AFRICAN UNIVERSITIES' ETHICAL RESPONSIBILITIES TO THEIR SUPPORTING COMMUNITIES

Charles Coulter Verharen
Howard University
cverharen@howard.edu

KEY CONCEPTS

African universities; ethics; W.E.B. Du Bois; ICT & MOOCs; service learning; Fort Hare curriculum

ABSTRACT

If universities are supported by the communities in which they are embedded, then solving their communities' problems must be a critical university ethical goal. The essay's first part examines philosophy's roles in directing university research in such disciplines as the natural and social sciences, history, art and mathematics. Of particular interest are the roles that information and communication technology (ICT) might play in the dissemination of research results in universities' supporting communities. The Pan-African thinker W.E.B. Du Bois believed that virtually all humans are capable of profiting from a university education. ICT must be critical to African universities' discharge of their ethical responsibilities to their communities. The first part's conclusion suggests three ways whereby African universities may advance toward Du Bois's goal. The essay's second part proposes a curriculum for Fort Hare University in Alice and East London in South Africa's Eastern Cape Province. As both an urban and rural university, Fort Hare presents a unique opportunity for examining university-community relationships. The essay's conclusion argues that African universities must play a critical role in constructing African self-knowledge. Critical to university and alumni contributions to re-thinking African identity, will be the inclusion of curricular material specific to the cultures of communities selected for university outreach.

UNISA | university of south africa

Portions of paper adapted from Verharen, Gutema, Tharakan, Bugarin, Fortunak, Kadoda, Liu, Middendorf (2014a).

INTRODUCTION

If universities are supported by the communities in which they are embedded, then solving their communities' problems must be a critical university ethical goal. The essay's first part examines philosophy's roles in directing university research across all disciplines. Of particular interest is the role that internet communication technology (ICT) might play in the dissemination of research results in universities' supporting communities. The Pan-African thinker W.E.B. Du Bois (2001) believed that virtually all humans are capable of profiting from a university education. This claim presents a dramatic reversal of Du Bois's (1903) earlier claim that only the "talented tenth" were suitable for university studies. ICT must be critical to African universities' discharge of their ethical responsibilities to their supporting communities (Verharen 2012d). The first part's conclusion suggests three ways whereby African universities may advance toward Du Bois's goal. A critical first step is the proposal that universities must take responsibility for the life-long education of their alumni. A second step is the proposal that university alumni have an ethical obligation to carry service learning into the universities' supporting communities throughout their professional careers.

The essay's second part projects a curriculum for Fort Hare University in Alice and East London in South Africa's Eastern Cape Province. As both an urban and rural university, Fort Hare presents a unique opportunity for examining university-community relationships. The essay's conclusion argues that African universities must play a critical role in constructing African self-knowledge. Critical to university and alumni contributions to re-thinking African identity, will be the inclusion of curricular material specific to the cultures of communities selected for university outreach.

PART I

THE ETHICAL RESPONSIBILITIES OF RESEARCH UNIVERSITIES

How are universities supported? By people! What is the primary ethical responsibility of research universities? Solve the people's unsolved problems! In an age of globalisation, it may be argued that universities are primarily agents of corporations and governments vested in exploitation of the masses for the sake of economic gain. However, the ethical premise of this essay is that consumers and citizens provide the ultimate economic support for corporations and governments.

Universities supported by both government and corporation funding have as their primary ethical obligation the research and teaching that allows communities to solve their unsolved problems. As their most basic function, universities train students to become professional problem solvers − doctors, lawyers, engineers, accountants, entrepreneurs. Universities train students to solve problems of which the solutions are already well known and widely practised in the diverse professions. These problems have algorithmic or recipe-like solutions. But the most important target of research universities should be the unsolved problems of their constituent societies.

THE PRIMARY OBJECTIVE OF A RESEARCH UNIVERSITY

The etymology of the term *university* reveals the core of a university mission. Like the universe itself, a university is literally a "turning toward the one", a reduction of the manifold of experience to the unity of simple concepts. In this role, the university is an instrument of the brain as a "reducing valve" in the words of Huxley (1954). As an agent in *Homo sapiens'* pursuit of survival and flourishing, the brain abstracts patterns from the environment through the senses. These patterns are categorised as *concepts.* The term *concept* comes from two Latin roots meaning *grabbing together.* Awareness of the patterns that core through the universe of our experience gives us the power to predict and thereby control our experience. The history of thought is, in part, quite literally the history of the reduction of complex patterns to simpler patterns. Thought's motto might be conceived of as *simplex sigillum veri*: simplicity is the hallmark of truth. Simplicity in the case of the brain's working does not mean ease of understanding. The height of *practical* and *powerful* simplification in our six thousand years of written history might be Einstein's $E = mc^2$. This formula that served as a partial stimulus to the creation of nuclear weapons took all of humanity's ~200,000 years on earth to discover and can only be practically understood through many years of study (Churchland 1989).

The brain's reductive efforts are displayed across all areas of thinking. Religions as the solutions to questions that cannot be answered in any consensual way moved from suppositions of thousands of explanatory concepts to a single concept. The evolution of religious thought flows from animism and polytheism to henotheism and monotheism. Monotheism yields to cosmotheism or pantheism. And theism finally collapses into atheism, the sense that the physical universe does not require a non-physical or spiritual source of its existence (Verharen 2012d).

Primitive ethics start with the conviction that the self or the tribe must be the source of moral value. Egocentrism and ethnocentrism finally yield to anthropocentrism in many of the global religions such as Christianity. All humans have moral standing, not simply those who belong to a particular group. Anthropocentrism in our era begins to fall to biocentrism, or the conviction that all life forms have moral standing. The

cutting edge of contemporary ethics is eco-centrism, the principle that both organic and inorganic forms have moral standing (Verharen 2012d).

Modern science most clearly displays the brain's reductions at work (Greene 2011). Kepler reduced planetary motion to ellipsoidal paths. Galileo discovered laws for all terrestrial motion. Newton's grand unification uncovered laws of motion for all objects with mass in the universe. Einstein's correction of Newton projected laws for very fast objects like photons and massive objects like stars or galaxies. Darwin's reduction displayed the consilience of human life forms with all other life forms (Mayr 19993).

