainable in Europe, tempered with a strong religious bias, the missionary education in British West Africa was dismissed as lacking in authenticity. A similar situation was also observable elsewhere in the areas colonized by the French.

Until the early twentieth century, the colonial governments more or less assisted in funding the schools run by the missionaries and made suggestions as to the curriculum without being too overbearing. At the end of WWI, after the allied forces had declared

victory over imperial Germany, it became more eminent that the colonizing powers of Britain and France stood to gain from becoming more involved in the colonial process. First and certainly most important was the economic benefits accruable from the colonies, who would henceforth act as the suppliers of raw materials to feed the growing and booming factories of the colonialists. Second, the post-war mentality of readiness to fight, even in times of apparent peace, convinced both colonial powers that their colonies could be utilized as "strategic bases from which to attack the colonies of the adversary" (Moumouni 1978, 38). In addition, the use of black soldiers to fight in WWI occasioned their preservation as canon fodders in the case of another war in the near future. In French West Africa, for instance, it was a battle for acculturation of the African mind in order to assure France of the loyalty of her African subjects. By alienating the African as much as possible from his culture, France was able to economically maximize the benefits accruable from colonialism without much dissent from the colonized. The most strategic tool for this cultural acculturation was the colonial education policy. In the words of M. Brevie, the Governor-General of French West Africa, which he stated before the Government Council of French West Africa

> The duties of colonialism and political and economic necessities have imposed a twofold task on our work in education. On one hand, we must train indigenous cadres to become our auxillaries in every area, and assure ourselves of a meticulously chosen elite. We must also educate the masses to bring them closer to us and transform their way of living… from the political standpoint we must make known to the people our intention of bringing them into the French way of life… From the economic viewpoint we must train the producers and consumers of tomorrow… the content of our school programs is not simply a pedagogical affair. The pupil is an instrument of indigenous politics (Moumouni 1978, 43).

In the text of the decree of May 10, 1924, which reorganized education in French West Africa, it stated quite clearly, the reasons for embarking on the education of the natives as follows:

> *Article 5:* Attendance in school should be obligatory for the sons of chiefs and notables.
>
> *Articles 9:* The best student from the preparatory school, those who understand and speak French, shall be directed to the nearest elementary school and continue directly on for the *Certificat d'etudes primaries indigene* (CEPI). The others, constituting the large majority, will be returned to their families and replaced by an equal number of young recruits in order that the largest number of children will be given an introduction to the understanding and use of spoken French.
>
> *Article 2:* The essential goal of elementary education is to bring the greatest possible number of indigenous people closer to us, to familiarize them with our language, our institutions and our methods, to lead them gradually towards economic and social progress by the careful evolution of their own civilization.
>
> *Article 32:* The goal of advanced primary education is to provide general education in each colony:
>
> 1. To give additional instruction to the sons of local notables who will later be called on to assist our administration as chiefs.
>
> 2. To prepare candidates for the schools of the Governor-General, in order to supply native officials for general administration.

> 3. To train officials for local administration. The number and nature of the sections will vary according to the needs of the colony.
>
> *Article 64:* French will be the sole language in the schools. Teachers are forbidden to use local languages with their students (Moumouni 1978, 45).

In British West Africa, the same philosophical undertones defined colonial education. Walter Rodney cites the example of the Bemba of Ghana who, when the children went to school, were taught about European roses flowers and plants, which bore no resemblance with the plants and flowers observable within their own society. Walter Rodney quouted a Dr. Kofi Busia;

> At the end of my first year at secondary school (Mfantsipim, Cape Coast, Ghana), I went home to Wenchi for the Christmas vacation. I had not been home for four years, and on that visit, I became painfully aware of my isolation. I understood our community far less than the boys of my own age who had never been to school. Over the years, as I went through college and university, I felt increasingly that the education I received taught me more and more about Europe and less and less about my own society (Rodney 1972, 270).

More poignant is the fact that on a hot afternoon in West Africa, school children were being taught that the four seasons of the year was—spring, summer, autumn, and winter. Rodney regrets that "Europeans thoughtlessly applied their own curricula without reference to African conditions; but very often they deliberately did so with intent to confuse and mystify" (Rodney 1972, 271). African children were being taught about the Alps and river Rhine, but nothing about the Niger, Nile, Congo, or Zambezi rivers. Instead, African pupils were taught that Mungo Park "discovered" the Niger River, and were forced to memorize the names of other Europeans who "discovered" Mount Kenya, Lake Victoria, and other indigenous African heritage sites. Writes Rodney,

> As late as 1949, a Principal Education Officer in Tanganyika carefully outlined that the Africans of that colony should be bombarded in primary school with propaganda about the British royal family. "The theme of the (British) king as a father should be stressed throughout the syllabus and mentioned in every lesson" he said. "African children should be shown numerous pictures of the English princesses and their ponies at Sandringham and Windsor Castle" (Rodney 1972, 271).

Certain governors tried to protect the indigenous knowledge of the African in the education curricula but came under intense criticism by the colonial authorities in the motherland. In the 1920s, Governor Cameron of Tanganyika was one of the rare enlightened minds among the Governors who sought to preserve the personality of the African through the academic curricula designed for him. However, he was very seriously reprimanded and called in for questioning, in response to which he denied the charges, for fear of losing his job, claiming instead, that "his intention was that the African should cease to think as an African and instead should become a fair-minded Englishman" (Rodney 1972, 272). The missionary schools of Livingstonia and Blantyre in Malawi produced Scottishmen in black skin. Amilcar Cabral (1980, 45) writes in *Unity and Struggle* (London: Heinemann) that "colonialism by denying the dominated people their own historical process, necessarily denies their cultural process."

Peggy Ann David (1986) in the dissertation, "The African People of Guyana: A Study of Social Organization During the Colonial Period" (Howard University Department of African Studies), rightly divides colonial education policy in Africa into education for adaptation; intended to produce only "wage laborers and simple peasant producers," education for control; directly enforced through the curricula, corporal punishments and teaching practices, and education for cultural colonization which sought to produce Europeanized Africans (David 1986, 86). David asserts that colonial education was of a far more inferior quality than what was obtainable in the countries of the colonizing powers for several reasons. Following the widely accepted scientific notion of the low intellectual capacity of the African, the curriculum was designed to embody only the level of knowledge which the African was deemed to be able to absorb at any given time. Africans were given just about enough education to enable them understand the language and ways of the European, so that upon graduation, it will be a seamless transition to the position of a clerk, messenger, typist or other low level job in the colonial bureaucracy. Here, mastery of the colonial language, became a prerequisite for admission into post-secondary schools, and in this instance, several brilliant students who were not good at languages lost out.

Language of Instruction and Dependency

During colonial times, the languages of the imperial powers occupying each country in Africa became the official language of communication and learning. French, English, and Portuguese were used in teaching at varying degrees all over colonial Africa. The Kenyan author, Ngugi Wa Thiong'o (1987) who has written extensively on the language policy of Africa, writes in *Decolonizing the Mind: The Politics of Language in African Literature* (London: Heinemann), that the end of colonial rule signaled the end of the "sword and bullet" and the commencement of the "chalk and blackboard" of the colonizers as a means of subjugation of Africa. It was through acculturation, achieved through the education process and the language of communication that the colonialists succeeded in controlling not just the resources and state of Africa, but most frighteningly, his mind as well. In *Decolonizing the Mind*, Wa Thiong'o (1987) notes that the erosion of cultural pride makes Africans want to identify with other peoples' languages rather than their own. He relates the incidence observable in his days of growing up in rural Kenya, where he spoke his mother tongue Gikuyu, at home and in the fields, but at school, his language of education ceased to be the language of his culture and thoughts. The child who was caught speaking his heart language, Gikuyu within the school premises was subjected to corporal punishment or fined money. Those who spoke English were admired as the intelligent ones, and English, according to Wa Thiong'o, "became the main determinant of a child's progress up the ladder of the formal education" (Wa Thiong'o 1987, 12).

In a paper delivered in 2003, titled "Consciousness and African Renaissance: South Africa in the Black Imagination" which was delivered at The Fourth Annual Steve Biko Memorial Lecture, at the University of Cape Town, South Africa, Wa Thiongo explained culture as being central to a society's progress, and language as the major vehicle of culture. This implies that language is important in shaping the consciousness of the individuals that make up society. Realizing this truth, the outgoing colonialists ensured that their languages and therefore, their cultures were retained by the ex-colonies. Culture transmits world imagery through the spoken and the written language. Unfortunately for the colonial child, his exposure to written language brought with it a forceful initiation into the culture of Europe, while his own culture and language were demeaned as not upscale enough to merit intellectual or academic attention (Wa Thiong'o 1987, 12).

Apart from Tanzania whose immediate post-independence government was able to institute Swahili as the national language and language of education at the primary and post-primary levels, most other African countries at the end of colonialism, were unable to overhaul the linguistic inheritance of the colonialists in the educational sector.

Colonial education aimed at the devaluation of not just the African language but the debasing of the culture it embodies, such as "art, dance, religion, history, geography, education, orature and literature, and the conscious elevation of the language and culture of the colonized" (Wa Thiong'o 1987, 16). In this regard, Wa Thiong'o stresses that while Africans routinely exclude their language and culture, losing sight of who they are and ignoring their essence, the Christian Bible is available in, "unlimited quantities in even the tiniest African language" (Wa Thiong'o 2003, 26). The proselyte from Europe having a strong faith in his mission of mental and spiritual conquest made sure he communicated in the heart language of his target audience, while the African writer, on the contrary, lacked faith in the ability of his indigenous language to carry the weight of his thoughts and experiences.

Obanya (1980) concurs with Wa Thiongo when he asserts that

> It has always been felt by African educationists that the African child's major learning problem is linguistic. Instruction is given in a language that is not normally used in his immediate environment, a language which neither the learner nor the teacher understands and uses well enough (Obanya 1980, 66).

Fanon (1963) in *The Wretched of the Earth* (Paris: Presence Africaine) notes that cultural imperialism is the worst form of imperialism since it effectively destroys the memory, values and unique consciousness of the colonized, and forces an alien memory on him. In Fanon's words

> Every colonized people… in whose soul an inferiority complex has been created by the death and burial of its local originality – finds itself face to face with the language of the civilizing nation; that is with the culture of the mother country. The colonized is elevated above his jungle status (in his eyes) in proportion to his adoption of the mother country's cultural standards (Fanon 1963, 18).

Of note is that the most famous African education commission set up by the British colonial government—the Phelps-Stokes Fund Report of 1922[3]—recommended the use of indigenous languages as languages of instruction for African schools. According to the report,

> with full appreciation of the European language, the value of the Native tongue is immensely more vital, in that it is one of the chief means of preserving whatever is good in native customs, ideas and ideals, and thereby preserving what is more important than all else, namely, native self-respect. All peoples have an inherent right to their own language… No greater injustice can be committed against a people than to deprive them of their own language (Lewis 1962).

Contrary to the recommendations of the Phelps-Stokes Commission, Africans felt differently about studying in their mother tongue and resisted the policy fiercely, contending that it served to perpetuate the racial arrogance of the colonial powers by depicting the African as incapable of assimilating knowledge packaged in the English language.[4] In *Whose Education for All: The Recolonization of the African Mind*, (New York: Falmers Press), Brock-Utne (2000) asserts that the Africans rejected the systems supposedly tailored to their needs and demanded to be educated to exactly the same standards as the Europeans (Brock-Utne 2000, 147). Ali Mazrui (2003) in *Africa and Other Civilizations: Conquests and Counter Conquests*. (New York: Africa World Press) notes that African universities are mentally dependent on the West and engaged in wholesale imitation of Western educational systems-including the medium of instruction. He further emphasized that no African intellectual or researcher can carry on a scientific or advanced academic discussion in an African language.

Effects of Colonial Education

The lingering effect of the type of education which was imposed on most of Africa can be experienced in the lack of creativity and innovation, which are the hallmarks of Africa's education system. Commenting on this, Walter Rodney in *How Europe Underdeveloped Africa* notes that

> Education is crucial in any type of society for the preservation of the lives of its members and the maintenance of the social structure… The most crucial aspect of pre-colonial African education was its relevance to Africans in sharp contrast with that which was later introduced under colonialism… The main purpose of colonial school system was to train Africans to participate in the domination and exploitation of the continent as a whole… Colonial education was education for subordination, exploitation, the creation of mental confusion and the development of underdevelopment (Rodney 1972, 263).

[3]The fund was a philanthropic American organization which had helped establish a segregated educational system for black Americans and based on the "successes" recorded in America, was requested by the British to organize a similar system for their colonies.

[4]The suspicion of the Africans was that the language policy was designed to keep them in the social ghettoes just like the black Americans whose education is inferior to the whites.

Colonial education succeeded in its aim of preparing Africans for subordinate positions available to natives within the structure of the colonial bureaucracy; interpreters, clerks, teachers, hospital workers, and other needs of the administration. The result was the production of civil servants who were dedicated to the service of the colonizing powers and indeed regarded themselves as the highly privileged few as compared to the majority of their brethren. In *Decolonising the Mind,* Ngugi Wa Thiongo stresses that the "Berlin conference of 1884 was affected through the sword and the bullet. But the night of the sword and the bullet was followed by the morning of the chalk and the blackboard. The physical violence of the battlefield was followed by the psychological violence of the classroom" (Wa Thiong'o 1987, 9). Along with the magnitude of servility displayed to their white supervisors, the newly educated African elite also treated their fellow Africans with scorn and arrogance, thereby propagating the myth of "white superiority" and black inferiority (Moumouni 1968, 49).

Arising from a syllabus that extolled the virtues of the white race and the civilizing mandate of Europe towards a barbaric African race, the newly educated elite "could not conceive of a future for their country outside servile submission to the colonial yoke" (Moumouni 1968, 49). Whatever strength of character, belief in himself, his environment and community that the educated African previously had was soon replaced by complete detachment from his own people and an attitude of intense and desperate imitation of any semblance of Whiteness. According to Cheikh Hamidou Kane in *Ambiguous Adventure* (1972),

> On the Black Continent, one began to understand that their real power resided not at all in the cannons of the first morning but in what followed the cannons. Therefore behind the cannons was the new school. The new school had the nature of both the cannon and the magnet. From the cannon it took the efficiency of a fighting weapon. But better than the cannon it made the conquest permanent. The conquest forces the body and the school fascinates the soul.

Colonial education sought to systematically devalue Africa's indigenous knowledge and to destroy all sense of self, community awareness and pride, which the African had prior to being engrafted as a part of the colonial system. Walter Rodney declares that "the educated Africans were the most alienated Africans on the continent. At each further stage of education, they were battered and succumbed to the white capitalist system, and after being given salaries, they could then afford to sustain a style of life imported from outside… that further transformed their mentality" (Rodney 1972, 275).

Owing to the overwhelming evidence of technical and economic advancements by the colonial powers, even the uneducated and half-educated Africans, began to strive to be like the "Whiteman," to the detriment of being true to their authentic selves. The educated African soon became trapped in the desire for ever more acquisition of the manifestations of capitalism in the form of wealth—ostentatiously displayed in the form of houses, cars, apparel, and frequent overseas visits. The more they endeared themselves to the colonial authorities, the more they were rewarded and the more they treated their fellow Africans with disdain.

Colonial education, by de-personalizing the African, succeeded in the corruption of his thought processes and perceptions, such that he began to think abnormally

and in a warped and self-hating sort of way. The way of thinking of Africans taught in the classrooms, and their uneducated counterparts, whom they interacted with outside the classroom assumed a self-denigrating pattern. In particular, the colonial education of the French, Belgian, and Portuguese which tried to assimilate Africans into their own culture resulted in an almost total annihilation of the personhood of the African. Fanon succinctly explained it when he wrote that; "culture has never the translucidity of custom; it abhors all simplification. In its essence, it is opposed to custom, for custom is always the deterioration of culture. The desire to attach oneself to tradition or bring abandoned traditions to life again does not only mean going against the current of history, but also opposing one's own people" (Fanon 1963, 224).

At the basic level, the African had to prove himself to be completely bereft of his Africanness in order to be accepted to a reasonable degree by the colonizer as being human at all. Moumouni contends that, "the attraction of the foreign culture was a normal consequence of the desire to expand one's intellectual horizons, and more particularly, of an almost total ignorance of African history and the historical significance of colonialism" (Moumouni 1968, 55).

Speaking on the congenial inferiority occasioned by colonial education, Richard Mollard writes in *Hommage a Richard Mollard*,

> In any case, the "civilized" and civilizing White, good or bad – perhaps above all good – began in most cases by persuading the Black that it was a humiliation to be Black, that there is no civilization except the white one. They became unanimous on this point, "My parents are savages," the *evolue* tells you himself, if he has the rare courage to speak to a White of his origins, which he thinks are shameful… It is understood that the Negro is a savage; sometimes a cannibal, more often as docile as a faithful dog; in short, contemptible and despised; naked, unable to write, incapable of inventing a thing as simple as a wheel or anything that turns; unable to defend himself effectively; he laughs when you show him a zipper; he calls every civilized way of doing things "the way the Whites do it." In short, to be Black is a taint (Richard Mollard, *Hommage a Richard Mollard,* Paris: Presence Africaine, 1953, pp. 341–62, 368–9) in Moumouni 1968, 56).

The contemptibility displayed towards the African during colonial times differed markedly from the way other colonies or colonized peoples across the globe were treated. Perhaps, this is attributable to the fact that the other civilized cultures such as the Hindus, or the Japanese were never enslaved. Skin color aside, there is also the probability that the interaction between the West and Arabs, Hindus, Chinese, Japanese, and other cultures dated back to a period when these civilizations were on par with Western civilization (Moumouni 1968, 57). Richard Mollard tries to make sense of this peculiarity

> This problem is unique to the Negro world. It hardly exists, at least not in the same way, among the other non-western people in the world. Not only were Europeans unable ever to persuade the Arabs, Hindus, Cambodians, Chinese and Japanese that they were savages, primitives, grown-up children and born slaves…, but they themselves began to believe, little by little, that these people, however picturesque and strange they seemed, had their contributions to make, their learning, their civilizations… One may think of this what one will, certainly, but it is incontestable. Also, these people can energetically demonstrate their existence, and at times their opposition, to the "civilizing mission" of Westerners whom they consider miscreants, materialists and intruders (Moumouni 1968, 52).

In contrast to the colonially imposed view of Africans as savages, the colonialists displayed a much different disposition towards other colonies such as India. Jai Kishan Sharma in *Education for Third World Countries: With Special Reference to India* (B.R. Publishing: New Delhi, 1986) notes that the respect for the culture and indigenous knowledge of colonial India by the Imperial British powers was manifest in a scheme "post-War Educational Development in India," established by the colonial government in 1944. Writing his observation about the state of education in India, then Governor Sir John Sargent notes in the report, "I have no hesitation in insisting that the foreign system of education at present prevailing in India has, to a large extent, corrupted India's mentality… its effect has been to imprison those associated with it, in, at present, inescapable servitude of foreign mindedness." Prior to making this observation, which formed the bedrock of education in a post-independence India, a scheme had been drawn up in October 1937 at Wardha India. The Wardha scheme was chaired by Mahatma Gandhi under the aegis of an All India National Educational Conference. Among its several recommendations, was the granting of free and compulsory education in the mother tongue, the structuring of curriculum around indigenous knowledge, among other structural and technical transformations (Sharma 1986, 34). The Sargent and Warhda schemes were the foundations upon which the contemporary education system in India was formed.

In a post-colonial India, the basics of the Indian society forms the foundation, but a lot has been borrowed from the Western system. Education in contemporary India seems to have imbibed to a reasonable degree, the principle of *Samyakvada* or integration, as stated by Sharma. *Samyakvada* entails the recognition that no distinct philosophy of education, be it Western or traditionally Indian, can meet the needs of the contemporary Indian society. Sharma asserts that it dawned on the government that a new way of education must be embarked upon as a matter of urgency for India to develop after the end of colonial rule. This led the government of the day to state categorically that, "it is beyond argument that we shall have to devise our own system, a system which should be completely and neatly our own in content and form; an imported system of education will only act as a pill of poison for the dying nation to hasten its doom" (Sharma 1986, 37). Sharma decries the present decay of the Indian social theory of *Varna*, which extols the values of cooperation, complementarity, cohesion, and interdependence. This decay has been occasioned by the spirit of competition and the diversion of the interest of Indians from the deep love for truth, enlightenment and self-realization towards mundane utilities and quick gains. *Varna* drew Indians to the recognition of individual fulfillment that is tied to societal fulfillment, while the advancement of the Western education philosophy, which glorified science, fostered competition and the formation of groups around "interests, economic or social, political or religious" bred disparities and divisions. India's effort towards returning to the Varna spirit was not necessarily a matter of going back verbatim to the traditional way of life, for that would be parochial and unprogressive (Sharma 1986, 39). It simply entails the integration of science and technology with the authentic Indian values; ridding the spirit of the Indian of the corruption imposed by Western education, its penchant for a lust for power and materialism and repudiation of cooperation, love for truth and nonviolence. Making

India "a society by the past in the present but for the future; heritage from the past has to be preserved, grown and enriched for posterity" (Sharma 1986, 43).

