Introduction

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The present issue of *Africa Development* is dedicated to CODESRIA’s fortieth anniversary and carries articles on the very idea that generated creative debates that led to the realisation of CODESRIA itself. CODESRIA was founded in 1973 by the intellectual visionary, Samir Amin. The acronym CODESRIA, standing for the Council for the Development of Social Science Research in Africa, is self-explanatory. CODESRIA is concerned about pursuing the very necessary goal of social science research in Africa. Such was necessary in the early days of post-colonial Africa when the ex-colonial powers enjoyed the monopoly in disseminating information on Africa’s societies. The importance of empirical social knowledge is easily understood when one recognises that the colonialists established research organisations such as the Royal Africa Society in the case of Britain and the Institut français de l’Afrique noire – later changed to Institut fondamental de l’Afrique noire – in the case of France. The goal was to gather and interpret information on African societies in all areas so as to better coordinate the colonial enterprise.

Under these circumstances there was a two-stage approach to the gathering of information. First, there was the formulation of theoretically founded interpretive frameworks into which empirically observed data was inputted. These theoretical formulations covered all the then existing social sciences; but in a number of instances, they were modified for the tasks at hand. Thus, sociology was morphed into anthropology to distinguish the study of African societies from that of European societies. There were also African history and African linguistics; though it must be pointed out that the economics and politics of African societies were covered under the broad rubric of anthropology.

Under such circumstances, the improvised theoretical framework used to describe and explain African realities was founded on theoretical constructs that were designed to express meanings and significations for societies that were qualitatively different from those of a colonising Europe. These theoretical constructs required their own specific lexicons.

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The basis for the differential analysis derived from the fact that the African societies that were being colonised were not as technologically advanced as those of Europe. On account of this, the colonisers maintained a status quo of technological imbalance that allowed the material exploitation of Africa’s resources. This was the basis for the development of the key social science of biological anthropology of which physical anthropology was a macroscopic expression. Theories of biological race were henceforth developed which were used to explain the technological gaps between Europe and its colonies in Africa.

The colonial anthropological argument was that individuals of African ancestry were not on evolutionary par with the rest of humanity on the basis, especially, of cranial analysis. An appropriate lexicon was developed to explain the sociology of this portion of humanity. Terms such as ‘tribe’, ‘negro’, ‘negroid’, ‘caucasoid’, ‘Hamite’, ‘hamitic’, ‘chief’, ‘bride-price’, ‘negro Africa’ (now euphemistically referred to as sub-Saharan Africa), etc. were duly introduced into the descriptive analysis.

An interesting aspect of all this is that whereas in the West the different aspects of human behaviour were studied under the distinct social sciences such as economics, history, political science, etc., this was not the case with colonial research on Africa. All research efforts of whatever nature were bundled together under the heading of ‘anthropology’. This, of course, is not in any way to support the way intertwined aspects of human social behaviour are treated by separate sciences in contemporary Western social science. Thus suffice it to say that in the study of African society during the colonial period, two foundational concepts – race and ethnic group (normally referred to as ‘tribe’) – were crucial in this regard. A number of European scholars became prominent in this engagement as they studied and interpreted the social, cultural and spiritual life of African society in all its dimensions and usually under the rubric of ‘anthropology’. The stage was set for the racial paradigm with the work by Arthur de Gobineau (1853-1855) in his ‘An Essay on the Inequality of the Human Races’. The colonial era began in earnest not long after following the Berlin Conference (1885). In the case of Africa specifically, the signature work in terms of the racial paradigm was that of Charles Seligman, with his The Races of Africa (1930), according to which the so-called ‘caucasoid Hamites’ were accorded distinction of being the bearers of civilization in Africa. The so-called Hamitic hypothesis was based on pure imagination but it fitted well with the colonial enterprise and the cultural narcissism of a then dominant Eurocentric scholarship about Africa.