Contemporary research in physics is a key example of reduction in action. According to Greene (2011) four forces expressed through laws as generalised descriptions used to account for the behaviour of the most basic elements in the physical universe: gravitational, electro-magnetic, nuclear-weak, and nuclear-strong. Maxwell discovered that electricity and magnetism can both be covered under a simple set of equations. Teams of physicists have united electro-magnetic and nuclear-weak phenomena under "electro-weak" principles. The "holy grail" of current physics research is the search for a "Grand Unifying Theory" (GUT) or "Theory of Everything" (TOE). String theory is the purely mathematical speculation that offers the most promise of reducing the four forces to a single force (Greene 2011).

What Huxley's (1954) characterisation of the brain as a "reducing valve" misses is that the brain is also an "expansion valve". This paper argues that the brain accomplished the classic reductions cited above through the creation of new theories or ideas (literally *seeings* in the original Greek) that appeared at their point of origin to contravene "common sense": the earth moves; humans are animals in their origins; all humanity constitutes a single group; our experience of the universe is a "virtual reality" produced by the brain. The argument here is that the etymology of the term *consciousness* captures the brain's dual function. "*Con*" signifies a joining together. "*Sci*" is a root designating knowledge, as in the Latin *scientia.* However, *scientia* may be traced back to a Proto-Indo-European root, *skei,* as the sound in *scissors* or *schizophrenia,* meaning *to cut.* The brain *cuts* our experience into the manifold of concepts designated through symbols (Greek, *throwing together).* At the same time it joins our experiences together through those same concepts. I contend that the long-range motion of the brain is to cut down the numbers of concepts we require to predict and control experience. The cut-down concepts are then joined together in the overarching concepts that displace them in the brain's reductive process.

Furthermore, the university can literally be seen as the *school* (Greek *schole),* the place of leisure where the brain's *cuttings* and *joinings* take place. The university's highest degree is appropriately called the *PhD*, the doctorate of philosophy. That degree is appropriately named after philosophy not simply because philosophy is the search for wisdom. Philosophy is also the instrument directing the search for new

knowledge. Where the path to new knowledge is uncertain, speculation takes the place of certainty. In its most general definition (Verharen et al 2014a), philosophy is a set of rules for the direction of life − under conditions of maximum uncertainty. Philosophical speculation will thus direct cutting edge research in all of the sciences. We therefore contend that by reason of its imaginative and critical role, philosophy brings *adversity* to the *university*.

The history of philosophy is a history of proposing apparently *preposterous* concepts, ideas, theories, in order to guide them into empirical investigation (Verharen 2014a). Original philosophical concepts are preposterous both as they appear to fly in the face of experience and as generalisations that require massive reductions in conceptual apparatus. Imagine the hubris of ancient Egyptians and pre-Socratic philosophers dispensing with anthropomorphic gods to explain the origins of the universe in primordial chaotic water, light or fire, atoms or numbers. The time between a first philosophical speculation and an empirical investigation of a preposterous hypothesis is a function of the speculation's departure from "common sense" and its generality or reductive force. Empirical confirmation of Aristarchus' preposterous heliocentric hypothesis (the sun does appear to move around the earth!) did not take place until the 19th century (Greene 2011). String theory proposes the preposterous hypothesis that the universe is made of strings, objects that resemble in some ways Pythagoras' concepts of numbers − relations of relations, rather than relations of things (ibid).

Philosophy's *adversity* inserts itself into every area of university research where conflict predominates. Where the best path toward the creation of new knowledge is uncertain, there philosophy finds its work. According to Gutema (2012), separating researchers into philosophers and scientists is an artefact of the German focus on specialisation in university research methods. Intellectual disciplines may be distinguished by the degrees of *adversity* present in their research methodologies. The oldest physical sciences have achieved grand degrees of consensus in their claims. But the philosophical instinct for adversity threatens the complacency that arises from consensus. Physicists knew that the precession of the perihelion of Mercury was an anomaly that Newtonian mechanics could not address − yet Newton's system prevailed for two centuries (Greene 2011). I believe Einstein's philosophical taste for adversity inspired him to overturn Newton's basic convictions − a universe infinite in all directions, rectilinear motion, Euclidean geometry as the geometry of the universe − to replace them with his own − a finite but unbounded universe, curvilinear motion, Riemannian geometry as a *vehicle* for the universe's description.

This paper contends that the degree of *adversity* in the social sciences is much more abundant and apparent. Researchers in the social sciences must choose research methodologies that are grounded in pure speculation − in other words, in philosophy, *tout court*. In doing research in abnormal psychology, for example, researchers must choose among the methods of drug therapy, cognitive behavioural therapy, Freudian

psychotherapy, positive and negative reinforcement therapy or some combination of those therapies. Neuroscientists bring their research methodologies to problems in abnormal psychology. The field is saturated in philosophical speculation as guesswork, and the hope is a resolution of problems through a grand reduction that is in the present state of the art in psychology *unimaginable*.

We further argue that the university's *adversities* extend past the sciences into the humanities. The aim and methods of history as a discipline is a matter for contestation in historiography: the grand (and racist) narratives of Toynbee (1934-1961), for example, versus the narrow descriptions of Braudel (1982). Conflict over the aim and methods of the fine arts is embedded in the fabric of that field: art for the sake of art, for example, in the aesthetics of Locke (1989) versus art for the sake of social justice in Du Bois's (2001) aesthetic. The American pragmatist Richard Rorty goes so far as to say that art as literature should replace philosophy as the primary agent of humanity's path to freedom (Rorty 2009a & b).