Unlike the situation in India, post-colonial African leadership did not attach much importance to curriculum transformation at the end of colonialism. Those who did, such as Julius Nyerere and Jomo Kenyatta, could only sustain the transformation until the need arose to seek external funding to sustain the education sector. In *Decolonising the Mind,* Ngugi Wa Thiong'o (2003) maintains that colonial education made the African view his history with much disdain, as a "wasteland of non-achievement" and one which the African would rather distance himself from, than embrace. Colonial education made the African want to identify with that which was furthest removed from himself and to loathe that which he is or which belongs to him. Fanon writes that, "in the man of color, there is a constant effort to run away from his own individuality, to annihilate his own presence" (Fanon 1967, 60). The result of colonial education was a perpetual psychic dominance of the colonizing power and a psychic submission by the colonized (Wa Thiong'o 2003), such that even the handover of power to the colonized in the name of independence did not change this fact.

On a positive note, colonial education rather than incite a sense of bewilderment and servitude in some, actually engendered a thirst for more knowledge, and mindset that sought to shed light on their subjective situation. These select educated civil servants viewed with much discomfort, the adulation of the colonialists by their ilk, despite the obvious "racist affirmations of the colonial propaganda" (Moumouni 1968, 50). This tiny minority amongst the educated Africans, at the expense of their career and lives in certain cases, refused to pay obeisance to the colonialists and became marked men, termed a negative influence on the docile populace.

> Western education has been the most revolutionary of all influences operating in sub-Saharan Africa since the imposition of European rule. It has been the instrument to the creation of a class indispensable for imperial rule, but one which invariably has taken the leadership in challenging and displacing that rule (Coleman 1960, 278).

It was to an extent the behavior of these few educated citizens which ignited the nationalist passion in the rest of the masses resulting in the ensuing struggle for and granting of independence to the formerly colonized peoples of Africa, an event that occurred mostly in the 1960s.

Culture, Education, and Dependency

Colonialism caused a drastic shift in the cultural paradigm of African societies. The transplantation of the European education system, which lacked any resemblance to the African environment and culture, brought about a distortion in perception in such a way that alienated Africans from the realities of their environment. Mazrui (2003) opines that Western education has eroded several African cultural values, such as reverence for elders, and solidarity between age peers. What is now observable is a forceful attempt to box African identity within social classes as is observable in

the West. In the Western liberal principles, the individual as the unit of identity is promoted, unlike Africa's principle of social cohesion and collective responsibility. Western education has also assisted in changing the taste, morals, and other values of the African. Mazrui asserts that, "there is little doubt that African concepts of what is proper or improper, just or unjust, attractive or repulsive have now been profoundly influenced by that system of education of which the university is the pinnacle" (Mazrui 2003, 78).

The change in values has changed the motives for behavior and conduct. "Western individualism and the erosion of traditional restraints" have in many cases resulted in the desire for quick wealth and conspicuous consumption (Mazrui 2003, 79). The impact of the "bureaucratic bourgeoisie" on consumption patterns in Africa according to Mazrui, has been much more profound than any meaningful contribution to technological and economic advancement (Mazrui 2003, 79). Western education has facilitated the desire for quick wealth without the concomitant entrepreneurial foundation. In pursuit of wealth for the purpose of ostentatious expenditure, long-held African values such as deference for elders, solidarity between age groups, character and integrity have been swapped for intense competition, corruption, and wide-scale embezzlement. Through acculturation and normative diffusion, colonialism was able to "constitute a major shift in the cultural paradigm of African societies" (Mazrui 2003, 79).

Colonialism was an intense and sustained process of social, psychological, and to some extent, physical violence against Africa. Although the political, economic and structural control of Africa by European powers can be said to be technically over, the psychological residue of colonialism, implanted as a result of the colonial educational process tarries on the continent. Bulhan R. in *Frantz Fanon and the Psychology of Oppression.* (New York: Plenum Publishing 2003, 53) explains that one of the consequences of violent experiences is that it distorts the developmental process of the receiver, limiting productivity and indeed causing death. This death is more psychological than physical in nature and directly refers to the death of creativity and innovation in the mind of the violently manipulated. Essentially, colonialism as has been demonstrated through the institution of education, succeeded in embedding a sense of inferiority in the African, thereby fostering a situation of dependency on the colonial powers for the day to day sustenance of the colonized. Unsurprisingly, at the end of colonialism, not much changed in the dependency syndrome inflicted on the formerly colonized peoples of Africa. According to Moumouni, "common sense is enough to prove that the result of so many years of tenacious effort and deliberate action on the part of colonialism cannot be made to disappear overnight" (Moumouni 1968, 54).

Through education, colonialism entrenched abnormal behavior and thinking in Africans, such that even after the acquisition of political freedom from the erst-while colonial powers, not much change has been effected in the area of education transformation. Apart from slight and mostly structural changes, the existing reality is that African countries have not addressed the core of the education curricula to reflect mental and psychological independence. African leaders for several reasons, which shall be addressed, have not deemed it a matter of paramount importance to

overhaul the education process, particularly in the area of program content, to reflect the now independence thought and spirit of the African masses. In an independent Africa, the outcome of colonial education still makes the African identify with foreign concepts, knowledge, so-called foreign experts and consultants, and devalue the indigenous, home grown knowledge and more qualified experts on the continent. As has been earlier proven in this text, in contrast to most of sub-Saharan Africa at Independence, India involved itself in a massive transformation of the education sector through the efforts of the visionary Mahatma Gandhi and some other protégé of his, leading to India's great strides in the area of innovative and creative education in the contemporary global economy.

Several decades after the end of colonialism, sub-Saharan Africa has not made much progress in liberating the education process from the clutches of imperialism and dependency. Only marginal improvements have been recorded, such as, increased rate of enrolment, expanded infrastructures, training, and recruitment of more teachers and other improvements that are peripheral to the core issue of curriculum transformation. African pupils and students graduate from different levels of education, with a sense of helplessness, inferiority and deference to Europe. In other words, the more the African studies, the deeper his inability to utilize his knowledge to directly and progressively influence his immediate environment for the better.

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Chapter 4
Contemporary Education Curriculum in Africa

Education in Contemporary Africa

Soon after independence, African countries began to invest heavily in the education sector. This was necessary owing to the very low literacy levels that marked most of the newly independent countries. The granting of independence was earlier delayed by the colonialists who advanced the reason that the uneducated Africans would be unable to effectively manage their own affairs. Soon after independence, therefore, African governments began to invest aggressively in the education sector. In *Political Values and the Educated Class in Africa*, (Univ. California Press: California 1978), Ali Mazrui asserts that at Independence in Ghana, only about 20% of the country's children were in school. In 5 years, this figure was raised to 85% (Mazrui 1978, 44). This desire to fund education attracted the attention of donors, such as, the United Nations Education, Scientific and Cultural Organization (UNESCO). Most African governments could not afford the enormous funding needed to make education accessible for majority of their populace; the UNESCO was very forthcoming with funding in this regard. As described by the then Director-general of UNESCO, the problem of education in Africa is "far and away the biggest single task facing UNESCO" (Mazrui 1978, 44).

From the 1960s and onward, UNESCO's yearly budget gave priority to the funding of the expansion of education in Africa. Zaire (Democratic Republic of Congo) was the first to be allocated the "largest single amount ever devoted in a single year to a single country" (Mazrui 1978, 44). The former colonial powers of Britain and France especially, were also very much involved as donor nations in assisting their ex-colonies to build their education system. These agencies and bilateral relationships provided wider sources of assistance for Africa's deprived education sector, mostly through the provision of teachers, volunteers, shipping of textbooks and school materials and the granting of scholarships to brilliant African children. The United States for example, provided 300 scholarships as an "Independence present" to Zaire (DRC).

C. Ezeanya-Esiobu, *Indigenous Knowledge and Education in Africa*,
Frontiers in African Business Research,
https://doi.org/10.1007/978-981-13-6635-2_4

Mazrui asserts that the negative effect of this dependence on external agencies and governments for the funding of Africa's education is not far-fetched. Africa lacked the much needed capacity or even audacity to intervene and change the colonially bequeathed structure, and most importantly, program content of its education system. It was a case of "either you accept colonial tutelage or your educational progress will be retarded" (Mazrui 1978, 44). The immediate post-independence African leadership, eager to present the promised dividends of independence to the masses, went all out to solicit for, and accept assistance from all who offered. The question, unlike the case in India, ceased to be about what was being taught, but about how many were being taught.

As a direct response to the clamor by the recently decolonized people, who had seen the benefits of white collar jobs for the very few who were opportune enough to be educated under the colonial administration, the immediate post-colonial governments demanded increased aid in the area of education from the international community. The United Nations and the major world powers responded to this plea, not necessarily out of deep-seated feelings of empathy or humanitarian considerations, but more due to the unfolding global realities. The commencement of the Cold War, the resultant shifting of alliances and emerging re-alignment of interests, presented the reality that unstable governments and a disillusioned citizenry in any part of the world could pose serious risks to the rest of the globe. Through Western-styled education and training of the majority, the United Nations and major world powers sought to mitigate instability in emerging African countries. In his last annual report, Secretary-general Dag Hammarskjold stated that education held "the key not only to material welfare of the newly independent countries, but also to the very stability of the new states" (Mazrui 1978, 44).

Part of the evidence of the heavy presence of external forces in Africa's education is that as late as 1978, up to 50% of the teaching staff of an appreciable number of countries in both English- and French-speaking sub-Saharan Africa were non-African. These foreigners, lacking in understanding of the local terrain in which the schools they taught existed, insisted on their own paradigm being reflected in the curricula. African teachers, on their part, did not fare better, since most of them were either educated in the West or were products of colonial education, and had no inhibitions about transferring the same type of education they received to the next generation of Africans. Table 4.1 shows the indigenous versus expatriate employment ratio in eleven African countries at the eve of independence, it can be seen that on average, expatriates filled about 70% of jobs requiring a post secondary education.

The foreign nature of the curricula did not go unnoticed in all cases on the continent. A good example is the student revolt against the Americanization of the law syllabus in the Faculty of Law of the University of Dar es Salaam. Although the new syllabus was presumably an improvement on the previously British colonially imposed one, and supposedly took local issues into account, the Law students would not even accept it, complaining that it was "an American intrusion into the academic process at Dar es Salaam" (Mazrui 1978, 205). Mazrui refers to African universities as "multinational corporations, with their headquarters outside Africa" (Mazrui 1978,

Table 4.1 Employment of expatriates in select African Universities

Country	Year of survey	Educational A	Level B	C	D	Total
Botswana	1967	–	94	81	19	42
Ivory Coast	1962	79	61			
Kenya	1964	77	25	54	18	48
Malawi	1969	58	48	36		41
	1966	64	10	14		18
Nigeria	1964	39	5			13
Somalia	1970	7	2	20	2	2
Sudan	1967–68	12	6	2	0	3
Swaziland	1970	80	74	57	23	35
Tanzania	1965	82	23	31	9	31
	1969	66	20	12	6	18
Uganda	1967	66	32	16	11	21
Zambia	1965–66	96	92	88	41	62

Notes A = university degree or equivalent; B = A levels or O levels plus formal training; C = O levels or secondary form 2 plus formal training; D = secondary form 2 or primary plus formal training (Hinchliffe 1987)

298). For instance, in several African universities, no African language is offered for study, but Greek, Latin, French, English, Portuguese, Spanish, German and other European courses abound.

Research and Development in Contemporary Africa

This study is focused on curriculum and for that reason, the emphasis will be on higher education in Africa. Higher education is the core of research, teacher training and curriculum development. Efforts at general education transformation begin with higher education, which is the bedrock of educational programs for other lower levels, and where choices are determined. African universities were established within an imperial culture. The major rational for the establishment of higher education in Africa was to produce highly trained manpower capable of replacing expatriates.

Aside from colonial manpower replacement requirements, most of the colonies were bereft of universities able to cater to the demands for economic, political, and social expansions, which Independence was destined to generate. By the time Independence was grudgingly granted by colonial powers, the establishment of a national university became an obligatory sign of Independence, together with the national flag, the national currency and national anthem. In "Higher Education, the State and the Marketplace" Mahmood Mamdani (CODESRIA: 2008) opines that the smallest of the colonies in Africa, deemed too insignificant to be equipped with

one university all to themselves were lumped together and one regional university established. This was so in the case of Makerere University in Kampala, Uganda (Mamdani 2008, 2). In bigger countries such as Nigeria, for example, had only one university in 1961 with about 1,000 students immediately post-Independnce (Mamdani 2008, 3).[1]

The inevitability of Independence for colonized territories after World War II forced Britain to seek to establish institutions of higher learning to provide the, "kind of indigenous leadership that had acquired Western skills and a 'modern' outlook" (Mazrui 2003, 64). The universities that emerged were designed to provide bureaucratic support to outgoing colonial administrators and not necessarily to "help Africa close the technological gap with the more advanced countries" (Abdi and Cleghorn 2005, 26). Following this, the curricula advanced liberal arts and literary education at the expense of vocational and practical training, or technological literacy. By the time African universities were established, Africans themselves were all too eager to scramble for Western education and the culture it embodies without examining the foundations of its establishment.

The resultant effect is a university model that is rigidly foreign and more alienating, rather than integrating, of the African society—a system that has since been involved in churning out generations of graduates whose mindsets are geared towards imitation rather than originality.

Contrary to the wholesale assimilation of Western education by the African academia, Mazrui cites the instance of Japan, which after the Meiji Restoration, consciously emphasized the assimilation of Western technology, rather than its literary and verbal culture (Mazrui 2003, 65). The Japanese slogan was, "Western technique, Japanese Spirit," which literally implies the retention of Japanese systems, practices, and processes. The new technological knowhow or scientific expertise so acquired were distilled through Japanese paradigms, analyzed within Japanese culture and used to produce the great industrialized country that Japan is today.

In the education systems of most African countries, the study of such areas of life that are central to African societies continue to receive marginal, if any, attention. African music or musicology is a good case in point. Although "dance and song in African societies continue to play a more important sociological role than they now play in the western world, yet the decision as to which kind of subjects ought to be given priority in Africa is reached as a result of examining what is regarded as important in the western world…" (Mazrui 1978, 299). Educational institutions in Africa have consigned the teaching and study of African dance and music to a peripheral endeavor." In precolonial times, song and dance played prominent roles in the political, social, and economic life of the largely agrarian African societies. In times of agricultural austerity occasioned by drought or flood, dances and songs were used to boost morale and hold the community together (Mazrui 1978, 300). In a largely unlettered society, proverbs and songs were also very useful in enabling the young to memorize their civic duties and the history of their ancestry. With the

[1]Thirty years later, in 1991, independent Nigeria had 41 universities with 131,000 students. And Nigeria was not an exception (Mamdani 2008, 3)

eventual missionary incursion into Africa, however, African music, dance, songs, and drama were dismissed as fetish, a ritual to some god, and therefore antagonistic to the dual mandate of Christianizing and civilizing the natives. Rather than the deeply philosophical, energy infused and high octane African drama, dance, and songs, ballroom dance, rock and roll, western-styled rendition of poetry, Shakespeare, and other European expressions became acceptable. For a long time, the African university championed this neo-colonial aversion for any expression of art that was authentically African.

Connected to the question of practicality of the courses of study in the African system of education is the issue of curriculum relevance of the more practical courses. In the field of medicine for instance, medical pedagogy in Africa is abstracted from the realities of the environment in which the medical student would graduate to practice. This is considering the tropical nature of the continent, and the existing realities of the patronage of herbal medical practitioners by majority of the populace. In the field of engineering, there is the tendency to imitate Western models instead of placing emphasis on R&D of the simpler technologies for rural development (Mazrui 1978, 306). In the field of history, Mazrui concedes that much progress has been made as "most African historians now are at least committed to the proposition that oral tradition are proper material for historical reconstructions, and could be regarded in some ways as no less valid than written documents" as laid down by European scholarship (Mazrui 1978, 306). Using linguistic evidence, archeological findings and oral traditions, historians of African extract have defiantly insisted on reconstructing their own history and, by that, have refused to continue with the tradition of the intellectual dependency of African history on European interpretation. The success of the African historian in this novel enterprise has caused their western counterparts who are working on African history to respond to the inclusion of oral tradition as valid evidence for historical reconstruction (Mazrui 1978, 308).

External Factors and the Role of Aid

The World Bank has contributed to the decline in research and development in sub-Saharan Africa by mandating governments across the continent to channel fewer funds into higher education. In a framed debate, the Bank placed the market and the public as competitors, rather than as contemporaries, in the funding of higher education in Africa. The resultant effect was that "rather than discuss the most appropriate relations between the two, this debate focused on which one of the (competing variables—public or market based funding) to emphasize…" (Mamdani 2008, 5).

The first attempt at micro-managing the universities in Africa came at the 1986 conference of Vice Chancellors of African universities, convened by the Bank in Harare. The conference was organized at the time most African countries—owing to economic frustration and excessive debt—were on the verge of signing on to the ill-fated, but much coveted, World Bank Structural Adjustment Program. At the conference, the Bank advised the gathered VCs that it would make more economic

sense if they close all the existing universities in sub-Saharan Africa and channel all the necessary human resources trainings to Western Universities. The VCs, uncomfortable perhaps, at the prospect of being unemployed, protested vehemently against the World Bank's proposition, forcing the Bank to change tactic. The granting of desperately needed economic assistance was then tied to conditions that drastically curtailed the research orientation of most of the universities in Africa (Mamdani 2008, 4).

The World Bank Education Paper for Sub-Saharan Africa (EPSSA) emphasizes a reduction of funding for higher education in sub-Saharan Africa. The EPSSA document expressly states that

> to meet minimally acceptable targets for coverage and quality of lower levels of education in most countries, as a general rule the tertiary sub sector's share of stagnant real public education expenditures cannot expand further, and in some cases may have to contract. Some combination of efficiency improvements, increased private contribution to costs, constrained growth in some countries and fields, and outright cutback in production of graduates must be sought (World Bank 1988, 95).

The drastic reduction in funding of higher education emphasized by The World Bank is based on the Rate of Return on Education (RORE) (World Bank 2000a, b, 39). The RORE represents an attempt to employ a market based approach in analyzing state expenditures on higher education. Schugurensky summarizes this as "the commodification of knowledge, the redefinition of the relationship between the university, the state and the market, and a drastic reduction in institutional autonomy" (Schugurensky 1999, 283). Based on this approach, the World Bank projection on the social RORE of primary, secondary and tertiary education are 24%, 18%, and 11% respectively (Mkandawire and Soludo 1999). The lower the RORE, the more unworthy of further investment it was deemed. The major fields targeted were the arts and the humanities.

The case of the University of Dar es Salaam under the RORE was remarkable and worthy of note. At the end of Independence, Makerere University was one of the few African institutions to embark on massive education reforms, aimed at a decolonization of the school system. First the University started with a decolonization of personnel which was immediately followed by a decolonization of curricula. The emphasis was on the study of development from a standpoint of "broader historical study of imperial expansion since the 15th century" (Mamdani 2008, 3). It was mandatory for the entire student intake to take a full year equivalent course in Development Studies before graduation. In 1972, Edward Rugumayo, then Minister of Education, in a speech he made regarding the appropriate foundation of education curriculum in a post-colonial Uganda, stated that it is expedient for the students to be inculcated with "an independent mind capable of judging and analyzing problems objectively; the ability to live in a collective society with the major aim of serving it; one's loyalty to his motherland in a patriotic and nationalist way" (Mazrui 1978).

Makerere University was soon to be forced by the World Bank to adopt market-oriented reforms, through privatization and commercialization. Under privatization, privately sponsored fee-paying students became special targets of The University. Under commercialization, departments, faculties and institutes were mandated to

source for funding from different quarters and to generate majority of their budget (Mamdani 2008, 5). As an incentive, Departments that admitted fee-paying students were allowed to retain as much as 90% of these fees. The effect was that The University wide emphasis on a development based curriculum was truncated by individual faculties for more economically viable programs and courses that would attract private fee-paying students. Faculties began to bicker over who had more rights to teach certain more marketable courses such as secretarial studies, environmental management, conflict resolution, human rights, etc. These were, more often than not, Western-oriented courses introduced oftentimes by the "technical aid" expatriates sent by the World Bank to assist in remedying the dire economic situation of the African university. Within the faculties, financial considerations became the major determinant for the hiring and retention of staff, rather than academic considerations. Several adjunct professors were hired to replace those who had been asked to leave or who left for the West in search of greener pastures.

Within a decade of the introduction of market based reforms in Makerere University, research and development took a nosedive—two universities existed side by side within the institution. One was the 'official' university with tenured professors who must be Ph.D. holders, and were all appointed by officially constituted authorities. The other was an informal university, run by auxiliary teachers recruited by unit administrators on "an informal and short-term basis" (Mamdani 2008, 6). These second group of teachers were poorly remunerated and ill treated. Some of them taught for up to a decade without as much as a formal appointment letter. The World Bank market based reforms produced at Makerere a university of very low quality, where the independent indigenously developed curriculum, formerly built around knowledge needed by the erstwhile colonized people was sacrificed at the altar of capitalist preference for a lucrative education system based on Western curriculum. At Makerere as well as several other affected universities all across sub-Saharan Africa, fee-paying students became recipients of low-level irrelevant education in an expensive campus setting (Mamdani 2008, 6).