Conflict rules even in the disciplines that make it possible to structure our modes of thinking. Riemann and Lobachevski's (Greene 2011) efforts to introduce non-Euclidean geometry into the community of mathematicians caused a scandal. Gödel's (Hofstadter 1979) postulation of the elements of incompleteness and inconsistency into complex formal systems threatened the classical conviction that the *truths* of mathematics resided in some sort of Platonic hyperspace. The introduction of quantum or multi-valued logic into nuclear physics threatened the common sense conviction that propositions must be either true or false and not some unimaginable "third thing" (Greene 2011). The discipline of linguistics is riven with conflicts over Chomsky's (1985) postulation of a universal grammar embedded in and generating the ~7,000 human languages with their individual grammars.

In short, this paper contends that the *university* is a hotbed for *adversity*. Philosophy's role in the university is to heighten that adversity by undermining well-established consensus in all research fields by proposing hypotheses that appear to be preposterous and generalised past the bounds of propriety. Philosophy's adversarial role is not an end in itself, however. We believe the point of philosophy's adversity is to promote *diversity* in research methods and programmes throughout the university. In its "turning toward the one", the university must embrace the many. The question to be explored here is whether the university's embrace must extend to the members of the communities in which the university is embedded.

AFRICAN UNIVERSITIES' ETHICAL RESPONSIBILITIES

Du Bois (2001) believed that a primary mission of African American colleges and universities (Historically Black Colleges and Universities, hereafter HBCUs) should be taking the university into its supporting communities (Gutema 2012; Verharen 2012a). In his view, all universities have as their first mission training students to

become professionals who earn their living by solving problems that community members cannot solve for themselves. University-trained professionals are distinct from other professionals because their primary task is to solve those problems that require forms of thinking expressed through abstract symbols. With Plato, Du Bois would argue that "higher education" must immerse itself in the art of abstraction (Verharen 2001). Even surgeons undergo rigorous education in sciences such as chemistry and biology in addition to their more targeted courses in anatomy and physiology; and surgeons are expected to maintain the theoretical competency guiding their operations throughout their careers.

HBCUs have a second mission that extends beyond the objectives of majority institutions of higher education. Du Bois (2001) believes that HBCU graduates have distinct moral obligations to African American and other minority communities burdened with unsolved problems. He goes so far as to say that such graduates should sacrifice highly paid careers in majority communities in order to serve minority communities that justify the continuing existence of black institutions of higher education.

Du Bois's (2001) third mission for HBCUs is provocative. He holds that HBCUs should be the cutting edge of a movement to ensure that virtually everyone should have an opportunity to pursue a college education. Many will respond to this claim as being preposterous. In their view, the vast majority of humans are insufficiently motivated or intelligent to pursue a college degree, and like those who criticised Thomas Jefferson's (2011/1781) proposal that the rich should pay for the education of the poor, many will argue that they have no moral obligation to pay for a university education of someone who cannot herself pay. Du Bois (2001) himself had to overcome his original belief that only the "talented tenth" should undertake a university education. He moderated his views only as his philosophy became increasingly socialist in his later years (Lewis 2000).

Are Du Bois's claims about the moral obligations of HBCUs relevant for assessing the missions of African universities? The extent of moral obligation is a function of community need. The magnitude and extent of the fundamental unsolved problems confronting many African communities, support the idea of a forceful parallel between African and African American universities. A critical question is whether African universities can command the resources necessary to discharge their moral obligations. With the encouragement of Kwame Nkrumah, Du Bois spent his last years in Ghana working on the *Encyclopaedia Africana* (Lewis 2000). He believed that this project could serve as a foundation for a Pan-African curriculum that could serve as a springboard for universal university-level education in Africa.

This paper argues that, given Africa's economic circumstances and infrastructure in Du Bois's time, his aspirations for African and African universities were premature. However, in our own time, Information and Communication Technology (ICT) has the potential to realise his dream, provided financing can be found to inaugurate

universal broadband access in Africa (Sithole, Moses, Davids, Parker, Rumbelow, Molotja & Labadarios 2013). Roughly two billion people in the world now have broadband access (Bowen 2013). Facebook founder Mark Zuckerberg claims that it is a scandal (2013 Internet.org). Both commercial and ethical interests may drive this position (Kizza 2013).

Leading research universities such as MIT and Harvard, Cambridge and Oxford are now streaming their best lecturers' classes for free internet distribution in the form of MOOCs, or Massive Open Online Courses (Bowen 2013). Some of these courses have attracted over 150,000 students (Auleta 2012). Commercial start-ups like Coursera and Udacity offer students the opportunity to take MOOCs for university credit by paying fees to take proctored exams (Bowen 2013).

Unfortunately, high drop-out rates plague MOOCs (Bowen 2013). A possible remedy is a technique called the "flipped classroom", where students watch streamed MOOC lectures before convening in traditional university discussion groups. Two problems arise with this solution. First, it requires a conventional college setting, and many Africans will be barred from that setting by reason of financial circumstances. Second, the model displaces the traditional conception of university professors as both teachers and researchers.

Fortunately, Thrun (2014) poses a possible solution to the MOOC problem. He suggests that emerging technologies will make life-long learning possible through advances in computer-assisted learning. As an intermediate step toward Thrun's proposal, we might ask why a university's ethical responsibilities to its students end with graduation. Why shouldn't universities offer life-long learning to their students? We propose that such a programme might take place through a four-step process. The first step would be to make sure that every African university makes available to its graduates an online alumni magazine that details the university's programmes and successes. The Harvard alumni magazine (http://harvardmagazine.com) moves in this direction but it is designed for popular consumption rather than continuing education. A proper online alumni magazine would include hypertext that defines key research terms and takes readers directly to original research texts.

The second step would include periodic updates of the materials students were exposed to in their university courses. The third step would be for African universities to generate their own MOOCs targeted to communities in which the universities are embedded. The MOOC failure rate (Bowen 2013) makes it clear that MOOCs cannot be successful independently of targeted communities of learning. These communities will require discussion leaders with professional training in solving the problems to be solved in the MOOC course content. This paper suggests that alumni trained in service learning in their undergraduate and graduate experience can serve as discussion leaders in MOOC-based communities of learning situated in the communities for which universities bear ethical responsibility. Such alumni can also

counsel community members on choices of careers and networking and internships that help community members prepare for their own professional careers.