The result of the market-based reforms at Makerere was dramatic; student population increased from 3,000 at the start of the reforms to 30,000 in the first decade. Academic staff was paid by the hour instead a monthly salary with an average teaching load of about 20 h per week. Of course, the quality of teaching declined sharply while research became extinct. The successful courses were the ones deemed lucrative enough to attract a job in the tourism industry or with the several aid agencies who had flooded Uganda. Such courses include B.A in Tourism, Secretarial Studies, French and English languages. All of the development-based programs and courses were scrapped for lack of economic viability, and revenue generation took centerstage to research. To this extent, whatever little progress recorded in the effort by some African universities to break away from the colonial curriculum was reversed. Mamdani captures it thus:

> What happens when local universities focus on teaching to the exclusion of research? When knowledge production is seen as mainly an external process, to be imported? The result of a failure to develop local research capacity is that both problems, and solutions, come to resemble ideologically defined, off-the-shelf offers. One result is that those interested in

> research or dissatisfied with an externally-driven process of knowledge production began to move to oversea centers or simply out of the university. The tendency is to fill the university with mimic men and women. Research needs to be an integral component of higher education, particularly in countries with a recent colonial past, for the simple reason that without a capacity for research no one can be in a position to define meaningful choices. Even the imparting of a meaningful general education requires developing a curriculum that is responsive to local contexts and local needs, something that simply cannot be picked off the shelf (Mamdani 2008, 6).

Unfortunately, the RORE ignored the social implications of a university starved of funding for the wider African society. The continued dependency of Africa on the West for knowledge creation and national development is directly linked to the paucity of funds for African universities. Development theorists and practitioners have long presented the argument that universities are major actors in ensuring nation state led national development. Universities are looked upon to supply the human capital needed to ensure industrialization and other processes. In essence, the more graduates a nation produces, the higher its chances of attaining its development goals. In formerly colonized societies such as found in Africa, adequately trained university graduates are critical in ensuring the drive towards modernization. Unfortunately for Africa, this is not the case any longer. The declining capacity of the African states particularly since the 1980s has rendered the universities, who were 90% dependent on the state for funding, almost moribund. The de-emphasis on higher education in Africa would rob scholars of teaching and writing resources that are desperately needed to address societal problems, and would sustain the decline in all sectors of the African economy.

The EPSSA also included a clause for "technical assistance" from the West to support the universities in Africa. The result was the excessive inflow of expatriate staff from donor countries as technical experts, whose often inflated salaries and emoluments were paid from the aid package extended to sub-Saharan Africa, to be repaid with interest. The intellectual nationals of these sub-Saharan African countries were sidelined in the scheme of things, and, in certain instances, made answerable to less qualified expatriates from donor countries. The result was a massive brain drain; "the outflow of national intellectuals, mostly taking up jobs in the West" (Mamdani 2008, 4).[2]

The donor financed reforms of Africa's education has shifted all focus to teaching as opposed to research in higher institutions. Writing on Malawi, Mundy Karen, in "Externally Driven Reforms and Their Adoption during Democratic Transition," notes that after protracted negotiations with the World Bank, the regime of Kamuzu Banda in Malawi agreed to freeze all funding for research and to focus on general expansion and improvement of primary and post-primary education. The World

[2] "Given the obvious difference between incoming expatriates who were securing jobs under monopolisitic conditions and nationals who had to compete in open markets, economists are likely to tell us that those who succeed under free market skies are likely to be of superior quality than those who shelter under monopolies. If so, then the quality of intellectuals Africa lost at this period was surely much higher than that of the technical experts it welcomed as part of 'technical aid'" (Mamdani 2004, 4).

Bank policy instrument in Malawi, which was designed almost entirely by expatriate technical expertise, focused on "developing new teacher training programs, building schools, and designing and creating new learning materials" (Mundy 2002, 45).

In the 1990s and at around the same time the World Bank was implementing its own reforms in Malawi, USAID established an overlapping reform agenda in Malawi targeted at the improvement of education for girls. Resources for this reform were channeled at "scholarships, social mobilization campaign, and gender sensitization of curriculum and public schools" (Mundy 2002, 46). The USAID reforms followed the path of the World Bank policy paper and had very minimal consultation with locals. Expatriates were flown in from the United States who were experts in educational planning and administration. The much publicized policy document which the reforms produced was highly prescriptive on girls' education initiatives. In 1994, the government of Malawi attempted its own independent educational reform agenda, which did not differ in anyway from the externally funded and dictated reform efforts of the World Bank and the USAID. The Malawi government reform focused exclusively on the expansion of access to primary schooling, with minimal attention paid to funding for research and development. The reform agenda was prepared with very limited public consultation and was finally codified in a draft policy investment framework in 1995.

Although the 1995 reform was initiated by the government of Malawi, it was soon to be made apparent that it was funded primarily by external assistance. The funding agencies insisted behind the scene that their projects and policy instruments be made the core of the policy document (Mundy 2002, 40). Between 1995 and 1998, the most comprehensive curricular review in the history of Malawi education was implemented. Funded exclusively by donors, the reforms did not take indigenous knowledge into much consideration as the expatriate staff was not well informed about situation on the ground in the country. The curricular reform of 1998 was a mere follow up to the World Bank initiated and funded reforms of the primary school curricula in the 1980s and the "new gender and social studies/civics curricula" sponsored by USAID.

In the case of Guinea, the most comprehensive education reforms commenced in 1989 under the Education Sector Adjustment Program or *Programme d'Adjustement Sectoriel* or PASE (Welmond 2002, 119). The project relied almost entirely on donor funding for its implementation and, according to the dictates of the donors, the aim was to "substantially increase primary school enrollment and public expenditure for primary education" (Welmond 2002, 119). The PASE implementation strategy consisted primarily of the provision of conditional budgetary support and technical assistance by the donors. PASE advocated for an increase in funding for primary education and education administration, with a concomitant decrease in funding for secondary and higher education. The second and third phases of the reforms in the years 1995 and 2000 were not drastically different from Phase I, expanding the initial focus to include increased equipment and supplies and direct financing of training by donors. Donors totaling about six in number, were in charge of drafting the curriculum for the reformed Guinean education sector. At some point, these donors lost coordination and each came up with a different idea and project, all

within the larger reform initiative of the government of Guinea. In 1997, the World Bank, USAID, French Cooperation and the African Development Bank decided which textbook was needed, and financed most of the textbooks purchased for school children in Guinea from preselected suppliers in the international market (Welmond 2002, 135).

The African university system suffered as a consequence of the World Bank and other donor's insistence on certain policy framework. More recent World Bank publications and pronouncements on education in Africa, however, suggest a radical re-thinking of its anti-university orientation of the 1990s. In recent times, however, the Bank now seems to present a conviction of the central role and crucial place of higher education in development discourses in Africa, although there has been no formal or open admission of the error that was its earlier position, which it promoted with all its donor might. (World Bank 2010, 2018).

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Chapter 5
Africa's Indigenous Knowledge: From Education to Practice

This chapter will explore the previous and/or ongoing practice of Africa's indigenous knowledge across selected fields. The chapter will also, where applicable, explore the curriculum of study within the identified fields in order to determine the extent to which the existence and practice of indigenous knowledge is recognized in each.

Indigenous Knowledge in Agriculture

During precolonial and colonial times, British missionaries and later colonial masters, coming with a supposedly superior knowledge of farming techniques, sought to impress the local African farmer to change their centuries old methods of farming. From the time of colonial incursion into Africa, indigenous knowledge of agriculture became the practice of the ignorant rural peasants. Odhiambo (1990) asserts that the education system in Africa has consistently ignored the knowledge, skills, and survival strategies of local farmers, who have successfully managed their farmlands and remained productive for centuries, with little or no external input.

Despite the glaring differences between African and European climates, the subject of agriculture as taught in African schools and colleges relies almost entirely on European models and applications. agriculture textbooks from which students are taught are in some cases imported from Europe, and when published in Africa, rely on published European texts for ideas. Not much effort is invested in research into indigenous knowledge of rural farmers, and the use of such in formulating science- and technology-based agricultural practices that will work sustainably in Africa.

Efforts towards farmer education in African rural areas have taken the form of attempts to superimpose, in a top-to-bottom, hand-me-down approach, "modern" (European) agricultural technology. Conversely, the increasing realization of the hazardous effects of so-called modern farming methods—such as synthetic fertilizers, and toxic chemicals that act as pesticides—have resulted in European scientists

C. Ezeanya-Esiobu, *Indigenous Knowledge and Education in Africa*,
Frontiers in African Business Research,
https://doi.org/10.1007/978-981-13-6635-2_5

scuttling through the villages of Africa in search of indigenous knowledge as a "major untapped source for developing sustainable agriculture" (Odhiambo 1990, 3). Odhiambo states that "Indigenous knowledge can reveal missing ecological keys, which may help scientists develop alternative agricultural technologies less dependent on nonrenewable resources (e.g. fossil energy) and environmentally damaging inputs (e.g. chemical pesticides), than conventional technologies" (Odhiambo 1990, 3). Examples abound where indigenous knowledge in agriculture has contributed immensely in the development of that sector in Africa. A few shall be discussed.

Indigenous Shared Cropping System in Kenya

In Kenya in 1936, the Kikuyu farmer was mandated by colonial authorities to adopt the neat parallel-row mono-cropping, which was sure to yield immediate, but short-term profits. There was no effort at exploring the perspective of the Kikuyu farmer to understand his reasons for adopting and maintaining the indigenous shared cropping system. Instead, his farmland was described as messy and chaotic. It was Louis Leakey who published as part of his famous memoirs, an account of the Kenyan mixed cropping systems from the viewpoint of the Kikuyu farmer. From the account, it became evident that should the Kikuyu adopt the demands of the British agricultural officers, he would be exposed to countless production risks and severe environmental degradation (Warren 1991, 3). More than 50 years later, Warren (1991) notes that international and national agricultural research centers have scientifically established the effectiveness and efficiency of the indigenous mixed cropping systems of the Kikuyu, although in the Kenyan education curricular, the British imposed model is still being widely studied.

SR52 Hybrid Maize in Zambia

In Zambia, local producers were adamant about adopting the high-yielding Zimbabwean developed variety of SR52 Hybrid maize. The planners and extension workers at the Zambian Ministry of Agriculture applied considerable effort, without success, in trying to convince farmers to adopt the maize variety, based on its prospects for achieving food sufficiency in Zambia (Warren 1991). After the top-down effort to change farmer's perception of the maize variety failed, some officials of the Ministry of Agriculture arranged a meeting with some indigenous farmers in an *mphala* setting. At the *mphala* or the indigenous village-level problem-solving meeting, the farmers identified some complex production and marketing risks of the new maize variety. Farmers shared that the new maize variety, unlike the indigenously pollinated varieties, were more susceptible to drought and weevil infestation. The new variety, contrary to the Ministry's expectations, had very low germination rates in the fields of the Chewa-speaking people, and did not also store well in the indigenous

grain storage mechanisms. Unlike the indigenous open-pollinated maize, the new hybrid variety also required chemical fertilizers and pesticides, which the farmers could not afford, and had implications on the environment as well as human health. Just as in the case of Kenya, the Zambian officials were trained to believe that the foreign European modified maize was better than their local variety. But for the stiff resistance of the farmers, their indigenous knowledge would have been ignored and they would have been made to adopt a variety of maize that would not work to their advantage.

Traditional Rain-Fed Irrigation Project, Chad

The experience of local farmers in Chad, in utilizing the traditional *zai* rain-fed irrigation method, as opposed to the World Bank financed and government endorsed modern irrigated agriculture is another notable case in point. The government of Chad was convinced that large-scale commercial irrigation was the surest means of achieving its national objective of food security in the arid West African country. Conversely, the majority of the small-scale farmers whose agricultural production make up over 70% of Chad's total agricultural production output "have usually sought to include irrigation in a mixed survival strategy, blending recession, flood or small-scale localized opportunities with rain-fed farming and livestock or off-farm work depending on local circumstances" (World Bank 1989, 26).

Farmers were uncooperative towards the calls to surrender villages and farmlands for establishment of modern irrigation methods. The resistance arose after an initial attempt at commercial irrigation failed to generate growth in the productive capacity of a certain segment of the Chadian local farming population, who had given into the government's call for a conversion from indigenous to modern irrigation techniques. In order to determine the validity of the farmer's arguments, a financial and economic rate of return analysis was conducted on the cultivation of rice, wheat and sorghum, to identify the difference between the traditional rain-fed irrigation system and the more modern methods. Four models were examined: (a) a gravity controlled flooding technique which allowed for partial water control (b) irrigation based on water pumped with a diesel engine (c) modified rain-fed agriculture derived from bottomland cultivation (d) the indigenous rain-fed irrigation, which accounts for 90% of the rice production in Chad (World Bank 1989, 5).

The analysis revealed that the modified traditional irrigation method yielded greater economic profitability in cereal cultivation, particularly wheat and sorghum, in comparison with modern irrigated cereals. The World Bank in making its recommendations noted that "Governments and donors have tended to assume that farmers were interested in irrigated agriculture and failed to develop an understanding of how irrigation fits into the farmer's economic strategy" (World Bank 1989, 5). The World Bank advised governments to seriously reexamine the decision to heavily invest in modern irrigation systems on Lake Chad, "which are extremely costly in terms of both investment and operating costs" while yielding very little, noticeable,

economic benefit (World Bank 1989, 28). But for the farmer's resistance that led to the World Bank studies, the indigenous knowledge of the farmers would have been disregarded. Despite the study, there is no evidence that universities and colleges of education in Chad are seriously involved in researching this unique indigenous irrigation method to scale it up to ensure increased agricultural productivity. On the contrary, the Chadian agriculture curriculum proposes government investment in commercial irrigation as a way to increase yield and combat food insecurity.

Neem Biopesticides in Togo and Niger

Several research oriented trials were conducted on the indigenous knowledge of the Neem tree (*Azadirachta indica*) by a team of entomologists and social scientists from the University of Minnesota and from Niger, an arid country in West Africa. For hundreds of years, the seed and leaves of the Neem tree have been used in Niger for storing grains, layering with leaves and mixing with the mud used in the manufacture of earthenware storages. In an earlier study, Neem was established to offer protection from storage pests in the local granaries. The Minnesota and Niger team, therefore, focused their study on its usage for standing crops. The result of the research, conducted in collaboration with Indian scientists, was that the Neem seed kernel, more than any other part of the tree, contained the highest concentration of biologically active constituents (Warren 1991, 14). Armed with this discovery, scientists successfully offered protection to standing crops against invading locusts, by spraying a solution made with 1% Neem kernel extract. Further research established that this feat could be achieved to protect crops against 120 species of insects in a manner that is "exceptionally safe in terms of human exposure or environmental effects" (Warren 1991, 14).

Small holder farmers in Niger, faced with locust attacks, applied the wildly growing Neem tree kernel in a crushed form as an alternative pest control method. The result was the extremely effective and safe elimination of the locust attacks in a remarkably cost effective manner. A similar experiment was conducted among small holder farmers in Togo, where the Neem tree grows wildly as well, with the same level of success recorded. The most important lessons deducible from the experiment are the scientific validation of centuries old "folk knowledge" and the unsophisticated transfer of the technology to "similar agro ecosystems in other parts of the world" (Warren 1991, 15). Unfortunately, school textbooks in Niger and Togo, still advocate the use of expensive harmful pesticides—filled with established carcinogenic substances—for the control of locust invasions and other pest attacks on farms in these countries.

Ethno-Veterinary Medicine and Fishing in the Niger River

Ethno-veterinary medicine has been defined as the indigenous knowledge and practices in the field of animal health care. For instance, the Fulani cattle rearers, by an analysis of soil type, flora, fauna, and vegetation condition, are able to tell the pasture quality of a herd. Peruvian pastoralists are known to rotate the grazing of pasture in altitudes which are elevated, to ensure mixed species pastures and assure grass for the herd even during periods of climate imposed austerity (Warren 1991, 8).

During colonialism, the French colonial authorities radically altered the indigenous fishing methods on the Niger River. The emphasis shifted from the centuries old knowledge of the local fishermen to the European management model, dependent upon imported data. The end of colonial rule did not change this situation, as the incoming administration continued with the modus operandi of the colonial administrators. Teaching and research in fishery and fishing management in African schools and colleges revolved around this colonially entrenched paradigm, and the government in its policies and programs planned around it. The situation was to change in 1983 when the Niger River Fisheries Project was inaugurated with staff from the Food and Agricultural Organization (FAO) and funds from the United Nations Development Program (UNDP), with the assistance of the USAID and the Peace Corps. These organizations, in conducting an independent research study that involved the participation of the local fishermen soon recognized the profound knowledge of the Niger fishermen on things related to river ecology. Senior project personnel requested for cooperation in the way of information provision from these fishermen, which they complemented with information from biological research, fish capture and socioeconomic surveys. The end result was a comprehensive proposition "for future management based on the resulting synthesis of scientific and local knowledge" (Warren 1991, 23). In a series of public meetings, fishermen, and fisheries agents debated the "justifications, means of application and effects of each management approach" as collated in the document (Warren 1991, 23). This was a radical departure from the formerly colonially entrenched practice, and fishermen responded to the final policy paper with much enthusiasm. The paper was based on "respect of their knowledge, in collaboration with government technical services. Project results suggest this approach is a genuine foundation for long term development by and for local populations" (Warren 1991, 24).

In recognition of the need for preexisting indigenous knowledge and its usefulness in agriculture, several development agencies have called for the inclusion of indigenous knowledge in the research and development of agricultural projects in developing countries. The Farming Systems Research and Extension Projects, for example, "recognizes that local farmers know a great deal more about their own situations and needs than does anyone else, and these exigencies can and should form the basis of local development projects in the sector" (Warren 1991, 10). Since 1986, the International Rice Research Institute (IRRI) has incorporated in its research agenda, the inclusion of farmer perspectives in the development of appropriate rice technologies. Unlike what was previously observable, where consultants conducted

their research independent of farmer input, IRRI consultants have been mandated to provide farmer assessments of rice research priorities in all of its country-based projects. Instead of compelling farmers to adopt IRRI developed or promoted technologies, they are encouraged to try it, and compare it with the existing indigenous technology and adopt them if considered worth the while, or otherwise, to assist the IRRI researchers to develop or upgrade it in view of the existing indigenous technology.

Indigenous Knowledge of the Environment

Indigenous communities are known to have intimate knowledge of their environment, much more than any well educated foreigner would. This intimacy is a result of centuries of familiarity and knowledge passed down from one generation to another. Indigenous knowledge of the environment takes the form of "intimate and detailed knowledge of the environment, including plants, animals, and natural phenomena; the development and use of appropriate technologies for primary resource utilization; and a holistic world view that parallels the scientific discipline of ecology" (Appiah-Opoku 2005, 103). Indigenous healers, for instance, have intimate botanical knowledge of the environment including of plants and their healing properties. Indigenous farmers are thoroughly acquainted with the vegetation, soil, and climatic conditions of a place. Indigenous hunters have extensive knowledge of the habitat including the "location and timing of a host of biological events unknown to scientists. They know the life cycle of certain animals including the kinds of foods they eat, methods of searching for food, their pregnancy and gestation period, natural habitat and average life-span" (Knudston and Suzuki 1992).

Environmental Impact Assessment (EIA) is a catch all term for any "activity designed to identify and predict the impact on the biogeochemical environment and on human health and well being, of legislative proposals, policies, programs, projects and operational procedures, and to interpret and communicate information about the impacts" (Munn 1979, 17). Any major project that would involve the clearing of an appreciable area of land, or the resettlement of a community or even a number of people, is required to be subjected to EIA. Through conducting EIA exercises, impacts are mitigated on the people and on the environment, and adequate compensation paid, if necessary.[1] In Africa, most EIA laws are considered unnecessary and

[1] The United States was the first country to establish EIA processes when in 1970, President Richard Nixon signed into law the *National Environmental Policy Act of 1969*. The law was in "response to the strong protests by concerned citizens and environment NGOs on the pollution of the ecosystem as a result of the implementation of certain government policies. The successes recorded by the United States led several other countries around the world to enact EIA laws, and to incorporate it as a part of pre-conditions for the execution of all projects that would affect the environment in any manner. Developing countries who displayed indifference to such laws at first, were soon to be constrained to enact such laws when the World Bank, other bilateral agencies and intergovernmental bodies incorporated EIA laws as part of aid conditionalities" (Appiah-Opoku 2005, 15).

are only observed for projects being funded by the World Bank, USAID, CIDA and other agencies that demand them. African governments on their own, hardly conduct EIA assessments for projects being financed exclusively by them.

Several policies have been established and executed by governments across Africa, without an analysis of the impact of such on the environment and on the people (Appiah-Opoku 2005, 15*)*. This was very much the case soon after the end of colonialism in the 1970s when most of Africa began the rush towards modernization. In a bid to become "developed" African governments embarked on massive investments in mechanized agriculture, building of industries, and urban centers. In Ghana, for instance, the Ghana Industrial Development Corporation (GIDC) was established and tasked with establishing 600 industries within a period of 10 years. Armed with such a mandate and with the revenue from Cocoa and with funds readily available for borrowing from international financial institutions, the GIDC began to build factories and other "trappings of modernity" at such break-neck speeds without considering the impact on the environment (Appiah-Opoku 2005, 36). The construction of the Akosombo dam, although lauded as the greatest man-made lake, became the cause of river blindness, as the lake became a breeding ground for *onchocerciasis*: "almost half of the human population over 40 years of age living along the banks of the Volta Lake has lost their sight" (Moxon 1998, 198). Seth Appiah relates the neglect of the impact on indigenous communities in the rush towards a construction of modernity by the government of Ghana; writing about the Tema seaport project, he asserts that.

> This project involved a resettlement of 12,000 people living in Old Tema as well as the removal of over 200 communal and family gods. Problems arose as the project officials failed to take into consideration local resource-use and nuances or local values set to interpret the projects impacts. Most of the villages who were resettled lost all that was culturally dear to them, including burial grounds and shrines. This led to feelings of depression, inadequacy and general insecurity, especially among the elderly. Many of them abandoned new core houses provided as part of their resettlement package because the buildings did not take into account their socioeconomic circumstances. This was a bitter lesson for the Ghanaian government (Appiah-Opoku 2005, 37).

By 1994, the government of Ghana found it necessary to enact a legislation making EIA mandatory for all major development projects—it was the first African country south of the Sahara to do so. However, this EIA legislation relied overly on the Western model, which places too much emphasis on the scientific gathering of information while completely ignoring the time-tested indigenous knowledge of the local communities who will be directly affected by the project. Appiah asserts that the practice of EIA in Western nations is fashioned after procedural planning theories developed based on western culture, which like most theories of development, are unsuitable to the socioeconomic and political conditions of the developing countries (Appiah-Opoku 2005, 13).

The Western-based EIA models, as has been argued by certain African scholars, are "technical, reactive and narrow in scope of application," relying on "quantitative techniques for prediction and evaluation of impacts." These techniques comprise of such highly scientific and technical applications such as "matrices, impact network,

trend extrapolations, and simulation models" (Appiah-Opoku 2005, 18). Like all scientific methods, the Western-based EIA models in use thrive on certain basic assumptions (i) environmental relationships are identifiable, describable, measurable and subject to monitoring (ii) environmental changes are predictable to such an extent that "cause and effect relationships can be established (iii) it is possible to determine the value placed by stakeholders on the impact of environmental disruptions (iv) "issues of probability and uncertainty can be managed to such an extent that it is possible to decide whether a proposed action should proceed with or without modifications" (Appiah-Opoku 2005, 19).

The basic assumptions underlying the EIA processes betray its reliance on "perfect functioning models," founded on scientific positivist assumptions which state that with sufficient data and learned interpretation, environmental behavior can be predicted (World Bank 1988, 27). This model also relies heavily on Western-styled and assumable predictable socioeconomic and political conditions, which are often absent in much of Africa. The lack of interest of governments of African countries to independently embark on the implementation of EIA for their major projects is not unconnected to the complexity of the Western dominated EIA procedures in place, which they are forced to practice in Western sponsored projects.

However, there are very strong indicators that indigenous knowledge based EIA will be more useful and functional in the socioeconomic, political and environmental situation in most of Africa. A good example where indigenous knowledge played a crucial role in determining the success or failure of a development project is the James Bay Hydroelectric Mega project in Canada. The EIA for this project, as usual dwelt on scientific predictions, and failed to utilize local resources, nuances, and local value sets to interpret and evaluate predicted impacts. The result was a failure to predict the devastating impact of the project on the native peoples in La Grande River Watershed (Berkes 1988a, b, 201–250). Conversely, the involvement of indigenous knowledge of the native people in the EIA studies of the Beaufort Sea Hydrocarbon Production and Transportation, the Oldman River Dam, and the Norman Wells Oil Field Development and Pipeline projects in Canada "revealed useful baseline and monitoring information for environmental assessment"(Berkes 1988a, b, 201–250). Lalonde (1993) lists the concerns of the native peoples as displayed in several consultative sessions in their communities.

(a) Comments that their ancestors never mentioned moose being as far north as Davis Inlet, where in the last few years, moose are commonly seen.

(b) Observation that fox and mink eat their young when airplanes fly over them at low levels. Also, flying over grazing grounds at low altitude creates stress among female calves

(c) Concern that past recreational and traditional activities around an irrigation well should cease because of the apparent danger of drowning from new whirlpools and increased flow of rivers affected by this (Lalonde 1993, 41).

The above extremely useful information could not have been uncovered by scientific methods without the involvement of indigenous communities in EIA.

Indigenous knowledge should be incorporated in all environmental decisions, as the local peoples have lived in that area for centuries and are armed with sufficient knowledge regarding the patterns, changes, and outcomes of certain practices unique to the area. This knowledge cannot be simulated or gained by the rigorous methods of science. Indigenous philosophy of life seeks to conserve the earth as a deity which could be helpful if appeased and harmful if neglected—this philosophy keeps resource exploitation in check. Indigenous communities are also repositories of technologies that are suited for the local environment, which, if properly accounted for in the process of EIA, will play a crucial role in complementing scientific data for impact prediction, mitigation, and monitoring.[2]

Indigenous Knowledge of Trade and Economics

African indigenous economic systems have been portrayed as nothing more complex than hunting and gathering activities engaged in by a group of barbarians. The myth of subsistence indigenous African economies has long been upheld by anthropologists and most European historians studying Africa. These scholars, often times playing to racially motivated stereotypes, insist that indigenous African economy revolved around efforts by Africans to eke out a "pitiful living from primitive subsistence agriculture" and that "trade and exchanges were unknown since self sufficiency and subsistence farming were the operative commands" (Ayittey 2006, 317). In "Traditional African Economies," Harold Schneider disproves these claims by stating that the economic system that existed in precolonial Africa was legitimate and in line with what is acceptable as the fundamentals of market process. Understandably, the way Africans conducted their economic affairs differed from the way it was done by Europe and America, "but their behavior can still be considered economic and commensurate with market process" (Schneider 1986, 181).

Beyond the display of wares in the marketplace for sale, several indigenous African societies, especially in West Africa and in the Congo or Zaire basin, were involved in complex and well developed marketplace systems. In the market place process in Africa, trade and economics are founded on the idea of production for consumption and exchange. In the West, it is founded on "the worker selling his labor for wages, or by the manufacturer producing goods for profit and then using the profit to obtain other desired items" (Schneider 1986, 181).

Skinner (1961) asserts that Africans were involved in diverse economic activities which basically revolved around "agriculture, pastoralism, hunting, fishing, and

[2] "Many of the indigenous environment risk-minimizing strategies such as slash and burn and shifting cultivation, which were once regarded as primitive or misguided, are now recognized as sophisticated and appropriate to the local environment. Part of the significance of slash-and-burn method of farming is that it prevents phosphorous deficiency in tropical soils. The burning of slashed vegetation releases oxides of potassium, calcium, magnesium, and phosphorous to the soil to serve as plant nutrients and the heat from the burning also destroys weed seeds and pests." (Appiah-Opoku 2005, 146).

woodworking". Such minor industries such as pottery, brass works, iron, copper, silver gold and tin smelting and smithing also thrived. Skinner wrote that West Africa in particular was noted by the complex economic activities that thrived as the people had.

> Economies which made agricultural produce available in amounts large enough to be sold in rural and urban markets, craft specialization often organized along the line of craft guilds, whose members manufactured goods to be sold in these markets; different kinds of currencies which were nearly always convertible one to another and, later, to European denominations of values; and elaborate trading systems, external as well as internal. Goods produced in even the smallest West African societies were circulated in local market centers, and ultimately by porters, caravans, and boats, to the large Sudanese emporiums from which they could be shipped to Mediterranean areas in exchange for foreign products (Skinner 1961, 60).

In Nigeria, "the cloth industry was an ancient craft" and the ancient city "of Kano attained historical prominence in the fourteenth century with its fine indigo-dyed cloth that was traded for goods from North Africa. Even before the discovery of cotton, other materials had been used; the Igbo for example, made cloth from the fibrous bark of trees" (Ayittey 2006, 339). The Asante were famous for their cotton and bark cloth (*kente and adwumfo*). These indigenous materials were made in amounts far over and above that needed for consumption by the inhabitants, with the sole intention of exchanging the surplus for profit and value-add. Communities went out of their way to invest in technology that will increase production beyond the subsistence level in order to increase means of exchange. Schneider explores the technological innovation of the Haya people southwest of Lake Victoria in overcoming severe environmental challenges posed by the unsuitability of the soil, to increase the cultivation of bananas for exchange.

> the enterprising Haya overcame the problem by constructing compact circular villages inside which they dump mulch, mainly cattle manure, but also the leaves of dead banana trees, whereby they have built up the soil to the texture and fertility necessary for growing bananas. Rather than being determined by the habitat the Haya have overcome a constraint to achieve their goal. But why did they do it?… The answer surely must be that for reasons peculiar to the Haya situation it was worth the cost in terms of the "profit" to enrich the soil (Schneider 1986, 189).

We shall briefly explore indigenous knowledge in the three major means of production: land, labor and capital.

Land

Land is the major means of production in any society. Western view regarding the ownership of land is capitalist by definition. Capitalism considers land as a commodity with property rights attached, and which is tradable in the open market. Conversely, indigenous Africa views land as a communal belonging, where every member of the community by belonging to a family is assured of access to adequate land to secure his livelihood. In several indigenous African societies, land was

passed from one generation to another. Individuals who farmed the land knew that what they exercised was cultivation rights only, as the right of ownership was vested in the lineage. Writing about the Mbeere ethnic group of Kenya, Glazier (1985), asserts,

> Once an individual has inherited land from his father or begun cultivation of land gained from his lineage, his agnates do not interfere in these use rights. That is, a person freely uses the land as he wished, determining what sort of crops to plant, including cash crops. Further, the lineage exercises no rights to any part of the harvest nor to money gained from the sale of tobacco, cotton, or food crops. Use rights gained from inheritance within the domestic group or from acquisition of lineage land (assigned by the trustee on behalf of the group) are indissoluble and provide the cultivator with wide latitude in the ways he will exploit the land" (Glazier 1985, 196).

Ownership and control of the land was exercised within the lineage and in the smaller ethnic groups, by the chief and members of the ruling elders. On no account must the land be sold to an outsider. Anyone who wanted a piece of land for any purpose must state his reason for it and bring a token to the custodians who would grant him access for usage. The European settlers in East and Southern Africa misunderstood the granting of access to use for the outright sale of these pieces of property to them. For a bottle of hot drink, some fowls or two he-goats, the European settlers assumed that the infinite right to the land had been "sold" to them by the elders of these communities. By the time the elders realized this misconception and wanted to re-posses their lands, colonialism had taken root and the forceful appropriation of the African's property was entrenched. This was a misnomer and considered a "taboo" or "abomination" in most indigenous Africa where it was generally held that land could not be sold. Land was only held in trust by the living on behalf of the long gone ancestors, "to part with it was to invite the wrath of the ancestors. Land was deified, and selling it was considered sacrilegious" (Ayittey 2006, 339).

Strong emotional and spiritual emphasis was attached to land in indigenous Africa, for on them were buried the ancestors of the present inhabitants. It was believed that the sale of land would result in the disintegration of the social cohesiveness of the community who trace their ancestry to a common lineage. The benefit of this philosophy of appropriation prior to Western incursion was that nobody was landless. All individuals who were recognized as citizens of the community were assured of land as the primary means of production, thereby providing for financial and social security for all who were able and willing to work hard to till and cultivate the land for consumption and exchange. In a system of government where there was no indigenous form of taxation for the upkeep of any member of the society in the form of incomes or subsidies, land was the only asset that afforded the African income and security and also ensured that the old and infirm had a place to stay, which had not been sold to outsiders. For the reasons enumerated, the indigenous African economic system did not and still does not permit the outright sale of land as a means of production, unlike the Western economic system.

Africa's indigenous land communal ownership system was soon to become the subject of intense attack by development "experts." The World Bank, IMF, FAO and other institutions who trace their ancestry to the West critiqued the African indigenous

land system, proclaiming it an impediment to the development of agriculture in the subregion. The Western institutions whose consultants took a tour of several African communities that practiced the indigenous land holding system claimed that it was only through land privatization that Africa will achieve food security. Capitalist oriented "Land Reform Programs" were touted as the key to the improvement of land use practices. Ownership of title deeds, it was argued, would serve as incentives for investment in land, and reduce the high incidence of, "overgrazing, over-cultivation, exhaustion of soil fertility, and soil erosion" (Ayittey 2006, 340).

Under the pretext of Land Reform Programs, African governments engaged in wanton seizure of communal lands from communities. With the mandate of the Ethiopian Land Reform Act of 1975, Comrade Mengistu Haile Mariam decreed the nationalization of all land, and enforced villagization on over 75% of the country's population. Under Nigeria's Land Use Act of 1978, all lands in Nigeria became the property of the Federal Government. To utilize the land, farmers must lease from the Federal Government and therefore, they cannot be used as collateral for loans. In neither country did the seizure of communal lands result in agricultural revolution. Instead, corrupt government officials have appropriated land for themselves and their families for construction of expansive estates or other personal and antidevelopment uses. Ayittey asserts that "since the 1980s, starvation has been a constant threat in Ethiopia. Unable to feed itself, Nigeria spends $3 billion a year importing food—including rice, sugar, chickens and milk—which it could grow for itself" (*The Washington Times, July 18, 2004, A6*)

Labor

Indigenous Africa viewed labor very much the same way as land, a communal enterprise where responsibilities and profits are shared accordingly. Labor was extracted from within the extended family, and the larger the extended family then the greater the productivity. Unlike the Western concept of productivity where labor has been "thingified" or depersonalized, and therefore can be mindlessly expropriated, the African indigenous system of thought places a lot of respect on labor and considers investment in human capital a worthwhile venture (Ayittey 2006, 342).

On occasions when labor demands were beyond the ability of the extended family to supply, cooperatives were organized within the village to assist. This was usually the case when the need arose for heavy farm work or for special projects such as building a house. The work groups involved "pooling together members of the same age group, kinsmen, or all male or female members of a village. In Benin, the cooperative work group was called *dopkwe* and was used by the peasant farmer when his fields were too extensive to permit them to be hoed by his own labor and the labor of those whose services he has at his disposal" (Skinner 1961, 14).

Among the Yoruba

> A man can invite his relatives, his friends or the members of his club, depending on the size of the task, to form a working bee (*owe*). He provides food and drink for the group at the end of the day's work, but this is not considered payment; others participate because they earn the right to call upon their host for help under similar circumstances. No strict accounting is made of an individual's participation; but if someone calls for working bees without taking part when others called them, it is noticed and others will fail to respond to his invitation (William 1987, 70).

Farmers could also agree to labor exchange by taking turns to work together on one man's farm until all the farms of all the group members are cultivated.

Pawnship was another way of labor extraction, a situation where one man borrows money and either pawns himself, or gives another as a pawn to the lender to work for a specific period of time until the loaned amount is fully repaid. This is somewhat similar to the clientage method whereby individuals, of their own accord, attached themselves to a mentor, offering their labor services in exchange for protection or training in some trade or craft (Ayittey 2006, 343). "This practice was widespread in South Africa among the Xhosa, the Thembu, the Zulu, and the Dlamini. A person would be lent cattle by a wealthy community leader or chief. He herded the cattle and drank their milk, and received some of their offspring. In exchange, he assisted the owner in building or fencing or attended him in a court case or in war" (Kendall and Louw 1987, 5). The Igbo of southeastern Nigeria also engaged in clientage although at an earlier age. Young boys are given to traders or smiths for a certain number of years to serve the master. In return, the master teaches the rudimentary principles of the trade or profession to the young boy and upon the agreed period, when the boy is assumed to be old and well versed enough to be his own boss, he is "settled" with the basic provisions needed to start the trade or craft. This system exists till today. Domestic slavery also provided labor in precolonial indigenous Africa, although this was more often than not utilized by the wealthy. It should be stated that the treatment of slaves in Africa differed dramatically from Europe and America. Some slaves such as king Jaja of the Opobo kingdom in the Niger Delta Nigeria, rose to become leaders in the societies where they were previously slaves.

Capital

Capital as defined by economists implies any commodity whose value is generated from its usage in the production of other goods. Machines, funds and other assets such as tractors or trawlers are capital needed to ensure continued output. In its popularized variant, capital is used to refer to "funds or money needed to operate or to start a business" (Ayittey 2006, 344). Indigenous Africa relied on communal effort to raise capital for large-scale projects. This was done through a revolving credit scheme known by different names in different parts of the continent: it is *susu* in Ghana, *esusu* in Yoruba, *tontinnes* or *chilembe* in Cameroon, and *stokfel* in South Africa (Illiffe 1987, 136).

> Typically a group of, say, ten people would contribute, say, $100 into a fund. When it reached a certain amount, say $1000 it was handed over to the members in turn. Such a scheme required a liberal dosage of trust among members to be operational and somehow the natives managed to make it work. In fact, for many businesses in the indigenous and informal sector, the loan club was their primary source of capital (Ayittey 2006, 344).

Further, people borrowed money by pledging their farms, or where this was not possible, forming partnerships with a person with capital. A unique system of trading in Africa which was in existence is the institution of trust. In the area of commerce, it was possible for "middlemen or agents to secure credit solely on the basis of trust" (Ayittey 2006, 345). The institution of trust operated in the advancement of goods to a trader by a producer or importer, the repayment of which is expected from the latter within an agreed timeframe and in the medium acceptable to the supplier.

> At Old Calabar in 1851, the British Council estimated that at least 70,000 lb (sterling) of imported goods were in the possession of brokers and a further 13,000 lb (sterling) had been advanced and already traded to suppliers. Another observer found that "with the utmost confidence a fellow nearly naked will ask you for three, four, or even five thousand pounds (sterling) worth of goods on credit, and individuals are often trusted to that amount. I have trusted more than one man with goods, the returns of which were worth between two and three thousand pounds." Trust formed the essential part of the agreements between Sierra Leone traders and King Docemo of Lagos in 1854… In Gambia, the scale of trust in the 1850's was about 200 to 2,000 lb sterling per agent, and there were eight or ten agents for each French firm (Newbury 1971, 19).

The famous trade in palm-oil which dominated most of West Africa in the nineteenth and early twentieth centuries was run on the relationship of trust which existed between the European merchants and the Africans in the coastal areas who traded directly with the hinterland Africans.

> An African was compelled to sell all his oil to the European whose trust he held. The European never wanted his trust totally repaid by a reliable merchant because the African would then be free to sell to the European's rivals. Europeans tried every method, honest and dishonest, to keep Africans in debt to them. To break the monopoly hold on Africans, new firms would offer either higher prices or trust on easier terms. If the Africans supplied the new merchant with oil the old firms would forcibly seize it. The king would then declare a boycott of all trade until the dispute was settled. The king also declared a trade boycott when the European firms combined to fix prices. Nevertheless, despite its imperfections, the trust system did supply Africans with some credit to begin commercial operations (Newbury 1971, 19).

Indigenous Political Systems

In discussing the indigenous political system in Africa, one looks at the various ways in which governance, social organization, and representation, including matters of justice and equity, are addressed in the indigenous African society. In most of indigenous African political systems, "the lineage was the most powerful and effective force for unity and stability" (Abrefa 1951, 6). Writing on the Ashanti, Abrefa

(1951) notes that: "Each Ashanti village consisted of a number of lineages which formed a political community under the *odekuro,* who belonged to one of the first lineages to settle here. The affairs of the village were managed by the *odekuro* and the heads of the lineages of the village, but the *odekuro* was also responsible to an elder who lived at the capital in Wenchi" (Abrefa 1951, 6).

Indigenous African political systems can be loosely grouped under two broad categories; centralized authority and the acephalous or stateless societies. In the centralized societies, groups of ethnic groups, either voluntarily or by conquest are subjected to a single hegemony—the more famous of these included the "Fanti of Ghana, the Yoruba of Nigeria, the Mossi of Burkina Faso, the Swazi and the Zulu of South Africa" (Ayittey 2006, 106). The more prominent acephalous societies were the Igbo of Nigeria, the Kru of Liberia, the Tallensi of Ghana, the Konkomba of Togoland, the Fulani of Nigeria, the Somali, the Jie of Uganda, and the Mbeere of Kenya. Writing about the stateless societies, Jean-Francois Bayart (1989) in *L'Etat en Africa.* Paris: Fayard notes that "the most distinctive contribution of Africa to human history has been precisely in the civilized art of living reasonably peacefully without a state" (Bayart 1989, 58). A peaceful and well organized stateless society as was observable in precolonial Africa presented an enigma to the Westerner who views the state as a principal agent for the prevention of tyranny, although when mishandled the same state could be the vehicle for the enthronement of tyranny in a society. For the Africans who lived in stateless societies, the state was nothing short of an institution of tyranny, which enthroned the elites above the masses in the making of everyday decisions. The acephalous societies exemplified the height of democracy in any society, as all the adult citizens were entitled to be heard during decision making. Chancellor Williams (1987) notes that

> It was therefore in the societies without chiefs or kings where African democracy was born and where the concept that the people are sovereign was as natural as breathing. And this is why in traditional Africa, the rights of the individual never came before the rights of the community… these self-governing people did not have a Utopian society in any idealistic sense. Theirs was a practical society in every way. Their laws were natural laws, and order and justice prevailed because the society could not otherwise survive. Theirs was, in fact, a government by the people; and it was, in fact, a government for the people. That this kind of government did "pass from the earth" is another fact we now call "modern progress (Williams 1987, 170).