In conclusion, it is proposed that a fourth step would be to support African university research on computer-based expert teaching programmes. In our view the Oxford and Cambridge tutorial systems embody some of the best features of personalised education, but their cost prohibits their deployment in Africa. Finding ways to transform computer games into teaching tools will be one of the most important steps on an African path to universal university education.

PART II

A PROJECTED CURRICULUM FOR UNIVERSITY ETHICAL RESPONSIBILITY: FORT HARE UNIVERSITY IN ALICE AND EAST LONDON, EASTERN CAPE, SOUTH AFRICA

Fort Hare is one university; however, it addresses two distinct constituencies. The first is rural, centred in Alice. The second is urban, located in East London. In its recent history, these two campuses have been "separate but connected". In the future the university must be a "Unity in Diversity" (Locke 1989). The author believes that the university has the research capacity to unite its diverse populations by reducing demarcation lines between the urban and the rural. It is proposed that all Fort Hare students should share a core curriculum in general education. Differences in curricula at the two campuses will arise from specialisations addressing the needs of the two campuses' constituencies. Nevertheless by reason of recent developments in information communication technology (ICT), all specialisations will be available for students on both campuses (Bowen 2013).

Like UNISA, Fort Hare will – as far as possible – present all its courses online. However, unlike UNISA, Fort Hare will make these courses available as Massive Open Online Courses or MOOCs. It is probable that students in residence on the two campuses will have distinct advantages over students whose only access to Fort Hare courses will be online. First, Fort Hare students will experience close personal contact with professors and advanced graduate students in the form of large lecture format for students who have already familiarised themselves with online course content.

Second, it is proposed that Fort Hare students will engage in personal contact seminars and discussion groups led by professors and advanced graduate students. Third, students will form research teams under the supervision of faculty and advanced graduate students in order to prepare themselves for taking capstone courses and executing senior theses and projects that will be mandatory for graduation from Fort Hare.

Fourth, it is recommended that Fort Hare students will conduct service learning under the supervision of faculty and advanced graduate students in the communities of the university's constituencies. The justification for this last requirement for graduation of all Fort Hare students is Du Bois's (2001) philosophy of education for historically black colleges and universities (HBCUs), as we have seen above.

Fifth, Fort Hare University should serve as a model for universal transmission of university-level problem-solving skills to all of South Africa's populations. Given the advanced ICT that makes MOOCs possible and given Fort Hare's historical dedication to solving the problems of the poorest of the poor, Fort Hare has an extraordinary opportunity to act in practical ways to realise Du Bois's dream.

The disadvantages of MOOCs are well known (Bowen 2013), particularly in the areas of student retention, assessment of problem-solving skills, and the disconnection of the learning process from well-established learning communities. For its own resident students, Fort Hare can capitalise on the historical traditions of universities as communities of learning.

Fort Hare's special mission will be to conduct research and experimentation on distributing the virtues of campus community learning to online students. Strategies for the formation of *viva voce* local communities of learning together with smart tutorial artificial intelligence programmes for all MOOC courses will be critical to the success of Fort Hare's development of a MOOC model for universal university-level education.

FORT HARE'S POTENTIAL TO INTEGRATE RURAL AND URBAN POPULATIONS

Toward the beginning of the 20th century, around 95% of the US population engaged in agricultural production. At the end of that century, less than 5% continued in the profession (Conkin 2009). Comparable figures represent occupational distribution in nearly all the industrialised nations. Large-scale industrial agriculture displaces small-scale farmers to the economic margins. In extreme cases over the past centuries, urban wealth has created the economic and political power to evict small-scale farmers and crofters, forcing them to emigrate to foreign countries or urban environments where their lack of urban skills condemns them to impoverished lives.

That pattern continues in virtually all contemporary African nations (United Nations 2014). Powerful nations like Saudi Arabia and China with inadequate agricultural resources fuel the forced migration of African rural populations to the poorest areas of the largest African cities, whether Lagos, Addis Ababa or Johannesburg (Faola & Achberger 2013).

With its twin footprint in urban and rural environments and its commitment to address the problems of its poorest constituents, Fort Hare University has an unparalleled opportunity to address the urbanisation of the rural poor. The university

can conduct the research necessary to give its constituents the choice of living in rural or urban environments, or indeed of flexibly interchanging the two in their lives. Three global developments make this new range of choices possible. The first is the expansion of ICT capacity to rural areas. Urban populations already experience the freedom engendered by this development in their ability to work from home rather than in an office, through the power of the internet. Physical location of the work force dedicated to electronic operations, whether call centres, data storage and processing centres, or virtual conferences, is to an increasing degree an unimportant consideration.

The second development is the burgeoning global presence of MOOCs that may provide anyone anywhere in the world with computer or even cell phone broadband access, the ability to acquire a university-level education. To achieve its full research potential, Fort Hare must address a significant portion of its research to solving the manifest problems of MOOCs.

The third development is increasing global emphasis on urban farming. Concerns about global climate change, transportation costs for agricultural produce, and human alienation from the environment, have increased interest in urban farming technologies such as greenhouses and window-box hydroponic gardens. Because of its dependence on oil from foreign nations and its economy depressed by the US economic embargo, Cuba's universities have devoted significant research to the potential of urban farming (Clouse 2014).

With a concerted research effort dedicated to making broadband connectivity available to all Eastern Cape rural populations, and to the development of user-friendly MOOCs supported by smart tutorial programmes and the systematic organisation of local discussion groups, this paper asserts that Fort Hare has the potential to be a global leader in integrating rural and urban populations.

THE FORT HARE UNIVERSAL GENERAL EDUCATION CURRICULUM

Traditional European university education grounded itself in the trivium and quadrivium (De Ridder-Symoens 2003). The trivium emphasised the arts of communication with a focus on grammar, logic and rhetoric. The quadrivium carried those arts into application in the areas of arithmetic, music, geometry and astronomy. We contend that a truly universal university curriculum must cover not simply these seven subjects, but all possible disciplines.