The colonial masters encountered great difficulty in dealing with stateless societies. Although the colonialists tried hard to establish certain individuals perceived to be "powerful" whose words could hold sway in the gatherings of the citizens, the end result was a group of leaders who were previously equals now being imposed on the groups. Ayittey asserts that this group of chiefs "lacked authority since they were not part of the kinship group and were treated as external representatives of an alien government. Within the ethnic group they had little authority and what little they had was considered tyrannous by the people" (Ayittey 2006, 116).[3] The Somali

[3]The Somalis made mockery of the titles given to the first central government imposed by the British and the Italian colonialists, calling the president of the Somali Republic *madaxweyne,* meaning "big head" (2006. Michael Van Notten *The Law of the Somalis.* Trenton, NJ: The Red Sea Press, Inc.).

experience is worthy of note; the Somali clans are politically independent, "no clansman will accept being ruled by a member of another, any more than someone from his own clan. All clans adhere to one political philosophy; preventing any form of dictatorship. This nation-wide attitude toward government probably has its roots in the great respect that Somalis have for every individual's life, liberty, and property; theirs is a well thought out freedom philosophy" (Van Notten 2005, 82).

The brief decades of the imposition of European styled central government over the extremely freedom conscious Somalis have done little to change their desire for the indigenous institutions and the rule of law which they had developed themselves and practiced for centuries. Van Notten (2005) notes this when he writes that:

> During the 20th century, the Somalis were subjected to the heavy-handed policies of the colonial powers. These powers left a form of government behind that was at odds with indigenous Somali political culture. It took the Somalis 30 years to get rid of it and return to their precolonial political structure. Many problems arose in the course of this, but gradually the Somalis are resolving them. Foreign observers fail to understand what they are doing; they think the Somalis have been trying to establish a democratic government and constantly failing to do so. In reality, the chief aim of many Somalis is to clean their indigenous legal and political system of its foreign elements (Van Notten 2005, 139).

Among societies with central governments, the indigenous political systems had built-in checks and balances to prevent abuse by the central leader. This is most often accomplished through the office of the chiefs and the councilors that surround him. These councilors were made up of elders selected from the different wards, districts and lineages within the community. The councilors act to prevent the chief from becoming tyrannical, by constant critique of his policies, and in seeking to control his decisions. The work of the councils of elders transcends the selection and approval of the nomination of the paramount ruler (chief), to include policy advisory roles including matters of domestic and international relations. The paramount ruler also relied on his council of elders in administrative matters and in execution of government policies. In several centralized societies, the ruler was expressly forbidden from acting on any state matter without duly consulting and securing the approval of the council, and essentially, no law is promulgated outside of the council's approval. In this manner, the ruler's actions are checked, and should he display autocratic tendencies, he is very quickly deposed or deserted by the council, which renders him unacceptable (Kwame 1985, 18). Other in-built checks and balances within the system form part of what is regarded as taboos, customs and traditions of the African indigenous chieftaincy system.

Religious and Supernatural Sanctions

Traditionally, Africans believe in the existence of the supernatural. At the physical demise of an individual, the soul starts to exist in the ancestral world, watching over the activities of the living. The chief and those in authority feared the consequences of displeasing the ancestors, should they treat their people harshly or steal from the state

coffers. This fear made them circumspect in their dealings with state matters. The Limba of Sierra Leone who have no custom of deposition of a bad chief, believe that the ancestors will deal harshly and kill in a shameful and sudden manner, any chief who rules without due consideration of the wishes and aspirations of the populace. The Tallensi, the Dagomba and the Akan peoples (all of Ghana), are of the belief that invisible powers will bring punishment to leaders who abused powers and authority held on behalf of the masses (Amoah 1988, 79).

Institutionalized Sanctions

Apart from spiritually induced retributions, sanctions could come in the form of private and public admonitions which a ruler receives before he ascends the throne, and afterwards, when he starts displaying dictatorial tendencies. In the Ashanti system, it was the Queen-Mother who was imbued with the responsibility of scolding the king or presenting him with the option of his dethronement. Other forms of institutionalized sanctions are manifested in the establishment of certain prohibitions against the office of the chief. Among the Akan of Ghana, for instance, a chief is prohibited from meeting any foreigner except in the presence of the council of elders; this among others would ensure that the chief is not colluding with outsiders to loot the treasury. Amoah (1988) writes about the Akan tradition—obtainable across indigenous African political systems—which prohibits the chief from holding any form of private property.

> In some societies, especially the Akan of Ghana, the danger of a ruler using his position to amass wealth for himself was obviated by the custom that the king could not, except in a few circumstances, own any personal property while in office. Everything that the ruler acquired while he was in office, unless the elders knew that he was acquiring it for himself and consented to it, automatically became stool property. That rule applied to the wives of the ruler as well. To make the rule effective, the administration of stool funds and property was put in the hands of the *Sanahene* (treasurer). The ruler was debarred from any close contact with the stool finances. He was neither permitted to hold the scale used for weighing out gold dust nor to open the leather bag in which the gold was kept (Amoah 1988, 177).

Any chief who was considered despotic could also come under immense pressure from the several existing groups in the form of secret societies, age grades, market women associations, hunter's guild, etc.

Indigenous African political system upheld freedom of association to such an extent that it was a given part of the African's existence. Such associations were destroyed during colonialism owing to the fear of the European colonial masters that they could turn into platforms for political agitation. The age-grade system of the Igbo was quite influential in acting as a group that ensured that all within the acephalous Igbo society complied with rules and regulations. The *asafo* company of the Akan of Ghana was a warrior organization of the common people or youth who, among other responsibilities and duties, posed as an "effective political force in the enstoolment and destoolment of chiefs (Amoah 1988, 176). Amoah (1988, 176)

asserts that "no chief would remain on the stool for long if the *asafo* companies were united against him."

The inner workings of the indigenous African political system is contrary to the European characterization of the African chief as a dictator who enriches himself with the proceeds from the coffers of the state. The anthropologists, missionaries and colonialists did not understand the inner workings of the chief and his cabinet or councilors. The chief's main occupation was the survival and well-being of his people and it is expected of him to listen to a wide variety of viewpoints in order to arrive at a consensus. As a builder of bridges across different opinions, the chief acted as an umpire who ensured fair play and justice to all. Although occasionally, certain autocratic minded chiefs arose who tried to usurp power from the cabinet and take actions unilaterally, it was the exception rather than the rule. In stark contrast to theoretical convictions that the African chief ruled for life, the practice was such that the chief could be dethroned or destooled by the elders and the masses.

The African Indigenous Judicial System

Africa has been upheld as the citadel of many variants of free, fair, thorough, and advanced legal systems. The indigenous courts still found in the Bantu states of the continent is testimony to the enduring nature of the home-grown and time tested legal system of Africa . Heath argues that the "Somali legal system has all the makings for becoming one of the finest systems of the world. All it needs to achieve this status is exposure to the daily hustle-bustle of the market place of ideas, goods and services in the context of the world economy" (Heath 2001). The *gacaca* court hearings were synonymous with the Tutsi of Rwanda. The hearings are held in open places where all the concerned parties to the disputes are invited. The grievances of the offended are followed by statement of the accused defending his acts. Testimonies are also heard from eye witnesses and supporters of both the accused and the complainant. The judges are tasked with sifting through the submissions by all parties to separate lies, inconsistencies in arguments and other discrepancies before declaring judgment on the erring party. There is always room for a retrial or appeal to a court of higher authority in the case of unacceptable rulings. In the absence of an adequate "modern" judicial system, *Gacaca* has been adopted as part of the official judicial system in post genocide Rwanda, in order to bring the perpetrators to book.

The nuclear family settled minor disputes among members in the case of the Igbo of Nigeria. Graver matters are within the purview of the extended family or kindred, while the lineage heads settled "cases of assault, petty theft, family disputes, adultery and even divorce" (Olaniyan 1985, 28). Olaniyan (1985) asserts further about the Igbo

> The village court handled inter-lineage cases over which the lineages involved could not reach agreement. Both plaintiff and defendant paid settlement fees in kind, although the plaintiff paid the summons fees. The innocent party had a part of its settlement fees refunded

> while the guilty party forfeited its fees and was subject to further fines in line with the gravity of the offence… The right of appeal was always upheld (Olaniyan 1985, 28).

Essentially, the indigenous judicial system, which was in operation prior to colonialism, sufficiently handled the prevailing issues requiring social justice and amelioration with a built-in capacity to expand in response to societal growth and development.

Indigenous Knowledge in Medicine

Indigenous knowledge of healing in Africa is as old as the very first inhabitants of the continent. For centuries, this knowledge was applied to ensure longevity and quality of life within societies, and although practiced in various interpretations, there is general consensus regarding its underlying philosophy.

Philosophy and Practice of Africa's Indigenous Medicine

The general philosophy underlying African indigenous medicine can be gleaned from a study of its practice among the different societies on the continent. An analysis of indigenous African medical philosophy takes off at three basic premises, which although considered distinctly in this study, overlap in everyday practice. These are the natural, supernatural and social worlds; these three categories offer a holistic framework for Africa's indigenous medical system in its analysis of diseases, as it affects not just the individual, but also the community.

Natural Explanations: The crucial role accorded to natural occurrences in determining the cause of diseases in African indigenous medicine is hardly emphasized by much of the available literature on the subject. The ill health of an individual in Africa—unlike the erroneous interpretation given by Western anthropologists—is first attributed to "naturally occurring, unclean, or contaminated substance," and not the supernatural activities of witches and wizards (Baronov 2008, 132). The link between natural phenomena and ill health is a fundamental aspect of African indigenous medical practice, which guides the diagnosis and determined course of treatment. The Sukuma of Tanzania attributes illnesses which affect the whole community to some sort of environmental pollution or contamination. The BaKongo of Democratic Republic of Congo, give their newborn infants three herbal purges within the first few months of birth. It is believed that a child is born with *vumu*, a food substance in the stomach which ought to be cleansed to ensure that the baby does not grow into a sickly adult. The Zaramo of Tanzania directly link several bodily afflictions with food or air borne contaminants. The Zaramo also believe that one can fall sick by stepping on *uchawi* (witchcraft) ostensibly meant for someone else. Baronov argues that stepping on witchcraft suggests that witchcraft itself represents a

material substance with physical properties. Even the witchcraft, therefore, is susceptible to empirical-rational investigation, to be confirmed or refuted" (Baronov 2008, 133). The Meru of Tanzania view the human body as a complex machine which can malfunction for several external reasons which includes dirty food and environment, cold, overeating and eating the wrong kind of food, in addition to diseases caused by animals and germs. The Yoruba believe that most illnesses are caused by germs and some of these germs are contagious. They also believe that certain psychiatric disorders and other severe physical abnormalities are caused by invisible worms or as a result of impure or abnormal blood—what biomedical scientists now diagnose as sickle cell disease. The Maasai of Kenya attribute malaria to mosquito bites and the Kamba believe that measles is caused by "a reddish brown worm lodged in the stomach just under the spleen" (Mburu 1977, 178).

Environmental causes of ill health that underlie African indigenous medical beliefs include unsanitary living conditions, overexposure to sun, overcrowding, etc. The Zulu believe that there exists a unique kind of relationship between a man and his habitation or immediate environment. This environment is inclusive of topography, animal and vegetation which all interact with man in order to determine his state of physical well-being (Ngubane 1977, 323). The Igbo believe that diseases are "carried by breezes or winds resulting in coughs or yaws, while the Yoruba believe that *imototo* the act of dwelling in an unclean environment is a major cause of diseases (Ezeabasili 1982, 28).

In response to the identification of the personal and environmental causes of sicknesses, African indigenous medicine fashioned appropriate physical remedies or preventive techniques for these diseases. Flint (2001, 202) records that "when Europeans first arrived, Africans in the Zulu kingdom had, for the most part, minimized health risks by settling outside low-lying malarial areas and requiring multiple dwelling structures for large families." Herbalists also prescribe an array of plant-based remedies based on a presumption of the medicinal components of the specific plants, roots, and herbs and the specific illness. In this regard, Baer asserts that

> All human societies have a pharmacopoeia consisting of a wide variety of materials, including plants, animals (including fish, insects and reptiles), rocks and minerals, waters (salt and fresh, surface and subterranean), earths and sands, and fossils, as well as manufactured items. An estimated 25% to 50% of the pharmacopoeia of indigenous peoples has been demonstrated to be empirically effective by biomedical criteria; various biomedical drugs, including quinine and digitalis, were originally derived from indigenous peoples (Baer et al. 2003, 10).

In the case of indigenous African medicine, there is a limitless number of illnesses to which the treatment most often prescribed is natural, that is, based on plant or animal extracts. The Yoruba treat deafness with an herbal ear drop. Other common diseases such as colds, fevers, and childhood convulsions are treated with specific herbal remedies. In southwest Tanzania, constipation is treated with select herbal purges, and enema and eye infection treated with sap from a particular tree. The Bambari have potent herbs for the treatment of measles while the Shona of Zimbabwe

have several common herbs for alleviating of symptoms associated with scurvy. The list is endless.[4]

The distinctive efficiency of the African indigenous herbal remedies has attracted Western pharmaceutical companies whose exploitative inclination leads them to patent several of the age-old remedies as their own intellectual property. Baronov asserts that "this robbery is based on an ongoing relation of exploitation between Africa and the West as well as biomedicine's proclivity to treat medical care as comprised of discrete elements that exists outside a holistic framework" (Baronov 2008, 137).

Supernatural Understanding of Ill health: The African indigenous medical philosophy does not attribute the origin of all illnesses to natural events or substances. Supernatural causes of ill health, according to African indigenous medical philosophy, are founded on the negative activities of evil spirits, often times orchestrated through their human agents. Witchcraft, sorcery, magic, and spirit are all manifestations of evil forces intent on making life unbearable for innocent humans. The functions of the witch and the sorcerer, though considered distinct, are often co-mingled in certain African societies. The witch is commonly portrayed as the recipient of witchcraft substance, although he or she is at liberty to use it for harm or let it lie latent in him. The Tswana of Botswana contend that "The witches who prowl at night are said to be normal humans during the day, and are not even aware themselves of the nocturnal personalities which they have inherited from an earlier generation" (Ulin 1984, 245). Witches posses supernatural powers that make other non-witches fear them. Although the mere possession of witchcraft spirit, which could be eaten, inherited or assimilated consciously or unconsciously, is not necessarily evidence of intent to use it for harm. It is sorcerers who possess supernatural powers and are intent on using it to do evil to innocent men, women, and children. By going through specialized intensive training and through the dubious purchase of harmful magic, the sorcerer delights in causing harm to his neighbors and perceived enemies within and outside his family setting (Baronov 2008, 140). One of the very important functions of the African indigenous medical practitioner has to do with countering the negative effects of witchcraft and the sorcerer's spells with his own presumably higher powers. The role of African indigenous medical practitioner transcends the art of physical healing by administering herbs and other natural remedies, to include the control of the supernatural forces of darkness that might be threatening the life of his patient.

Another important aspect of supernatural interpretation of indigenous African medicine is the belief in the existence of a spirit world. The spirit world is generally assumed to compose of the spirits of long gone ancestors whose job it is to protect the living and ensure the preservation of the customs, culture, and values of the community. The spirit world is the domain of those who have departed from the community. It is generally believed that when someone dies, the soul departs from the body and goes on to join the forefathers in the form of a spirit. The breaking of

[4] Some of the relevant literature addressing herbal remedies in Africa include: Odebiyi and Togonu-Bickersteth (1987), Paarup-Laursen (1989), Sofowora (1982), Frankenberg and Leeson (1976).

a custom, often known as a taboo, is followed by some form of serious punishment to the person, which might range from ill health, destruction of crops, barrenness or other forms of negative occurrences in the life of the offending victim (Green 1999a, b). Spirits are a manifestation of ancestral presence and involvement in the everyday life of their children. Exorcism becomes necessary when some spirit, upset about a particular abomination, induces severe suffering to a community. In that case, a seer or priest, who also doubles as the medical practitioner in several instances, is called upon to cleanse the land and appease the offended spirit.

The supernatural realm in African indigenous medical belief involves several rituals that seek to influence the spiritual realm to favor the physical. The Kamba of Kenya would often prescribe a ritual bath (*ng'ondu*) in the case of female infertility (Good 1987). In essence, supernatural explanations link the causative factor of certain manifestations of human illnesses to "phenomena and forces whose nature cannot be understood, by appealing to the physical laws of nature as recognized by Western sciences" (Baronov 2008, 138).

There are two schools of thought on the role of the supernatural in African indigenous medical practice. One school of thought argues that beliefs in such forces are archaic and inconsequential in the study of the herbal knowledge of the medical practitioners. The supernatural aspect of African indigenous medicine, the school of thought contends, "contravene the laws of nature and are therefore, surely nothing more than the fanciful ranting of a preliterate, uneducated and primitive mind, however respectfully discussed" (Baronov 2008, 138). The second school of thought opine that the supernatural exists, and the fact that Western science, which upholds only the physical, does not take it into cognizance, is not proof of its nonexistence. This school of thought submits that "such forces pertain to a reality not captured by investigations of the natural world (for example, ancestral spirits) and are, therefore, simply beyond the self-imposed ontological limits of the Western natural sciences" (Baronov 2008, 138). The latter view is subscribed to by the practitioners and patrons of indigenous African medicine and by several African scholars.[5]

Closely related to the supernatural realm of analysis is the social network explanation as the cause of disease and infirmity in human beings (Baronov 2008, 142). Indigenous African medical philosophy contends that a breakdown in interpersonal relationships would occur when two people engage in some sort of quarrel. A consequence of such could be physical breakdown, especially when one party engages the supernatural to harm the other. For the indigenous medical practitioner, it is pointless to administer herbs to treat the symptoms of ill health if the underlying causative factors are not adequately addressed. Among the Ufipa of southwest Tanzania, a traditional healer would usually begin the diagnosis of diseases by questions "specifically directed at his client's personal relations" this line of questioning assists the indigenous practitioner to "identify the posited intrusive agencies (e.g., as territorial or ancestral spirits, or as sorcery)" (Willis 1979, 151). In the Northern Tanzanian Mgbuwe peoples, it is believed that the wealthy are often bewitched by the jealous

[5]Other studies include: Airhihenbuwa (1995), Ademuwagun (1979), Asuni (1979), Horton (1967), Mbiti (1970), Mume (1977), Oguah (1984), Quah (2003) and Wiredu (1984).

poor, and the Meru of Tanzania believe that illnesses often result from broken down interpersonal relationships (Baronov 2008, 143). Supernatural manifestations may be as a result of an aggrieved spirit or an upset neighbor, relative, or acquaintance. The angry neighbor would either attack his subject personally, if he has "eaten" witchcraft, or would solicit the services of a sorcerer, to accomplish his wicked schemes.

The general overview of the indigenous African medical system as shown indicate a field that presents a holistic framework for the analysis of diseases in the individual and community. Baronov asserts that "such holistic notions contrasts sharply with the Western cultural practice that emphasize discrete ontological spheres, causing a fundamental divide between those put under the microscope and those wielding the microscope" (Baronov 2008, 145). For Worsley, "one major projection on the part of the medical anthropologist is the very assumption that the object of study is something isolable. Even more fundamental is the assumption that the divisions we draw as scientists, in scientific situations, between the natural and the supernatural is a distinction that is shared by the subjects of anthropology" (Worsley 1982, 326).

As distinct from the over-compartmentalization which characterizes Western medicine, indigenous African medicine also blends in as part of the everyday lived experiences of the individual. Issues of health, wellness, and diseases are intermingled with the everyday activities of society and do not comprise a distinct, specialized sphere or social institution. Baronov asserts that "certain aspects of pluralistic-medical beliefs and practices, such as, concern for ancestral spirits involve ongoing facets of a person's life regardless of the momentary state of his or her physical health" (Baronov 2008, 146). Katz (1982) writing about the !Kung, posits that the !Kung do not consider their healing dances as distinct from their day to day activities. The healing dances are viewed like hunting, gathering, dancing, and other economic and social activities which they engage in as often as necessary. Due to this holistic paradigm which characterizes the African indigenous medical system, one can conclude that it is not the myopic relegation of treatment to the occasional episodes of illness requiring a separate activity and effort towards restoration of health. Unlike western medicine, African indigenous medicine is located within a holistic framework that incorporates the individual's complete life and that of his community and environment (Baranov 2008).