The author acknowledges that, given its limited financial resources, Fort Hare cannot include all possible subjects in its curricular offerings. However, some intellectual skills are so basic that every student must have a firm grasp of those basics. The European university curriculum is successful in that it can be conveniently divided into those subjects whose primary task it is to teach students how to relate

symbols to other symbols, and subjects that teach the application of symbol sets to the wider areas of experience.

MATHEMATICS

The author believes that the most general study of organising sets of symbols to display all possible relationships is mathematics. The difficulty in teaching mathematics is its degree of abstraction. Mathematics describes the relationships of all possible relationships without paying any attention to the kinds of actual objects that might be related with these systems of relationships. "*1 + 1 = 2*" is true for all possible sets of objects, no matter whether apples or oranges or any other kinds of objects are under consideration. The projected curriculum proposes that all Fort Hare students should have a highly developed set of skills in theoretical mathematics that will enable them to apply mathematical models to real-world problems. Fort Hare general mathematics should cover both number theory (arithmetic at the college level) and group or set theory (algebra, geometry, trigonometry and calculus) and statistics to the degree that students have not covered these areas in their previous levels of education. The most radical college-level introductions to mathematics will include topology, if instructors can show how the principles of topology may be applied to real-life problems.

Because of the abstract nature of mathematics, these subjects should be taught in the context of their application to real-life problems. Students majoring in mathematics should be exempted from this precept for obvious reasons. Even students who are not majoring in the physical or social sciences should have sufficient grounding to enable them to assess statistical or calculus-based claims bearing on the problems that must be solved for the Fort Hare constituent communities.

It is recommended that Fort Hare graduates, regardless of their disciplinary specialisations, should be able to assess economic policy proposals in all areas affecting the well-being of their constituents. They should be able to assess the mathematics underlying claims about Global Climate Change threats and proposed interventions (Gardiner 2011). Collaboration among physical and social science and mathematics faculties would be critical to developing new courses in mathematics that give Fort Hare students these competencies.

LOGIC

Sometimes called "critical thinking" or "principles of reasoning" (Hurley 2014), logic is in one sense simply the branch of mathematics that focuses on set theory. Logic at its most abstract reaches is a branch of mathematics focusing on the relationships

of classes (ibid). However, logic taught as a required course in most universities, concentrates on abstracting the logical structure of arguments in ordinary language for ease of critical analysis. Logic textbooks conventionally have three sections. The first focuses on the nature and limits of language, with a special concentration on "informal fallacies", or the logical errors most commonly found in uncritical ways of thinking: hasty generalisation, appeal to authority, false causation and the like.

The second section of conventional logic textbooks generally focuses on abstracting the logical structure of arguments in ordinary language to put them in symbolic form for the purposes of analysis (Hurley 2014). The classical form was the analysis of the syllogism (for example: All men are mortal; Socrates is a man; therefore Socrates is mortal) through sets of rules and simplified diagrams (for example, Venn diagrams). The more recent form is reducing sentences (for example, "the streets are wet") to symbols (for example, "let 'q' represent 'the streets are wet' ") and relating sentences with logical operators (for example, "and" conjoins two sentences and is represented by a period; "either/or" separates two sentences and is "represented by a 'v' ". Reduced to their most basic logical structure, arguments are analysed by elementary truth tables or generalised rules for analysis (ibid).

The third section of conventional logic textbooks generally focuses on the logical analysis of arguments in scientific discourse (Hurley 2014). This section demonstrates the limitations of inductive arguments and shows how deductive arguments in science must be based on inductive arguments. Well-taught, this section shows the provisional nature of scientific theories and laws. The best logic texts demonstrate how Einstein's theories of relativity have replaced classical Newtonian mechanics, even though the latter is still used for orbital computations for space vehicles. They also demonstrate the limitations of social science theories inasmuch as they are currently restricted to statistical empirical evidence (ibid).

The projected curriculum proposes that collaborative deliberation among all Fort Hare faculties would be necessary to determine whether all Fort Hare students should be required to take a logic course, or whether its separate functions might be distributed among philosophy, mathematics, physical and social science and language courses (Kher 2013). The primary consideration is that all Fort Hare graduates would be expected to be competent in analysing arguments for structural soundness and in evaluating conclusions for their truth status − in all of their respective specialisations and in their roles as problem-solvers for their constituencies.

LANGUAGE

Deeply innovative theorists of language like Chomsky claim that the structures of all ordinary languages like Xhosa and English can be reduced through logical and

mathematical analysis to a universal grammar that is the foundation of all human languages (Chomsky 1985). Unfortunately, Chomsky's project is still in the theoretical stages and is therefore hotly contested. In the meantime, it is suggested that Fort Hare students must be thoroughly versed in the particularities of the languages that make communication possible with one another, with their constituent communities, and with the global community of learning.

The issue of language must be one of the most important and most contentious facing Fort Hare as it moves toward creation of a new general education curriculum for Alice and East London students. Ideally, Fort Hare students with a robust "grammar" school and secondary school education will have an excellent command of their home languages and English as the current global medium of communication. However, this paper argues that education in other languages as the bedrock of the cultures that are carried through time by those languages, is one of the most powerful ways of stimulating the imagination and creativity of students who have the leisure and economic resources to acquire new languages.

Given the political and economic interest of nations outside of Africa in Africa's human and natural resources, it is imperative that Fort Hare students have access to languages such as Chinese, Arabic and Hindi. Given the efforts of nations like Saudi Arabia, Turkey, China and India to buy or lease land in impoverished African nations in order to feed their own peoples, we contend that learning those critical languages is an act of self-defence for students in African nations whose home language is not Arabic (Stiglitz 2003).

In the author's view, the principles governing language instruction at Fort Hare are twofold. First, the instruction must allow the students to advance in all fields the cultures supported by their home languages. Second, the instruction must give the students access to global learning through all available ICT. It is acknowledged that the economic resources available to Fort Hare will dictate the shape of language instruction curricula.

FINE AND PRACTICAL ARTS

If Fort Hare students have a thoroughly practical command of the ability to relate symbols to other symbols in the fields of mathematics, logic and language, their efforts to apply these disciplines to solving the problems of their communities in specialised fields will be well grounded. The most practical application will be found in the fields of the fine and practical arts. The former embraces music, theatre, film, the plastic arts of painting and sculpture, and now computer-generated art. The latter include all the professional fields such as business, law, health care (including medicine, nursing, radiology, and dentistry), architecture, engineering and computer science, agriculture to name just a few. Fort Hare's ability to offer degrees in these manifold fields will be dependent on its economic resources. However, the allocation

of those resources should depend on what Fort Hare's constituent communities require to advance their survival and flourishing (Verharen, Tharakan, Bugarin, Fortunak, Kadoda & Middendorf 2014b).

Proper education in both the fine and practical arts will depend on Fort Hare's capacity to ground its students in the more theoretical pursuits that serve as the foundation for the arts. No discipline can be adequately taught without a careful grounding in its history and philosophy. The former shows the development of the discipline over time and the latter highlights the radical innovations that have reshaped the practice of the discipline and pointed it in new directions for the future. Finally, the proper execution of the arts remains completely dependent upon the knowledge generated by the physical and social sciences.

HISTORY

The term *history* comes from the ancient Greek word for learned or wise man. Like the griot in West African cultures, the historian's responsibility is the complete record of human experience in all fields of endeavour. Unlike the fine or practical artist, the historian's task is twofold (Braudel 1982). First, the historian must record the particularities of human experience in intimate detail. Second, the historian moves toward a generalisation of particular kinds of experience through comparison and contrast. Historians define themselves by their dedication to each of these tasks.

Recent historians have turned away from recording the grand narratives of state or nation or empire politics and economics to the minute details of baptismal records, housing and land ownership, work and gender experience (Braudel 1982). Other historians call into play the most general theories of the physical and social sciences to attempt to describe and in the most extreme cases to predict the course of human experience. It is recommended that the Fort Hare historian be responsible for the self-knowledge of the university's constituencies in their relations to current global expressions of culture. The Fort Hare history and anthropology faculties must collaborate to present an accurate historical record of their constituent populations' cultures. Philosophy and science faculties must collaborate with history and arts faculties to deliberate together with community constituents on ranking the urgency of community problems to be solved and the directions those solutions should take the constituent communities in the future.

PHYSICAL AND SOCIAL SCIENCES

Scientists move past historical records of actual, lived experiences to generalise over the whole of experience in specific areas. To make this point more graphical, a natural historian or a historian of nature might record the exact features of unique historical events, such as Galileo's apocryphal timing of the fall of cannon balls of different weights from the Leaning Tower of Pisa. Scientists studying gravitational

phenomena will attempt to devise a universal description of all falling bodies, not simply the fall of cannon balls, and express that description in symbolic form: $S = 1/2\ gt^2$, where S is the distance any falling body will traverse and g is the gravitational constant of 32 feet per second or 9.8 metres per second; "t" is the time of fall squared.

Just as the historian generalises over the work of practical and fine artists, while still preserving a particular record of their unique efforts to reorganise experience, so the scientist generalises over the work of the historian. The general nature of scientific descriptions permits us to predict the future and thereby gives us the power to control our experience.

Faculties in physics, biology and chemistry must develop courses that will allow Fort Hare graduates to monitor developments in those fields that will enhance their ability to help their constituents solve their most pressing problems in the areas of clean air, temperature control through clothing and shelter, pure water, nutritious food and basic healthcare and education (Verharen, Tharakan, Middendorf, Castro-Sitiriche & Kadoda 2013). Courses in these three fields should be intimately linked to courses in practical arts such as chemical engineering, law and architecture.

Faculties in economics, psychology, sociology, anthropology and government must develop courses that will enable Fort Hare students to keep up with the new literature emerging in these fields and to apply the theoretical principles of the fields to the solution of Fort Hare constituents' problems.

Fort Hare faculties have the responsibility to develop new courses with new texts that integrate theory and practice. However, there can be no overemphasis on the practical at Fort Hare. The bitter dispute between Booker T. Washington and Du Bois (2001) on the merits of practical versus theoretical learning must be resolved in former historically disadvantaged institutions in South Africa, which understand that the most theoretical revolutions have - in the long run - the most practical consequences.

It is proposed that Fort Hare faculties must engage in continuous debate on the relation of theoretical and practical courses in the Fort Hare curriculum. Given the urgent problems of Fort Hare's constituent communities in securing their survival and flourishing, practical research might appear to be the first consideration for the community. However, Fort Hare is responsible to its constituents not simply for the present, but for the future. A projected future that is not deeply grounded in theoretical considerations is by its very nature impotent to carry communities into a viable and dynamic future.

PHILOSOPHY

Philosophy undertakes the solutions of problems that initially appear not to have any possible consensual solution (Verharen 2012d). Philosophy addresses humanity's

four most pressing questions: how and why did we come to exist; how should we live; and what hope may we have for the future (Verharen 2014a). Science attempts to answer those questions in consensual ways. Nevertheless, while scientists like Hawking (in Hawking & Mlodinow 2010) and Pinker (2011; 2013) claim that science has now taken over philosophy's roles, no scientific consensus has emerged on the origins and nature of the universe, let alone those of life and the best ways to live.

The task of the philosopher is to propose astounding new ways to live life and to lay the groundwork for utterly improbable new creations of knowledge (Collins 1998). Hindu philosophers made the claim some 3500 years BP that our only mission as human beings is to realise that we are "One with God" (Koller 2011). 2500 years BP the Buddha claimed that our only mission is to stop suffering, both human and animal (ibid). Plato uttered the preposterous claim that our mission is to stay in school for our entire lives, learning how to perform higher and higher-order abstractions (Kenny 2007).