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Chapter 6
The Case of Traditional Bonesetting and Orthopaedic Medical Curriculum

A traditional bonesetter is a lay practitioner of bone manipulation, well versed—at least, according to the view of patrons and his community at large—in the medical art of restoring broken bones to full functionality. Agrawal opines that the traditional bonesetter in the modern day definition is "the unqualified practitioner who takes up the practice of healing without having had any formal training in accepted medical procedures" (Agarwal 2010, 8).

Traditional bonesetting dates back to the period when modern homo sapiens began to hunt, and invariably began to suffer from fractures. As man matured in the management of bone injuries and its treatment, it became a specialized field such that certain individuals became custodians of the increasingly complex healing knowledge of bone manipulations and adjustments (Green 1999a, 258). Remains of the Neolithic man show evidence of fractures, splinted with what appears to be bark and sticks and secured with bandages (Beckett 1999, 7). Ancient people have been known to devise creative ways to immobilize fractured limbs. The Shoshone Indians wrapped broken limbs in strips of fresh rawhide that had been softened by soaking in water for days. The rawhide is left to dry and harden around the affected area, thereby protecting the injured area. Certain tribes in the Amazon are also known to use splints made from clay (Beckett 1999, 7).

As human civilization expanded, specific people became known as healers and bonesetters, with the techniques often being transferred from one generation to another, almost always from father to son. The skills were mingled with spells and incantations, when appropriate in order to encourage healing. In *Early History of Surgery,* Bishop W.J noted that as early as 1900 BCE in Babylon, King Hammurabi organized a code of laws regulating medical practice, and stating penalties for infringement. Specifically, the "Ghallabu" or bonesetters who handled dental work, minor surgery and the branding of slaves were mentioned.

The earliest known written instructions for bone surgery can be found in the Edwin Smith Papyrus, radiocarbon dated to 1600 BCE. In it, the appropriate treatment of fractures of the upper arm is described.

C. Ezeanya-Esiobu, *Indigenous Knowledge and Education in Africa*,
Frontiers in African Business Research,
https://doi.org/10.1007/978-981-13-6635-2_6

> Thou shouldst place him prostrate on his back, with something folded between his two shoulders in order to stretch apart his upper arm until that break falls into place. Thou shouldst make for him two splints of linen, and shouldst apply for him one of them both on the inside of his arm, and the other of them both on the underside of his arm. Thou shouldst bind it with ymrw (an unidentified mineral substance) and treat it afterward with honey every day until he recovers (Bishop 1960, 11).

For the skull fractures, the surgeon was to make a topical application of herbal paste made from ostrich egg around the wound while chanting incantations to the Egyptian fertility goddess Isis and then allow it to dry. Discovered also were writings, dated fifth-century ACE of the Sustra in India, in which was detailed instructions for the amputation of a gangrenous limb and the construction of iron prosthetics. Among the works of Hippocrates is a treatise on fractures and dislocation, renowned for its anatomical and physiological accuracy, and addressing such issues as "compound fractures, reduction, dressing and immobilization" (Bishop 1960, 12). Hippocrates also prescribes a form of wooden splint to be used in the treatment of femur dislocation and certain complex techniques for extension and counter extension (Bishop 1960, 14).

From Traditional Bonesetting to Modern Orthopaedic Medicine

These recorded advances in orthopaedic medicine slowed down with the collapse of the Roman Empire and the rise of the Roman Catholic Church as the world governing body for all social and religious activities (Bishop 1960, 15). The papacy was of the belief that sickness came in response to trespass and only pious supplication through prayer and fasting would cure such. Most forms of medical remedies previously subscribed were banned and declared paganistic, a breach of which led to the much feared excommunication and the eventual banishment of one's soul from perpetual redemption. Rather than healers and bonesetters, the faithful turned to their patron saints to intercede on their behalf and when that failed, they beseeched the priests for assistance (Beck 1974, 79). For a period spanning almost ten centuries, no form of medical advancement was recorded in Western Europe. Worse still, the language of learning was Latin, and only the priests were allowed access to that language. It was impossible for the laity to understand medical treatises and information. By 1100 ACE, there was growing concern within the papacy that the priest's involvement in the medical field could entail the clergy being guilty of bloodshed should a treatment go awry. To prevent this state of affairs, a series of statutes and laws were promulgated that barred priests, physicians and monks from performing surgical practices and attending public medical lectures. Only the servants of the priests, known as barbers were allowed by law to perform surgical operations (Beck 1974, 79).

Over the years, the barbers perfected their skills mostly through on the job training. They transferred such skills acquired to their children and apprentices. As they

worked, especially with the poor and defenseless, they were able to experiment without fear of retribution as they repaired damaged bones, pulled decayed teeth and performed other tasks which bonesetters were expected to perform. Nothing more than physical strength, dexterity and stamina qualified one to be inducted into the trade of bonesetting. Educational qualification was irrelevant. Apprenticeship rather than tutorials qualified one for practice and there was no training in science. The barbers preferred to treat the royalty, nobles, and their families due to the higher remuneration. The first barbers' guild was formed in England in the fifteenth century to assist with the recruitment, training and regulation of its members (Bishop 1960, 20). It was necessary because other medical professions had banded themselves under guilds and were able to defend their rights and establish themselves and their works. The government overlooked these guilds, ensuring that their members kept to the limits prescribed by the law; "the surgeons and their guild competed with the barbers to treat the same ailments. The druggist mixed medications, but had to purchase chemicals from apothecaries" (Bishop 1960, 20). "By 1540, Thomas Vicary helped put an end to the fighting and confusion by securing the king's permission to unify the guilds of barbers and surgeons; the same act also outlined the duties of the barber-surgeon, versus that of the physician or the apothecaries" (Bishop 1960, 25).

It was not until about 130 years ago that bonesetting became an integral part of Western medical teaching and practice (Green 1999a, 259). Green writes that, approximately 120 years ago, through a fortuitous accident of history, geography, and family connections, orthopaedists, that is, doctors of medicine dealing with pediatric deformities, expropriated bonesetting from early English surgeons and traditional healers (Green 1999a, 259). The journey from traditional bonesetting in the West began with the groundwork laid by renowned French surgeon and amputator, Ambroise Pare (1510–1590). Ambroise Pare's work centered more on the treatment of battlefield bone injury and he did not delve much into the study of domestic or industrial injuries, or deformities that are bone related. It was Nicolas Andry de Beauregard, another French man who "framed the entire field of orthopaedics as a discipline worthy of standing on its own." Nicolas Andry was trained as a medical doctor at the University of Reims and then Paris, graduating in 1697. The subject of his thesis, "The relationship in the management of diseases between the happiness of the doctor and the obedience of the patient," revealed a humanistic side to a man who first went into the seminary to study to become a priest before he made a detour to medical school (Le Vay 1990). His medical research was focused on alleviating the pain and suffering of the patient, while offering him the best treatment option available. His numerous works in the field of parasitology, earned him a prestigious professorship in the Faculty of Medicine at the University of Paris, where he later became the Dean of the Faculty of Physick. The very first thing he did with his new found authority was to restrict the practice of barber-surgery, a practice that was widespread in Europe at that time. Andry considered the barber-surgeons to be quacks and unskilled, who posed more of a threat to their patients than a solution to their ailments (Le Vay 1990). As Andry continued with his research work at the

University of France and in his practice as a physician, his interest soon delved into bone matters. According to him, during the course of his practice, he came in contact with several bone and limb deformities, to which there was no immediate medical remedy. During his time, deformities which affected the bone and limbs were common place especially in children. This was attributed to the numerous types of public-health challenges which the people faced, ranging from congenital syphilis to rickets. In order to help alleviate the suffering of the children, and also having recognized that the skeletal system of a child remained malleable until his teenage years, Andry believed physicians had a unique opportunity to help the deformed person live a normal life as an adult if the problem is addressed early on in life (Le Vay 1990).

It was not to be until 1741, when Andry was 83 years of age that his very first work on orthopaedic medicine was published. *Orthopaedie, or in its longer forms, L'orthopedie, ou l'art de prevenir et de corriger dans les enfants, les difformites du coprs, le tout par des moyens a la porte des peres et des meres, et de toutes les personnes qui ont des enfants a elever.* It was the very first ever use of the word orthopaedics, signifying the birth of an entire medical discipline. In the words of Andry; "As to the Title, I have formed it of two Greek Words, *Orthos,* which signifies straight, free from Deformity, and *Paedis,* a Child. Out of these two Words, I have compounded that of Orthopaedia, to express in one Term the Design I propose, which is to teach the different Methods of preventing and correcting the Deformities of children" (Le Vay 1990).

Andry's work established orthopaedics as the branch of medicine which deals with conditions that affect the muscoskeletal system. Orthopaedic surgeons, as the practitioners are often referred to, employ both surgical and nonsurgical means to treat "muscoskeletal trauma, sports injuries, degenerative diseases, infections, tumors and congenital disorders" (Ponsetti 1991). What followed Andry's seminal work was increased interest in the field now known as orthopaedics by several practicing physicians. In 1780, the first orthopaedic institute was established in France, dedicated to the treatment of skeletal deformities in children (Ponsetti 1991).

In the United Kingdom, it was the works of Evan Thomas, a traditional bonesetter of immense reputation in Liverpool—whose contented clients included Prime Minister William Gladstone—that transformed the field of traditional bonesetting to modern orthopaedic medicine (Green 1999a, 259). Thomas sought to obtain a hospital staff position, but was denied one as he did not possess a Doctor of Medicine. Hurt by this denial, Evan Thomas fought for his son, Hugh Owen Thomas, who had shown keen interest in orthopaedic medicine from an early age to attend medical school. After he obtained his MD degree, Hugh Owen Thomas set up a practice where he specialized in the correction of childhood deformities. As his father's health deteriorated, Hugh expanded his practice to include bonesetting for adults, using the very same tools his father used in his traditional practice.[1] Upon the death of Hugh Owen

[1] "Hugh Owen Thomas used his bracemaking experience to develop the Thomas Splint, a device that revolutionized the care of femoral shaft fractures, and which remains in widespread use today" (Green 1999a, 259).

Thomas from lung cancer at the young age of 58, his nephew Robert Jones whom he convinced to attend medical school and to join him in his practice thereafter, took over the practice.

Robert Jones had already learnt a lot of bonesetting skills from his late Uncle and also as an observer of his grandfather while he lived. It was very easy for him to continue with bonesetting as well as his regular practice as a certified MD. In a lecture "Cases that Bonesetters Cure," published in the *British Medical Journal* in 1867, Sir James Paget, famous orthopaedic surgeon of the nineteenth century in consenting to the validity of the indigenous orthopaedic medical practitioners, stated, "Few of you are likely to practice without having a bonesetter for a rival; and if he can cure a case which you have failed to cure, his fortune may be made and yours marred. Learn then to imitate what is good and avoid what is bad in the practice of bonesetters." It is worthy of note that the much acclaimed father of orthopaedic medicine in England, Hugh Owen was a traditional bonesetter (http://www.chirobase.org/05RB/BCC/07.html. 06/04/09).

At around the time Robert Jones' practice took off, the British government commenced the construction of the massive canal connecting the port city of Liverpool to the inland manufacturing center of Manchester. The British government engaged over 20,000 workers in this effort. Jones was granted a permit to establish mobile clinics along the construction sites in order to treat occupational injuries sustained by the workers. The most serious fracture cases were referred to the clinic at Liverpool (Green 1999a, 259). With the volume of patients he handled during this period coupled with the complexities of their injuries, Robert Jones gained vast fracture care experience within a limited period. Soon, physicians, who were traveling from the world over to the British Isles through the port of Liverpool, dropped by Jones' clinic for observation as his fame as a medical doctor specializing in bone injuries spread. By World War I, Jones had become the notable authority in large-scale care of bone casualties, and he was therefore called on to establish and head the Army's orthopaedic services. Robert Jones was Knighted at the end of the war for his war time contributions and afterwards, founded the British Orthopaedic Association, an organization that was modeled after "a similar group established a few years earlier by his disciples in the United States" (Green 1999a, 259).

Over time, traditional bonesetters in the Western nations gradually became extinct, to be replaced with orthopaedic doctors trained in the medical colleges. Orthopaedic medicine became engrafted into the field of medicine in both pedagogy and practice. Apprenticeship, inherited knowledge and skill, on the job training and learning were soon replaced by a rigorous scientific mode of inquiry. Several assumptions and premises upon which the traditional bonesetters practiced were discarded, and replaced with new scientifically established facts. Since this transformation, there have been several improvements, new inventions and developments in the field of orthopaedic medicine. Antonius Mathysen a Dutch military surgeon invented the plaster of Paris cast in 1852. It is worth noting that some of the most notable inventions in the field of orthopaedics were made at the battlefield. Traction and splinting was developed in World War I, the use of rods for the treatment of femur and tibia fractures was pioneered during WW II and during the Vietnam War, the fixing of

fractures without surgery was perfected by American soldiers (Ponsetti 1991). The USSR'S Gavril Abramovich Ilizarov, sent to Siberia in the 1950s to treat injured Russian soldiers, used bicycle scopes as external fixators to achieve realignment and lengthening to a previously unthought-of degree. Other advancements in the field of orthopaedics have taken place in research centers, and by doctors on the job practicing their skills (Le Vay 1990).

The United States is known as the country that is most advanced in the field of orthopaedic medicine. In the United States as in most other countries of the world, one must qualify as a trained physician first before proceeding to specialize in the field of orthopaedic surgery.[2] After completing the specialty training in orthopaedics, an orthopaedic surgeon becomes eligible for board certification. Board certification implies that one has met the "specified education, evaluation, and examination of the Board, often preceded by the successful completion of standardized and oral exams, including a period of observed surgical practical work". In the United States, there are several subspecialties in orthopaedic medicine, which include: "hand surgery, shoulder and elbow surgery, total joint reconstruction (arthroplasty), pediatric orthopaedics, foot and ankle surgery, spine surgery, musculoskeletal oncology, surgical sports medicine, and orthopaedic trauma" (American Board of Orthopaedic Surgery www.abos.com). The United States board certification for orthopaedic medicine is regulated by the American Board of Orthopaedic Surgery (ABOS).[3]

While the transition from bonesetters to orthopaedic doctors took place almost concurrently in the Western world, most of the developing world was left out of these developments. Traditional bonesetting still flourished as the only available option for the inhabitants of much of the world population well beyond the first half of the twentieth century. Through the years, traditional bonesetting has survived in the face of "modernization" and is now found mostly in the developing world. Despite technological advancement in modern medicine, traditional bonesetting has thrived as an alternative source of health service in India, Africa and South America. The profession is known as Kahuna Haihai in Hawaii, Sinikci in Turkey, Pahalwan in India (Green 1999a, 259). The developing economies are notable for having less developed healthcare resources, leaving indigenous bonesetters with a larger share of the population who are poor and denied access to the more expensive Western

[2] "In the United States and Canada, it is expected that orthopaedic surgeons have completed 4 years of undergraduate education and four years of medical school before going on to undergo residency training in orthopaedic surgery" (American Board of Orthopaedic Surgery www.abos.com).

[3] "In Canada, the certifying organization is the Royal College of Physicians and Surgeons of Canada; in Australia and New Zealand it is the Royal Australasian College of Surgeons. from 1999 to 2003, the top 10 common procedures (by order) performed by orthopaedic surgeons include: (a) Knee arthroscopy and menisectomy; (b) Shoulder arthroscopy and decompression; (c) Carpal tunnel release; (d) Knee arthroscopy and chondroplasty; (e) Removal of support implant; (f) Knee arthroscopy and anterior ligament reconstruction; (g) Knee replacement; (h) Repair of femoral neck fracture; (i) Repair of trochanteric fracture. While the names used may sound bogus and intimidating to the uninitiated, they simply represent technical names for some common bone ailments and injuries which people are more often afflicted with" (American Board of Orthopaedic Surgery www.abos.com).

medicine. Due to the underground and often unregulated nature of their practice, there are no reliable statistics to gauge the number of patients attended to by indigenous orthopaedic healers, however, it has been estimated that up to 40% of patients with fractures and dislocations in the developing world resort to indigenous orthopaedic doctors (Green 1999a, 263). In India, it is estimated that about 60% of the population patronize the over 70,000 bonesetters who ply their trade at any given time, second only to the *Dais* or traditional midwives.

Traditional bonesetters are renowned for their efficacy in the treatment of bone injuries in the communities where they practice. Like other variants of indigenous medicine, the knowledge of bonesetting is verbally passed from one generation to another, without resorting to formal documentation. Through the practice of apprenticeship and on the job training, traditional bonesetters pass down the knowledge of bone manipulation, herbal topical applications and sometimes oral ingestions to the next generation often consisting of family members. Indigenous bonesetters are take care to protect their reputation and therefore they give their very best to the restoration of their client's bone health. Most traditional bonesetters are renowned men of competence in their field. Tella has pointed out that a "highly remarkable degree of expertise and skill is involved in the practice of traditional bonesetters, especially as there is no radiology staff employed in their practice" (Tella 1979, 610).

Teaching and Practice of Traditional Bonesetting in West Africa

The history of bonesetting in West Africa and the whole of sub-Saharan Africa by extension dates back to the first group of settlers to make a home out of the sprawling grasslands, thick rainforests, and mangrove swamps that dot the region. Some of the earliest recorded observations of bonesetting in West Africa were by anthropologists among the several ethnic groups that inhabit the area. Excavation of materials like dead bodies and skeletons for analysis was not considered as proof of existence of professional bonesetters, or evidence of the existence of bonesetting among any group of people. Adolph Schultz avers that "well-healed fractures are numerous among wild gibbons and other primates which are not likely to enjoy treatment by professional bonesetters" (Schultz 1939, 571). The anthropologists recorded the use of original casts, made from leather, chicle, or clay in the setting of injured factures, after massage and use of certain "magic" ointments (Ackerknecht 1947, 35). The Liberian Manos were known to practice systematic traction as part of hand fracture treatment, and the Akamba, the total immobilization of the limb being fixed, by pinning to the floor with pegs.

The bonesetter in precolonial Africa is recorded to actively massage the affected area from the time the case is presented. As a therapeutic procedure; this shows the universality of massage in the treatment of fractures. Ackerknecht avers that precolonial bonesetting in Africa had some elements of magic in its practice (1947, 28).

The plants used to make the massage ointments are said by the practitioners to possess magical powers. This is also shown in the use of animals such as chicken, whose leg is broken and, according to Ackerknecht, "the success of an otherwise "rational" fracture treatment depends entirely on the fate of a chicken whose bones are broken and treated like those of the patients" (1947, 28). Here, Ackerknecht echoes the view of several anthropologists, who lack understanding of the logic behind certain activities of their study group, preferring instead to judge the observed procedures based on their own often narrow understanding of what is acceptable reality. Other purported magical instruments employed by West African ethnic groups in the treatment of bone fracture and injury include the blacksmith tongs for reducing a dislocated mandible, and the treatment of fractures and dislocation by only those born with their feet forward or those struck by lightning (1947, 28). Amputation seems to be rare, from the accounts of anthropologists in West Africa. However, the Masai of East Africa were known to amputate severely damaged limbs or hopelessly complicated fractures. This amputation as recorded, is done with great skill and precision and prostheses are fashioned for the patients afterwards.

As a practice, traditional bonesetting is found in almost all communities of the world. In Turkey, for instance, the citizens express a high degree of confidence in the patronage granted to bonesetters, and not in the Western-styled orthopaedic doctors in the area (Hatipoglu 1995, 203). In West Africa, specifically among the Yoruba of Western Nigeria, traditional bonesetters rank second only to diviners in the ranking of traditional healers, while the herbalists and others trail behind.

In the West African country of Nigeria, traditional bonesetters were the only available option for fractures and bone injuries until 1873, when the very first orthodox hospital was built in Lagos, Nigeria. Although it is now almost 150 years since the first orthodox hospital was built in Nigeria, there is still a severe shortage of qualified medical personnel to adequately attend the teeming population. Omololu et al. avers that with a population of 150 million, there are less than 200 orthopaedic surgeons to service the entire country, making it one per 700,000 people. The gross national income per capita is $1,040 and the total expenditure on health per capita is $53, with $16 representing government contribution (Omololu et al. 2008, 466).

Much like Ghana, Nigeria operates a three-tier system of healthcare; primary, secondary, and tertiary health care. The primary healthcare is the foundation of Nigeria's healthcare delivery system, and where the rural communities first go in the case of medical ailment. Unfortunately, primary healthcare delivery in Nigeria is bedeviled by several difficulties including personnel, finances, accessibility, and others. In the absence of orthodox healthcare providers, traditional healers, in some cases, provide 90% of primary health care to rural dwellers (Omololu et al. 2008, 393). These traditional healers vary in their areas of specialization—examples include traditional midwives, traditional herbalists, and traditional bonesetters.