Aristotle more comfortably proclaimed that our mission is to achieve happiness, defined as excellence in habitual action (McEvilley 2002). Greek Sophists, the Chinese philosopher Mo Di, Christ and Indian thinkers claimed our mission is to build a global community grounded in universal, unconditional love (ibid). Early Greek hedonists and 18th century English utilitarians focused on pleasure as the meaning of life (Kenny 2012). Under the influence of Kant and Hegel, Marx said our mission is to build a global community grounded in universal, unconditional freedom (ibid). The most ancient philosophers in Egypt and Ethiopia claimed our mission is to advance universal harmony throughout existence (Verharen 2012c).

These claims so struck their first listeners in their home cultures as both preposterous and seditious that their first response was murderous rage – culminating, for example in the executions of Socrates and Christ and in the more recent murders of Gandhi, King, Malcolm X and Biko. The author contends that philosophy excites rage because, unlike religion, it subjects all beliefs to incessant criticism. That criticism is based on the ability of the human brain to assess its beliefs in seven fundamental ways: first, through interrogation of the meanings of symbols; second, testing the correspondence between belief and fact; third, assessing the presence of contradiction; fourth, examining the practicality of beliefs; fifth, expanding the comprehensiveness of beliefs; sixth, striving to reduce the numbers of symbols required for the presentation of beliefs; and seventh, intensifying the capacity of beliefs to generate their successors (Verharen et al. 2013).

Philosophy can be regarded as the cutting edge of the creation of new knowledge (Verharen et al 2014a). Some philosophical guesswork gradually turns itself into science or the global core of knowledge on which we have achieved some degree of consensus. But the most foundational philosophical guesswork about how we should understand and live our lives has never achieved global consensus. Our philosophies

shape our lives and at this critical pass in the human record our philosophies will determine whether humanity has the power to avert the possibly terminal crisis of its self-caused sixth mass extinction (Kolbert 2014).

A PAN-AFRICAN CURRICULUM FOR AFRICAN UNIVERSITIES

This paper argues that in populations subjected to slavery, feudalism, colonisation, and now globalisation, recovering philosophy as the foundation of a culture's life is imperative. Because of the lack of written records for many of Fort Hare's constituent cultures, recovering indigenous philosophies requires the collaborative efforts of anthropologists and philosophers who are attuned to the presence of philosophy in all cultures, whether through literature or orature.

Professor Oruka at the University of Nairobi developed a methodology for uncovering philosophy in oral cultures (Gutema & Verharen 2012). Using the example of Professor Sumner, long-term philosophy professor at the University of Addis Ababa, Professor Gutema and the author modified Oruka's approach to explore the philosophies of the Oromo culture, the largest ethnic group in Ethiopia. The results are published in *African Philosophy in Ethiopia* (Gutema & Verharen 2012). The work is largely based on the research of Professor Megerssa, a social anthropologist based at Addis Ababa University. Social anthropologists at Fort Hare will have access to extensive anthropological field work on cultures for which the university assumes historical responsibility.

A team including Lukhele-Olorunju and Muchie (both at Tshwane University of Technology), Bank (Fort Hare University/East London), Gutema (Addis Ababa University) and Verharen (Howard University), is working to encourage the extension of that kind of research to a wide number of cultures across Africa. Our conviction is that all Africans, should have access to the indigenous knowledge systems of their home cultures. Self-knowledge must begin in the context of one's own culture before it expands to encompass what is rapidly becoming a global culture grounded in humanity's six thousand years of written history.

Just as UNESCO funded the research that produced the nine volume study of African history from an African perspective, so the African Union should support the research that sets a foundation for a Pan-African curriculum that is responsive both to Africa's global historic and future roles and to African citizens' self-identification in the context of their local cultures.

LIST OF REFERENCES

Auleta, K. 2012. "Annals of higher education: Get rich U." *New Yorker,* 30 April: 38-47.

Bowen, W. 2013. *Higher education in the digital age*. Princeton University Press.

Braudel, F. 1982. *The structure of everyday life: Civilization and capitalism, 15ᵗʰ-18ᵗʰ century, volume ,* translated by S. Reynolds. New York: Harper and Row.

Chomsky, N. 1985. *The logical structure of linguistic theory.* University of Chicago.

Churchland, P. 1989. *Neurophilosophy: Toward a unified science of the mind-brain.* Cambridge: MIT Press.

Clouse, C. 2014. *Farming Cuba: Urban agriculture from the ground up.* Princeton, New Jersey: Princeton Architectural Press.

Collins, R. 1998. *The sociology of philosophies: A global theory of intellectual change.* Cambridge, MA: Belknap.

Conkin, P. 2009. *A revolution down on the farm: The transformation of American agriculture since 1929.* Lexington, Kentucky: University of Kentucky Press.

De Ridder-Symoens, H. 2003. *A history of the university in Europe: Volume 1, Universities in the Middle Ages.* Cambridge University Press.

Du Bois, W.E.B. 2001. *The education of black people: Ten critiques, 1906-1960,* edited by H. Aptheker. New York, NY: Monthly Review Press.

Du Bois, W.E.B. 1903. The talented tenth. http://teachingamericanhistory.org/library/document/the-talented-tenth/ (accessed on 10 September 2015).

Faola, T. & Achberger, J. 2013. *The political economy of development and underdevelopment in Africa.* New York: Routledge.

Gardiner, S. 2011. *A perfect moral storm: The ethical tragedy of climate change.* Oxford University Press.

Greene, B. 2011. *The hidden universe.* New York, NY: Vintage.

Gutema, B. 2012. Some thoughts on the African university. In Gutema, B. & Verharen, C. (Eds). *African philosophy in Ethiopia*, 17-28 Washington, DC: Council on Research in Values and Philosophy. Washington, DC. http//www.crvp.org/book/Series01/master-ethiopia.pdf (accessed on 24 February 2013).

Gutema, B. & Verharen, C. 2012. African philosophy in Ethiopia. Washington, DC: Council on Research in Values and Philosophy. Washington, DC. http//www.crvp.org/book/Series01/master-ethiopia.pdf (accessed on 24 February 2013).

Hawking, S. & Mlodinow, L. 2010. *The grand design.* New York: Bantam Press.

Hofstadter, D. 1979. *Gödel, Escher, Bach*: *An eternal golden braid.* New York: Basic Books.

Hurley, P. 2014. *A concise introduction to logic.* Boston: Wadsworth.

Huxley, A. 1954. *The doors of perception and heaven and hell.* New York: Harper and Brothers.

Jefferson, T. 2011 [1781]. *Notes on the State of Virginia.* Chapel Hill: University of North Carolina Press.

Kenny, A. 2007. *Ancient philosophy: A new history of Western philosophy, volume 1.* Oxford University Press.

Kenny, A. 2012. *A new history of Western philosophy.* Oxford University Press.

Kher, M. 2013. "Studying issues related to industry and technology: A journey into interdisciplinarity." *African Journal of Science, Technology, Innovation and Development* 5(1): 171-175.

Kizza, J. 2013. "Mobile money technology and the fast disappearing African digital divide." *African Journal of Science, Technology, Innovation and Development* 5(5). DOI: 10.1080/20421338.2013.829298.

Kolbert, E. 2014. *The sixth extinction: An unnatural history.* NY: Henry Holt.

Koller, J. 2011. *Asian philosophies.* Upper Saddle River, New Jersey: Pearson.

Lewis, D. 2000. *W.E.B. Du Bois: The fight for equality and the American century* 1919-1963. New York: Henry Holt.

Locke, A. 1989. *The philosophy of Alain Locke: Harlem renaissance and beyond.* L. Harris (Ed). Philadelphia: Temple University Press.

Mayr, E. 1993. *Charles Darwin and the genesis of modern evolutionary thought.* Cambridge: Harvard University Press.

McEvilley, T.C. 2002. *The shape of ancient thought: Comparative studies in Greek and Indian philosophies*. New York: Allworth Press.

New York Times 2008. Congo's death rate unchanged since war ended. http://www.nytimes.com/2008/01/23/world/africa/23congo.html? (accessed on 11 September 2015).

Pinker, S. 2011. *The better angels of our nature: Why violence has declined*. New York: Viking.

Pinker, S. 2013. "Science is not your enemy: An impassioned plea to neglected novelists, embattled professors and tenure-less historians." *New Republic*, August 6. http://www.newrepublic.com/article/114127/science-not-enemy-Humanities (accessed on 29 September 2013).

Rorty, R. 2009a. From religion through philosophy to literature: The way Western intellectuals went. *http://www.crvp.org/book/Series04IVA-30/chapter-6-htm.* (accessed on 10 July 2010).

Rorty, R. 2009b. Philosophy as a transitional genre. http://mitpress.mit.edu/books/chapters/0262025671 (accessed on 10 July 2010).

Sithole, M., Moses, C., Davids, Y., Parker, S., Rumbelow, J., Molotja, N. & Labadarios, D. 2013. "Extent of access to information and communications technology by the rural population of South Africa." *African Journal of Science, Technology, Innovation and Development* 5(1): 71-84.

Stiglitz, J. 2003. *Globalization and its discontents.* New York: Norton.

Toynbee, A. 1934-1961. *A study of history. http://nobsword.blogspot.com/1993_10_17_ nobsword_archive.html* (accessed on 11 September 2015).

Thrun, S. 2014. Credentials that work. *McKinsey Report. http://mckinseyonsociety.com/sebastian-thrun-udacity-credentials-that-work/* (accessed on 27 February 2015).

United Nations. 2014. Agriculture in Africa: Transformation outlook. http://www.un.org/africarenewal/sites/www.un.org.africarenewal/files/Agriculture%20in%20Africa.pdf (accessed on 11 September 2015).

Verharen, C. 2001. "What they lose on earth by being black: Du Bois and the future of African American education." *C.L.R. James Journal* 8(2): 121-151.

Verharen, C. 2012a. Philosophy and the Future of African Universities: Ethics and Imagination. *African Philosophy in Ethiopia*, B. Gutema and C.C. Verharen (Eds), vol. 1 of series, *Philosophy in Africa Now.* Addis Ababa University Philosophical Studies, 3-10. Also available at Washington, DC: Council on Research in Values and Philosophy. http//www.crvp.org/book/Series01/master-ethiopia.pdf (accessed on 24 February 2013).

Verharen C. 2012b. Sage philosophy, rationality and science: The case of Ethiopia. In *Philosophy in Africa now: African philosophy in Ethiopia.* B. Gutema & C.C. Verharen (Eds). Washington, DC: Council on Research in Values and Philosophy. http//www.crvp.org/book/Series01/master-ethiopia.pdf (accessed on 24 February 2013).

Verharen, C. 2012c. Comparing ancient Egyptian and Oromo philosophy. In *Philosophy in Africa now: African philosophy in Ethiopia.* B. Gutema & C.C.Verharen (Eds). Washington, DC: Council on Research in Values and Philosophy. http//www.crvp.org/book/Series01/master-ethiopia.pdf (accessed on 24 February 2013). Also published in *Journal of Oromo Studies,* 15(2): 1-31, 2008.

Verharen, C. 2012d. "Ancient Africa and the structure of revolutions in ethics: A prolegomenon for contemporary African political philosophy." *Philosophia Africana* 14(1): 1-21.

Verharen, C., Tharakan, J., Middendorf, G., Castro-Sitiriche, M. & Kadoda, G. 2013. "Introducing survival ethics into engineering education and practice." *Science and Engineering Ethics* 19(2): 599-623.

Verharen, C., Gutema, B., Tharakan, J., Bugarin, F., Fortunak, J., Kadoda, G., Liu, M. & Middendorf, G. 2014a. "African philosophy: A key to African innovation and development." *African Journal of Science, Technology, Innovation and Development* 6(1): 3-12.

Verharen, C*.,* Tharakan, J, Bugarin, F., Fortunak, J., Kadoda, G. & Middendorf, G. 2014b. "Survival ethics in the real world: Research universities and sustainable development." *Science and Engineering Ethics* 19(2): 599-623.