Although modern technology and improved orthopaedic practices have made the practice of traditional bonesetting obsolete in developed countries, the practice thrives in developing countries and Africa in particular. Traditional bonesetters still treat the majority of fractures in sub-Saharan African countries, and there does not seem to be an end in sight to this practice in the foreseeable future. In Nigeria, up

to 85% of patients with fractures and bone injuries present themselves to be treated first by the traditional bonesetters and only end up at the orthopaedic hospitals in the case of gangrene (Omololu et al. 2008, 466).

Traditional bonesetting is a family practice in developing countries where they flourish; skills and knowledge are passed from one generation to another. Through apprenticeship, it is possible for certain outsiders who show keen interest at an early age and are sometimes "sanctioned by the gods" to learn the intricacies of the profession. Records are kept orally and instructions are transmitted though verbal interaction and observation (Onuminya and Onabowale 1998). Splints made from bamboo, rattan cane (*Oncocalamus yrightiana),* and palm leaf axis (*Elaeis guineensis*) are knitted closely together to form a mat-like splint that is used to immobilize the fractured area by tightly wrapping it around the affected site (Eshete 2005, 103).

While observing a traditional bonesetter at work in the rural South Western Nigeria, Omololu et al. (2008) proceeded to document his clinical sessions, consultancies, and treatment of fractures. First the bonesetter identifies the fractured area by taking note of such symptoms and signs as "swelling, pain, loss of function, angulations, abnormal mobility and crepitation on palpitation of the fracture site" (Omololu et al. 2008, 393). The traditional bonesetter does not employ the services of a trained radiographer, and neither does he personally use a radiographer to aid him in his diagnosis and treatment of bone injury. Upon diagnosis, the traditional bonesetter proceeds with treatment processes, which includes "reduction, application of herbal cream, splinting and bandaging." The initial process is intense massaging and manipulation (reduction) aimed at restoring the fracture to its anatomical state. The pain during this process is intense, and members of the patient's family forcefully hold the patient down as he screams out in pain. If the patient is unaccompanied—which is rare in a typical African setting—the apprentice of the traditional bonesetter does the job (Omololu et al. 2008, 393). An analgesic is administered at the end of bone manipulation exercises, and is composed of a mixture of several herbal drinks mixed in gin. The traditional bonesetter as observed by Omololu et al. was not forthcoming with disclosing the composition of the herbal mixture, holding some sort of intellectual property right over it, afraid that divulging the secret would lead to mass production and loss of their customers to competition. A large quantity of the herbal mixture is applied to the affected area with a bird's feather and the site is splinted with a splint made of raffia palm, plywood, tree bark, and hard cardboard. A bandage is tied with pressure around the limb to hold the splint in place. Being an orthodox orthopaedic surgeon himself, Omololu asserts that the pressure of the bandage possibly impedes blood flow to the lower part of the limb. This, he contends is manifest through the swelling that is evident when the patient returns for a change of dressing and reapplication of ointment every 3–5 days (Omololu et al. 2008, 395). Upon inquiry, the traditional bonesetters state that the frequent change of the bandages is necessary in order to reapply the herbal cream that aids in the healing of the bone. In some instances, especially in the case of open fractures, it has been noted that the traditional bonesetters employs such mechanisms as incantations, to extract bone fragments from the fracture area, while amulets and charms are given to the patients to take home, with the belief that they will be protected from the forces of dark-

ness, which could hinder the healing of the bone (Omololu et al. 2008). In modern orthopaedic medical practice, analgesic, or even anesthesia is administered prior to fracture manipulation. Once reduction is achieved, a plaster of Paris cast is applied to stabilize the reduction and assist in healing. In modern orthopaedic medicine unlike traditional bonesetting, there is a near absence of cast removal and recasting—the cast remains in place until complete healing is achieved.

Reasons for Patient Patronage

It has been argued in certain quarters that the bonesetter's lack of knowledge of anatomy, physiology, or radiography has brought about limb and life-threatening complications in several of his patients. These complications present in the form of acute compartment syndrome, tetanus, deformities, chronic osteomyelititis, gangrene, amputation, and death (Omololu et al. 2002, 335). In the Gambia, doctors have established that almost all cases of gangrene that occur in children, which eventually lead to limb amputation could be directly traced to traditional bonesetters in the rural areas (Bickler and Sanno-Duanda 2000, 1431). Yakubu et al. conducted a 10 year in-depth study of the complications of fracture management by traditional bonesetters and notes that 23% of the 320 adult limb amputations in their research were for post-fracture splintage gangrene (Yakubu et al. 1996, 104). Certain studies have also established that limb gangrene is just one of the many complications of fracture treatment by the traditional bonesetters. Most affected patients who are young and in their productive years end up with limb amputations, becoming disabled at a very young age.[4]

In a 10-month study conducted at the Wesley Guild Hospital Ilesa in Southwestern Nigeria between October 2003 and July 2004, 29 patients were consecutively studied at the outpatient clinic of the orthopaedic hospital (Ogunlusi et al. 2007). All of the 8 female and 21 male patients had come there after a failed attempt by traditional bonesetters to remedy their situation. The 29 patients had a total of 33 bone and joint injuries and were between an age range of 7–85 years (Table 6.1).

In the study, the patients claimed to have patronized the traditional bonesetters because they wanted quicker services that would enable them return to work sooner. Rather than what they hoped for, the patients ended up with poorly treated and complicated primary pathologies. The presence of certain complications in the management of traditional bonesetter injury is one of the most often presented critiques of its practice by the Western medical doctors. Of the doctors interviewed during the period of this research, all were of the view that, especially for cases of open fractures, traditional bonesetters were not qualified to treat or handle bone injuries.

[4]Eighty five percent of patients with femoral fractures first present to traditional bonesetters (Katchy et al. 1991).

Table 6.1 Patient's reasons for patronizing traditional bonesetters (Ogunlusi et al. 2007, 4)

	Reasons	No	Percentage (%)
Reasons for patronizing TBS	Quicker services	12	41.4
	Cheaper services	9	31.0
	Fear of amputation	3	10.3
	Combination of above	4	13.8
	Strike in government hospitals	1	3.5
Reasons for seeking MOS	Nonunion	16	55.1
	Malunion-LLD of lower limb	6	20.7
	Malunion-deformity of UL	6	20.7
	Chronic osteomyelitis	1	3.5

MOS = Modern orthopaedic services

Practice of Traditional Bonesetting with Western Infusion

Several studies have been conducted on the merging of traditional bonesetting practice with some form of Western orthopaedic medical practice. In a study conducted by Onuminya (2006), between the periods January to December 2002, the performance of a trained traditional bonesetter was evaluated at a remote 75 bed facility traditional bonesetting clinic located in the rural area of Owan East Local Government Area of Edo State Nigeria. The bonesetting clinic, known as the Afuje traditional bonesetting center is situated in a town comprised mostly of subsistence farmers and their families. There is no orthopaedic center situated within even a 5-hour drive from the village. The proprietor inherited his knowledge from his father, and he is being assisted by his three sons, two of whom were university undergraduates.

The Afuje traditional bonesetting center has in its employ, a trained general practitioner. For diagnosis, rather than the age old method of the bonesetter feeling around the affected area to determine the nature of the injury, patients are sent to an x-ray facility, situated about 5 km away from the center, and again for check-up at the end of treatment. The medical director of the hospital is not employed by the government, but works closely with the chief patron of the Afuje center to handle cases such as "osteoclasis[5] and open reduction without fixation for cases of malunion and

[5]Osteoclasis is the surgical destruction of bone tissue performed in order to be able to repair a fracture.

delayed union as requested by the traditional bonesetter" (Onuminya 2006, 4). The traditional bonesetter who runs the Afuje center does not handle fractures with open wounds, until the medical director has treated the open wound and supervised its complete healing. Only then is the case referred to him for fracture manipulation. Other Western or orthodox clinics around the area, which are all non specialist in nature refer cases of fracture to the Afuje center for treatment.

Fracture patients at the Afuje center who were interviewed, stated their preference for patronizing the traditional bonesetter due to the easy accessibility of the center; the closest orthopaedic hospital to them being several miles away. Moreover, the patients stated that the bonesetter at the Afuje center is acclaimed for his efficacy, charges very little and his treatment comes with little or no risk of amputation. The role of the nurse in the Afuje center is that of a pharmaceutical dispenser, who sells analgesics and antibiotics and also immunizes certain at risk patients against tetanus. On the whole, Onumiya reports that the Afuje traditional bonesetting center represents a "well-organized 'tradorthopaedic' clinic" (Onuminya 2006, 4).

In the same study, Onumiya used another traditional bonesetting clinic as a control center. The control traditional bonesetting center is located in a similar rural setting at Ogua in Esan West LGA of Edo state in Nigeria. He notes at the commencement of the study that the two centers utilized "similar conservative methods of treating fractures and were both reputable traditional bone setting practitioners with good patronage within and outside their Local Government Areas" (Onuminya 2006, 3). Onumiya's study began with teaching the traditional bonesetters at the Afuje center, during a one-day workshop, "safe conservative treatment of fractures with regard to diagnosis, patient selection, basic principles of fracture treatment, prevention of complications including transmission of HIV infection, referral services and outcome of treatment. Center B received no instruction." (Onuminya 2006, 3). At the end of the course, a 2-year prospective study of the outcome of fracture treatment at the two centers was conducted in order to determine the success or failure of the course. The study was restricted to an analysis of the treatment of 40 tibial shaft fractures in both the Afuje center where the course took place and Center B where the course was not held.[6] The Table 6.2 shows the outcome of the tibial shaft fractures.

Onumiya records that in both clinics, no deaths were recorded during the study period. In the Afuje center, the median duration of stay for patients with tibia shift fractures was 4 months (in a range of 2–12 months), while it was 8 months (in a range of 2–18 months) in the control center B. Noticeable was also the disparity in the rate of voluntary discharge at both centers. Voluntary discharge arises when patients are dissatisfied with the treatment results especially in cases of nonunion, delayed union, infection or gangrene. The rate of voluntary discharge at Afuje center was 25% (10 patients) and 50% (20 patients) at center B. It was notable that the hygienic and sanitary conditions at both clinics were exceptional, as the traditional bonesetters had long ceased using the same blade for more than one patient in the

[6] At both centers, the male–female ratio was 3:1; the ages of the patients ranged from 20 to 65 years with a median age of 30 years, and the distribution of the pattern of fracture between the groups was fairly similar" (Onumiya SAMJ 96, 4, p. 5).

Table 6.2 Outcome of the treatment of Tibia Shaft fractures at Afuje and Ogua Centers (Onuminya 2006, 5)

Outcome	Center B (No. %)	Center A (No. %)
Acceptable union	19 (47.5)	5 (12.5)
Malunion	8 (20.0)	12 (30.0)
Nonunion	3 (7.5)	6 (15.0)
Delayed union	7 (17.5)	8 (20.0)
Posttraumatic osteomyletitis[a]	2 (5.0)	5 (12.5)
Limb gangrene[b]	1 (2.5)	4 (10.0)
Total	40 (100)	40 (100)

[a]Acute and chronic bone infection
[b]Gangrene is the death of a considerable mass of body tissue

event of scarification. Patients were now required to bring their own blades when coming for treatment. At both centers, Onumiya notes that most of the patients in the study had initially voluntarily discharged themselves from orthodox hospitals before seeking treatment at the traditional bonesetters. The patients cited several reasons from family pressure to dissatisfaction with the consultation and treatment method and outcome of the orthodox hospitals.

Onumiya's submission is typical of the outcome of several studies of traditional bonesetters in West Africa, which often is based on the fact that traditional bonesetters should learn to imbibe more orthodox practices. In his particular case, Onumiya notes that instruction on the appropriate application of a splint on the fracture did result in a remarkable decrease in cases of limb gangrene at the Afuje center. On the contrary, the center B where the instruction was not dispensed recorded 4 cases of gangrene, whereas only one case of gangrene was recorded at the Afuje center. In the case of gangrene, amputation became the only possible remedy, or death would have definitely occurred through tetanus and septicaemia. Onimiya further asserts that the resultant casualties to gangrene noted in center B were as a result of the lack of awareness of the dangers of tight splints among traditional bonesetters.

> Traditional bonesetters have traditionally been considered secretive, and it was difficult to teach them how complications could be prevented. However, with the cooperation of the modern traditional bonesetters, it was possible to arrange 1-day instructional courses on the safe fracture treatment. This has resulted in a considerable decrease in the rate of gangrenous limbs, infection, nonunion and malunion. There has been a significant increase in the rate of acceptable union among patients treated by the trained TBS compared with the untrained (Onuminya 2006, 322).

According to Bodkere and Burford (2007), the undue emphasis on the dangers of traditional bonesetter in West Africa could be due to several reasons, the main one being that "those who have the interest and capacity to report cases to professional journals rarely see successful treatments; of the many patients treated by traditional bonesetters, only those who have been failed will seek hospital care" (Bodkere and Burford 2007, 56).

One of the earliest publications of traditional bonesetting study by a Nigerian orthopaedic doctor was in 1986 (Oguachuba 1986). Through his article, Oguachuba enlightened the Nigerian medical community of the existence of such cases of traditional bonesetters' mismanagement, encouraging the medical community to report them in medical journals. By 1991, three major articles had been published in *The Nigerian Medical Journal* denouncing the activities of traditional bonesetters (Eze 1991; Katchy et al. 1991; Adebule 1991)—this set the pace for several articles to follow, all following the same trend of negative reporting regarding the activities of traditional bonesetters in Nigeria and much of West Africa.

In another study, Onuminya et al. (2000) were able to demonstrate the bias of the medical publishing industry against traditional bonesetters, and how this has resulted in unjustified antagonism towards them in the medical professions. In Onomiya's study, of 100 major amputations performed on 96 patients in two major hospitals in Nigeria, 60 were established cases of fracture ill management occasioned by traditional bonesetters. The study was conducted over a 10-year period and although the number seems quite high at a cursory glance, when analyzed against the volume of patient traffic at the traditional bonesetting centers, and the fact that the two orthopaedic hospitals were almost the only available orthodox orthopaedic hospitals that serviced several millions of people, the number might not seem so distressing. It amounts to about six casualties per year in both regions whose catchment areas include states in the middle belt and eastern regions of Nigeria respectively.

Orthodox orthopaedic doctors are also prone to medical mistakes—there are several recorded cases where orthopaedic doctors could not treat patients and the patients resorted to traditional bonesetters where they were effectively treated. Oyebola (1980) reports of a patient with a tibia and fibula dislocation who after six weeks of intensive treatment at the State Hospital voluntarily discharged himself and checked into a TBS home where he received successful treatment and was discharged soon afterwards. On the whole, both orthpaedic medicine and traditional bonesetting can be mutually reinforcing in Africa's education curriculum, rather than being mutually exclusive, as is presently the case.

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Chapter 7
Research, Innovation, Indigenous Knowledge and Policy Action in Africa

Introduction

Innovation, invention and creativity are the major drivers of growth and advancement in nations across the globe. A country that invests in creating an enabling environment for its human capital to operate at optimum usually receives yields by way of highly innovative products and services. At the foundation of innovation and invention is knowledge—intimate knowledge of the environment within which the end product will be utilized. Indigenous knowledge forms the basic foundation of knowledge for much of Africa's population south of the Sahara. Conversely, rather than ideally forming the foundations for teaching and research across the region, this variant of knowledge has been marginalized from formal learning and research platforms. As stated elsewhere in this volume, this state of affairs is traceable to the colonial origins of formal education and research in Africa, and the continued dependence on external forces for education funding (Brock-Utne 2000). He who pays the piper dictates the tune, and therefore, rather than an emphasis placed on Africa's indigenous knowledge in curriculum and in research focus areas, western curriculum and western agenda usually form the basis. Research for development in Africa must not only be relevant to the needs of the people concerned and be appropriate to the social and material environments in which it is pursued (Hanushek and Ludger 2007), it must also be adaptive and cumulative—that is, responding to the exigencies of situations and be meaningful to the members of the society, taking into account their aspirations and concepts of development. In his 1999 *Development as Freedom*, Amartya Sen, opines that real development occurs when a people are free to define their development based on societal dynamics. This view is also presented in many other variants by numerous scholars writing on education and societal advancement (see Dewey 1959; Freire 1972; Brock-Utne 2000). This chapter explores the question of whether the incorporation of Africa's indigenous knowledge into the continent's research and development process will not offer more viable approaches to its innovation and creativity across the region. Along that line, the chapter seeks to explore

C. Ezeanya-Esiobu, *Indigenous Knowledge and Education in Africa*,
Frontiers in African Business Research,
https://doi.org/10.1007/978-981-13-6635-2_7

any connection between the low level of innovation and inventions in Africa and the absence of indigenous knowledge in teaching, learning, and research across the continent. It starts by exploring the fundamental tenets of innovation and then proceeds to look at the relationship between innovation and indigenous knowledge by drawing examples from regions outside of Africa. The paper further explores options for mainstreaming indigenous knowledge in policy making across the continent, and concludes with the assertion that an emphasis on indigenous knowledge is crucial in African governments' efforts at creating a crop of highly innovative and creative citizenry.

Innovation

Innovation generally entails the idea of doing new things. It is the whole process of renewing, changing, transforming, or indeed creating more efficient and effective means, products, processes, or ways of doing things. There is widespread convergence around the fact that innovation is a major source of organizational or national wealth, health, and overall advancement (West 2000; Drucker 1992). It has been said that innovation rules the world; nations that are constantly innovative have been shown to grow at a much higher rate than nations that are only rich in mineral, human, or any other resources, but lacking in the innovation edge (OECD 2000). A good example is the United States, where it was assumed for over 200 years that economic growth came about as a result of increased input of capital and labor in production processes, thereby resulting in greater output. It was not until Robert Solow, who would later win a Nobel Prize in Economics for his work, established that only 15% of economic growth in the United States between 1870 and 1950 occurred as a result of increased input of labor and capital (Rosenberg 2004). That is, between 1870 and 1950, increased input of capital and labor "could only account for about 15% of the actual growth in the output of the economy. In a statistical sense, then, there was an unexplained residual of no less than 85%" (Rosenberg 2004). It was the unexplained residual of 85% that "persuaded most economists that technological innovation must have been a major force in the growth of output in highly industrialized economies" (Rosenberg 2004).

Today, innovation in science and technology remain a major force in determining the rate of economic growth recorded by nations. Nesta, the United Kingdom's innovation foundation, conducted a study, which established that between 2000 and 2008, 63% of the growth rate recorded in the United Kingdom could be attributed to innovation, while only about 37% could be linked to more inputs of capital and labor (Nesta Foundation 2013). According to the Foundation, "research, the ability to turn ideas into useful new products, services and ways of doing things is the wellspring of prosperity for any developed country" (Rosenberg 2004). Source—(Nesta Foundation 2013)

Appropriate Technology for Innovation

Technology implies the application of scientific knowledge. The process of applying scientific knowledge to address real-life issues often occurs through invention, innovation or the creation of a new product or method (Gordon and Waage 2010). Technological innovation is at the bedrock of the quest for improved economic growth in most nations across the globe. This technological innovation is often the result of intentional, consistent and sustained investments in appropriate industrial and technological research by governments and private sector (Grossman 1993).

If investment in appropriate technology is a key to innovation, it is important to understand the concept of appropriate technology. For technology to be considered appropriate it must be founded on certain fundamental principles, which include

- Accessibility and affordability—this means that instruments needed for innovation to occur must be accessible and easily afforded by majority of the population expected to engage in innovative practices. The situation where technology depends on imported parts or expertise to both take-off and be sustained does not fall within what can be termed appropriate technology.
- Ease of utilization and maintenance—technology created within a locale must be easy to use and be maintained by the members of the community or some designated experts among them. If technology is hard to understand and difficult to maintain by community members, then that technology is not appropriate.
- Meeting real needs of end-users—meeting the real and not the imagined or superimposed needs of end-users should be the guiding principle in innovation that is based on appropriate technology.
- Effectiveness

Innovation in the fields of technology, therefore, should have the aforementioned attributes. The implication is that there is the need for a deep knowledge of the environment where the product being developed is to be utilized. Researchers, inventors, and innovators who have an intimate understanding of their environment are often more succeessful in developing needful technology or other products, tangible, and intangible, which impact the environment in deep and meaningful ways, oftentimes bringing about transformation and noticeable progress.

A Case for Localized Innovation

In a groundbreaking theory, Basu and Weil (1998) proposed that localized innovation is a strong and driving force in economic growth. According to the theory, new knowledge, although relevant for increased technological production can only be applicable or appropriate when used in those "countries that produce according to technologies similar to the innovator's technology" (Los andTimmer 2003). The

implication is that when a product is developed in a particular environment, the innovation needed to develop its offshoots is more likely to be generated in the same environment where the original product was created. In essence, the idea of transferring technology is not sustainable since it is highly unlikely that imported technology will easily take root in a foreign environment and form a basis for more innovation in its new territory. It is in this regard that appropriate technology needs to be situated in the preexisting technological knowledge or environmental reality of the innovator. This is where indigenous knowledge comes to the fore.

Indigenous Knowledge and Innovation

Innovation is often a product of in-depth knowledge and expertise in a particular field. People who are well versed in indigenous knowledge and who also understand their environment intimately are more disposed to being inventors and being innovative, if the right kind of support and access to information are made available.

Although technology transfer has assisted Africa in some way, it has, however, consistently proven to not be what can launch the continent into the level of advancement it needs. Local community members are often lacking in appropriate knowledge regarding the maintenance of imported technology, Africans, therefore, remain dependent on importation. On the other hand, indigenous technologies have been developed and utilized over an extended period in Africa. It has been tried and tested within local communities and has proven to meet the immediate needs of the people. Examples include natural medicine, agricultural techniques, governance mechanisms, etc. As a matter of fact, indigenous knowledge is known to have laid the foundation for quite a few of what is considered modern knowledge or technology. In the United Kingdom, the efforts of Evan Thomas, a traditional bonesetter of enormous talent and training, based in Liverpool whose satisfied clients included Prime Minister William Gladstone, transformed the field of traditional bonesetting to modern orthopaedic medicine (Green 1999).

In China, the establishment of university level education in orthopaedic medicine, at the initial stages, copied the curriculum available in the Western universities. But it was not long before Chinese-trained orthopaedic medical practitioners opened up to indigenous knowledge of Chinese traditional bonesetters. These westernized trained medical doctors have been able to redesign and remodify given assumptions inherited from the west, through their interaction with the knowledge of Chinese traditional bonesetters (Shang and Dong 1987). An example is the traditional bonesetter's superior treatment of displaced bone fractures of the forearm. The western method of dual plating was displaced by the bamboo splint method used by China's traditional bonesetters (Fang, Ku, and Shang 1996). In Turkey, the knowledge of Turkish traditional bonesetters is valued in modern orthopaedic medicine research and practice (Atici and Atici 2004, 50).

Indigenous Knowledge and Research in Africa

There is an obvious disconnect between what is generally researched in Africa and what the real needs of the majority of Africans are. Woodman and Bradford (1987) observed that it has proven difficult to design workable development strategies in Africa due to the fact that the region's contemporary approach to development is a complete deviation from the knowledge, principles, and values of the indigenous communities over which the colonially contrived nation states have imposed their rule. Education is the surest and quickest path to ensuring social continuity and bringing about transformation in any society. For Dewey, human beings "are born not only unaware of, but quite indifferent to, the aims and habits of the social group and have to be rendered cognizant of them and made to become actively interested; education and education alone, spans the gap" (Dewey 1959, p. 3). Education ought to be based on the real-life experiences of learners and what their immediate environment and social realities entail. In this instance any "rift between curriculum and society must be bridged" (Walker and Jonas 1986, p. 11).

The World Bank's admits that "educational research has shown that teaching supported with prior knowledge increases students' ability to grasp materials taught to them (…) and they are more apt to retain information." (World Bank 2000) The document further advises educators to utilize indigenous knowledge as the basis to "build on and teach new concepts" a process known as constructivist learning." In sub-Saharan Africa, education and research has mostly taken the form of an outside -in approach whereby the agenda for what is to be researched is set by the donors or development partners. This is also the case with curriculum of teaching and learning. Very few efforts, transformative in approach and content, has been put into modifying the curricula of teaching and learning across the continent of Africa, in order to make for independent, environmentally generated and sensitive teaching, learning and research.

Research that will lead to advancement in Africa will have to be founded on appropriate education. Classroom content must integrate "particular curriculum content and design, instructional strategies and techniques, and forms of evaluation" (Trifonas 2003, p. 23). In Africa, research agenda, curriculum and "given" conceptual frameworks should be continuously reexamined by researchers, teachers and students, with the aim of eschewing all manifestations of neo-colonial underpinnings and emphasizing indigenous ideas and addressing Africa's peculiar realities and challenges (Ezeanya 2011).

In the search for knowledge within any particular community, people's history, culture, and worldview ought to form the baseline for further studies and analysis (Sarpong 2002). Africa is rich with indigenous knowledge in all fields and sectors, which the advent of Western methods of scientific inquiry repudiated. The result of this disregard for what is authentically African in agriculture, science, mathematics, geography, arts, medicine, politics, economics, to mention few, is a detachment of research from the people's lived experiences. African researchers struggle for relevance and to have the masses appreciate their research output, but this has proven

difficult over the years as a result of the disconnect that exists between research and reality. According to Mkabela, "it is the examination of the African reality from the perspective of the African; one that places the African experience at the core, recognizes the African voice and reaffirms the centrality of cultural experience as the place to begin to create a dynamic multicultural approach to research" (Mkabela 2005). It is very important, therefore, for African researchers to reacquaint themselves with Africa's knowledge systems and research.

There is need for African researchers to establish a foundation of learning that is in indigenous knowledge. Western and other acquired knowledge, skills, methodologies and tools of research will form part of the structure of education in Africa, but not the basis, as is presently the case (Nsamenang 1995). In essence, Western solutions and research strategies for discovering new knowledge are not made to measure for all. The West does not hold the key to research methodology and approaches for understanding the rest of the world. In Africa, the lack of emphasis on this truth has brought about distortions in efforts towards advancing the continent and its people. According to UNESCO, "new insights reveal that development interventions have failed to induce people to participate because of the absence of instruments and mechanisms that enable them to use their own knowledge. Greater efforts therefore should be undertaken to strengthen the capacity of local people to develop their own knowledge base and to develop methodologies to promote activities at the interface of scientific disciplines and indigenous knowledge" (UNESCO 2000) African researchers are reluctant to tackle challenges facing the continent unless they are to be funded or to enter into some sort of partnership with Western institutions. These are hindrances to authentic research works in Africa and the production of authentic knowledge out of the continent.

Mainstreaming Indigenous Knowledge in Policy Action

Policy backing and support is fundamental in ensuring that appropriate technology is emphasized across national boundaries, which will in turn foster innovation across Africa. Public policy used here refers to the activities, or lack of it, pursued by government officials and their agencies in trying to address issues of public interest. Public policy is crucial in the drive towards the political, social, and economic advancement of any nation. Economic policy decisions can strongly encourage the utilization of appropriate technologies within institutions and across sectors, leading to periods of national economic growth.

Policy formulation, to be effective, must be preceded by the appropriate identification of challenges, but what drives results is the determination to, as much as possible, draw, or locate solutions within the ambient environment and not from externally induced or copied modalities. Oluba (2010) opines that appropriate policy must be theoretically sound and be logically consistent and sustainable, in addition to being backed by appropriate laws that are widely accepted by the general public. What this implies is that public policy must essentially be in direct response to

local challenges, using locally relevant ideas and processes. It is very important that public policy be relevant within the context of its implementation. Ndah (2010, 5) states that "government decisions and actions become ineffective when they fail to address public problems in ways that are consistent with widely shared values and preferences."

For much of sub-Saharan Africa's recent history, however, public policy declarations, although emanating from the lips of African leaders, have often been formulated on their behalf by external parties, and/or copied from other nations. Much of sub-Saharan African states are yet to take up the challenge of authentic public policy formulation and implementation based on indigenous knowledge. There is still an over-reliance on external "experts" to construct governance mechanisms and processes across the region (Mkandawire and Soludo 1999). Africa's long years of inappropriate policy making have been established as one of the major reasons for the continent's persisting development challenge (Olokoshi 2000), since ill-fitting policies lead to ill-developed nations.

Decades after colonialism, the end of Cold War, and with the public acknowledgement of the ill-effects of the Structural Adjustment Program, African countries have allowed the aid industry and a lack of political will to continue to dictate the tune of public policy. Although there has been some noticeable progress, public policy formulation and implementation in Africa still relies very much on the counsel and examples of outsiders than on being generated from authentic local realities in order to address local challenges. Indeed, Africa's previous attempts at nation building has more often than not, relied on externally dug foundations, but while the assistance of outsiders might in several instances prove invaluable, its role must be restricted to a supportive, rather than a transformative role (Birdsall 2005). Development strategies, to be effective, must be decided and crafted within the area where the development is to take place. The inappropriateness that is characteristic of Africa's recent public policy history is not without a background. Precolonial African societies were known to have fashioned public policy in accordance with local realities. Such policies or rules and regulations addressed the needs of the population and were generally understood by all. Governments in most precolonial African societies emphasized self-reliance. The social, political and economic independence of nations was of paramount importance to leadership, as such, there was no question of yielding public policy and decision making to external forces (Kisangani 2005). Such principles as accountability, transparency, and rule of law have been liberally identified as being very much present in several precolonial governance systems (Ezeanya 2014).

Owusu (2012, p. 137) avers that "colonial governments in many countries did not develop the capacity of the state; rather they established only the minimum state and bureaucratic capacity to help maintain law and order and facilitate resource extraction." Public policy making would then shift from an independent and growth centered enterprise with adequate and well trained personnel, to one where untrained or ill-trained personnel were hired to depend on external forces for directions and strategy.

For several reasons, in a post-independence Africa, leaders felt incapacitated by way of fashioning policies rooted in authentic African realities. Outside of such founding fathers as Julius Nyerere of Tanzania, Kwame Nkrumah of Ghana and a few others who made efforts towards authentic policy action, much of immediate post-Independence policy making depended on external parties. The Cold War division of the continent along ideological lines did not tolerate much originality in decision making across government officials in Africa. That ideologically charged era fed into the era of Structural Adjustment Program (SAP) for much of the continent.

Under SAP, African governments were told in no uncertain terms to follow a policy formula pre-fabricated in the Bretton Woods offices in Washington D.C. Erring governments were threatened with economic sanctions of doomsday proportions and there were few who did not toe the line. SAP fed into the era of foreign aid; donor funded and often times, donor determined policy took root across Africa. The aid business blossomed at an unprecedented rate across the region. In and out of Africa flew consultants from the Eastern and Western hemisphere, clutching suitcases with one hand, and briefcase filled with policy documents with the other, crafted and ready to be handed over for implementation to African governments. Few African governments saw the need, and were convinced of having the capacity to search out and implement grassroots and homegrown or indigenous knowledge based public policy across sectors. A recognition of the inherent inability of western knowledge to form the foundation of advancement across Africa is a first step towards fashioning policies that will strengthen research on indigenous knowledge, which will in turn ensure a highly innovative Africa.

Conclusion

Despite decades of graduating university and post graduate students in Africa, there has been recorded a low level of innovation and invention across the region. The persistence of several developmental challenges and the snail speed drive towards technological advancement across Africa points to foundational issues with the region's research and development agenda. Africa, for instance, records the lowest patent applications around the world and begs the question, how are the existing curriculum and research agenda contributing to the dearth of widespread innovation and inventions across the continent? Inventions, innovation, and creativity spring from a place of familiarity and spontaneity. Indigenous knowledge is the knowledge that many Africans are acquainted with, but it is not incorporated in teaching curricula and research agenda across the continent. Research for the average African researcher is an enigma that can only be unwrapped with funding, assistance or publication platforms offered outside of the continent's realities. Rich and potentially life-transforming indigenous knowledge in certain fields explored in this volume, such as agriculture, environment, pharmacology, and mathematics, if incorporated as part of the teaching curriculum and a foundational part of research agenda in

Africa, will most likely result in a remarkable increase in innovation and creativity across the region. To work effectively with indigenous knowledge, researchers would have to be a little more humble, patient, determined, sensitive, flexible, creative, unconventional, open-minded, critical, and cautious.

Empowering indigenous knowledge as a fundamental aspect of research in Africa will make for spontaneity which has been identified as the bedrock of creativity and innovation. Ease of access to research materials will be another major reason for innovation and creativity thriving in Africa when indigenous knowledge is given emphasis. Transformative homegrown and grassroots based creativity and innovation across all sectors, including trade and economics, philosophy, science and technology, the creative arts, politics, social and cultural, and others, will be experienced when Africa's indigenous knowledge is accorded its place in research.

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Chapter 8
Conclusion: Towards a Mainstreaming of Indigenous Knowledge in Africa's Education

Indigenous knowledge centered education is critical and holds the ability to set the stage for Africa's advancement in all fields and sectors. The fundamental disconnect between curriculum and reality that is characteristic of Africa's contemporary education is not without a background. Precolonial African societies were known to have designed learning to reflect the lived experiences and aspirations of learners. Education addressed the needs of the population and was generally understood by all. The social, political, and economic independence of the various African nations that existed before colonial intrusion was of paramount importance, and as such, there was no question of yielding the shaping of young minds to the whims of external parties.

Colonial rule brought to much of sub-Saharan Africa, a repudiation of the region's own indigenous knowledge across sectors. Education would then shift from an independent and growth centered enterprise with adequate and well-trained personnel, to one where untrained or ill-trained personnel were hired to depend on external forces for directions and strategy.

For several reasons in a post-independence Africa, those in charge of designing education structure continue to advance the colonially bequeathed foundations of education across the region. Former South African President Thabo Mbeki, referring to the need for Africa's indigenous knowledge to be given prime attention across sectors stated that

> It is necessary that the peoples of Africa gain the conviction that they are not and must not be wards of benevolent guardians, but instruments of their own sustained upliftment. Critical to this is the knowledge by these peoples that they have a unique and valuable contribution to make to the advancement of human civilization, that…Africa has a strategic place in the global community (Mbeki 2010).

This study set out to analyze the absence of indigenous knowledge in Africa's academic curricular, and its impact on the development of the continent. The central thesis of the study is founded on the observation that the difficulty of designing viable development strategies in Africa derives from the fact that the region's modern

C. Ezeanya-Esiobu, *Indigenous Knowledge and Education in Africa*,
Frontiers in African Business Research,
https://doi.org/10.1007/978-981-13-6635-2_8

development thinking is not the direct descendant of, or an adaptation of the principles of the indigenous communities over which the new nation states have imposed their rule. This statement directs attention to the sociological implications of education, the relationship between a society's level of socioeconomic advancement on the one hand, and the quality of education on the other. The key questions raised at the start of the study revolve around the nature of indigenous African knowledge and its implications for the role of education in the region's development. Specifically, the study raised the question, "in what way are the principles and philosophies of indigenous African knowledge either in harmony or in conflict with those of the region's modern scientific ones as promoted by the educational system? In other words, in what way will the understanding of the region's indigenous knowledge systems enable us improve upon its paradigms and models of development?"

The study is founded on the contention that there is no such thing as neutral, objective, or bias-free knowledge, but that every form of knowledge is packaged with underlying intentions and upheld by power. Knowledge is dependent for its creation and sustenance upon certain attributes such as culture, context, custom, and history. There is no universal knowledge upon which all mankind can lay claim to or identify with. The study explores the construction of knowledge, and raises questions on why some variant of knowledge are acceptable and why others are not. It deals with the social construction of knowledge, with the "crucial factor being that some forms of knowledge have more power and legitimacy than others" (McLaren 2009, 63).

Education in Africa in terms of curriculum and learning is still largely defined by the colonially imposed boundaries as to what constitutes "proper education." This situation is exemplified in the curriculum of education across levels, where indigenous knowledge is largely considered a subordinate knowledge system to Western science—if at all it is given any recognition. Often dismissed as lacking in legitimacy, such terminology as "non-quantitative, out of date, and amethodological" are often used to describe the concept of indigenous knowledge, while arguments are presented, stating that it is bereft of scientific rigor and objectivity.

This study has tried to present an argument in favor of the mainstreaming of indigenous knowledge in Africa's curriculum.

The World Bank's admits that "educational research has shown that teaching supported with prior knowledge increases students' ability to grasp materials taught to them (…) and they are more apt to retain information" (World Bank 2000). The document further advises educators to utilize indigenous knowledge as the basis to "build on and teach new concepts" a process known as constructivist learning." In sub-Saharan Africa, education and research have mostly taken the form of an outside-in approach whereby the agenda of what is to be researched is set by the donors or development partners. This is also the case with curriculum of teaching and learning. Very few efforts, transformative in approach and content, has been put into modifying the curricula of teaching and learning across the continent of Africa, in order to make for independent, environmentally generated and sensitive teaching, learning, and research.

Research that will lead to advancement in Africa will have to be founded on appropriate education. Classroom content must integrate "particular curriculum content and design, instructional strategies and techniques, and forms of evaluation" (Trifonas 2003, p. 23). In Africa, research agenda, curriculum, and "given" conceptual frameworks should be continuously reexamined by researchers, teachers and students, with the aim of eschewing all manifestations of neo-colonial underpinnings and emphasizing indigenous ideas and addressing Africa's peculiar realities and challenges (Ezeanya 2011).

In the search for knowledge within any particular community, people's history, culture and worldview ought to form the baseline for further studies and analysis (Sarpong 2002). Africa is rich in indigenous knowledge across fields and sectors, however, there is a detachment of research from the people's lived experiences. African researchers struggle for relevance and to have the masses appreciate their research output, but this has proven difficult over the years as a result of the disconnect that exists between research and reality. According to Mkabela, "it is the examination of the African reality from the perspective of the African; one that places the African experience at the core, recognizes the African voice and reaffirms the centrality of cultural experience as the place to begin to create a dynamic multicultural approach to research" (Mkabela 2005). It is very important, therefore, for African researchers to reacquaint themselves with Africa's knowledge systems and research.

There is need for African researchers to merge the Western acquired knowledge, skills, methodologies, and tools of research with the African reality (Nsamenang 1995). In essence, Western solutions and research strategies for discovering new knowledge are not made to measure for all. The West does not hold the key to research methodology and approaches for understanding the rest of the world. In Africa, the lack of emphasis on this truth has brought about distortions in efforts towards advancing the continent and its people. According to UNESCO, "new insights reveal that development interventions have failed to induce people to participate because of the absence of instruments and mechanisms that enable them to use their own knowledge. Greater efforts therefore should be undertaken to strengthen the capacity of local people to develop their own knowledge base and to develop methodologies to promote activities at the interface of scientific disciplines and indigenous knowledge" (UNESCO 2000) African researchers are reluctant to tackle challenges facing the continent unless they are to be funded or to enter into some sort of partnership with Western institutions. These are hindrances to authentic research works in Africa and the production of authentic knowledge out of the continent.

For research on indigenous knowledge to be effective and far-reaching, researchers would definitely have to exude humbleness, endurance, determination, sensitivity, creativity, open-mindedness, and critical thinking. These attributes are needed to overcome challenges that a curriculum or research agenda which seeks to inculcate indigenous knowledge must be ready to contend with. Further challenges that must be overcome by researchers seeking to work with indigenous knowledge include;

(i) The unwillingness of indigenous knowledge custodians to part with it. As knowledge is synonymous with economic, social and even political power in every society, individuals tend to want to play a zero sum game, wanting to protect their territory and means of livelihood and family sustenance by any means possible, some holders of indigenous knowledge could insist on concealing the knowledge they have in order to maintain the status quo.

(ii) Related to the above is that some indigenous people are hesitant to divulge knowledge due the fact that they are uncertain of its usage in the hands of the uninitiated. This fear has been legally founded, especially in the activities of Western based pharmaceutical companies which dubiously procure indigenous knowledge from local communities only to patent it and benefit exclusively from it to the detriment of the values and the economic advantage of the actual owners.

(iii) Indigenous knowledge, it must be recognized more often than not, functions optimally within its environment of origin, having been tried and tested over centuries within that particular locale. In working with indigenous knowledge caution must be exercised in the wholesale transplant of knowledge to another location. This goes on to show that indigenous knowledge requires a lot of academic emphasis and not its dismissal as noted from this study, as unscientific in nature.

(iv) Just like in every other field of human endeavor where there are variations in learning, indigenous knowledge holders also vary in their expertise, and care should be taken not to consider everybody who calls himself a traditional bonesetter as having all the necessary knowledge in that field. There are quacks in every profession, and indigenous knowledge is not exempt. The same level of depth, versatility, professionalism, and aptitude used in identifying genuine practitioners in just about any other field can be applied to the field of indigenous knowledge.

(v) Oftentimes, it is difficult to separate indigenous knowledge as a distinct body of knowledge, different from its originating culture. Essentially, indigenous knowledge is embedded in culture and this entails rituals, legends, folklore, proverbs, etc. This lends it very easily to misinterpretations and mal judgments from outsiders, especially westerners who tend to dissect that body of knowledge from the lenses of their own limited interpretations.

(vi) The question of intellectual property rights regime for the use of indigenous knowledge has also been an issue among scholars, researchers and holders of indigenous knowledge. New legal alternatives are to be considered to protect indigenous pharmacology, in order to stem the tide of 'illegal' patenting and economic exploitation by the West. This work recommends a *sui generis* approach that provides for the nature of indigenous intellectual property to be defined in accordance with the cultural values of the indigenous communities. Unlike the IPR regime that provides a shelf life for inventions, the *sui generis* provision should recognize the timeless nature of sub-Saharan Africa's indigenous pharmacology and should be devoid of the provisions for originality and material form, which the global IPR regime upholds.

Empowering indigenous knowledge as part of the education curriculum will demystify knowledge to Africans who have been conditioned since colonial times to not identify their culture and learning with science, technology, the humanities, and arts. The effect will be that education will become "easy" and accessible to many and can be readily applied to real-life situations. The outcome will be unprecedented innovation and creativity and accelerated scientific and technological advancements across Africa.

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C. Ezeanya-Esiobu, *Indigenous Knowledge and Education in Africa*,
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https://doi.org/10.1007/978-981-13-6635-2