This fallacious theory was so well believed that it led to an actual race-based sociology in the case of Rwanda and Burundi. Similar race-based
considerations were applied in the analysis of the languages of Africa. Westermann and Meinhoff classified the languages of Africa according to the principles of the Hamitic hypothesis. Thus, the languages of the Hamites were not subject to strict linguistic analysis to establish real family affiliations but were a priori shunted off to the language grouping of ‘Hamitico-Semitic’. The other languages of Africa were simply labelled ‘Negro languages’.

Given that there were no established modern research centres in Africa – except in the case of South Africa – Eurocentric research gained almost universal acceptance by default. Similar considerations applied to the analysis of what could be paraphrased as ‘African modes of thought’ as was explored by colonial theorists such as Levy-Bruhl (1922) with his La mentalite primitive, later seconded by E.E. Evans Pritchard (1937) and his Witchcraft, Oracles and Magic Among the Azande. Over time, the social scientific analysis of Africa became more nuanced as the idea of decolonisation advanced. In the areas of Anglophone expression the ideas of Robin Horton became well known and debated. His Patterns of Thought in Africa and the West (1997) [a collection of Horton’s papers] makes for interesting reading as he debated the ideas of stalwarts who wrote substantially on the sociologies of Africa, from social structures to thought patterns.

But, all in all, the social scientific research literature on Africa was dominated by researchers of colonial provenance. It was at the dawn of formal independence that journals such as Presence Africaine began to publish the ideas of those who were at the receiving end of colonial ideologies. This new beginning also witnessed the publication of antithetical, path-breaking works, such as those produced by Frantz Fanon (The Wretched of the Earth 1958; Black Skin, White Masks 1956). Add to this the works of Cheikh Anta Diop, noted for his critiques of orthodox Eurocentric research on Africa in all of the social sciences from anthropology to linguistics. His iconoclastic work Nations nègres et culture (1958) was duly rejected by the doctoral examiners at the Sorbonne. The work was, however, published later by Présence Africaine. Then there were the works on political economy all with a Pan-African orientation published by Diop (1987) and Nkrumah (1963) when he was President of Ghana. The orthodox Eurocentric thesis was being challenged on all social scientific fronts by an African anti-thesis.

This is not to say that research in the social sciences is alien to Africa. Historians’ ideas would all point to Ibn Khaldun’s Al Muqaddimah (1377) and its pioneering work in history, sociology, and economics. Then there the various Tariqs produced in medieval Ghana-Mali-Songhay, of which the
works of Kati and Sadi are well known. The University of Tomboctou had a significant roster of scholar-researchers including the acclaimed Ahmed Baba and his set of publications in the social sciences and jurisprudence.

Given that a tradition of research is not alien to Africa, it is already recognised that research in the social sciences is of utmost importance if Africa is to compete effectively with other areas of the globe. CODESRIA is, of course, doing its part. It is now incumbent on other institutions to take the cue from CODESRIA and to make their needed contributions. As of now, African research in the social sciences is less than three per cent of total world output. Maximum output hails from the Euro-American world despite the ongoing efforts from African institutions. Thus, there is need for more concerted commitment from those institutions and governments that are capable of participating in this ongoing enterprise. The goal is to create societies that are sufficiently independent to be self-regarding and self-sufficient in most areas as are the nations of Euro-America. To attain this goal requires information about societies in Africa that is internally generated and disseminated. This would require three conditions: (i) increased funding for more universities and research institutions, (ii) more university and private publishing houses, and (iii) more Pan-African journals that would attain international repute. Though there has been improvement in the three areas mentioned above, there is still large gap to be filled.

The key social sciences that offer insights and information on contemporary Africa are political economy, political science, anthropology and history. The colonial statements on Africa placed more emphasis on anthropology – as the key explanatory social science – and history than on political economy and political science since these latter two were incorporated into the economics and politics of the colonising nation.

It is a fact that though social science research on Africa presented itself as objective in content, it was heavily value laden. The theoretical structures on which it was founded and the theoretical terms used to evaluate had the ingrained intent of reifying and justifying certain material conditions and circumstances in favour of colonial dominance. The function, therefore, of post-colonial social science would be to engage in research that would be more objectivist in nature, thereby correcting the ideological excesses of metropolitan social science and with the goal of producing a social science that would have as its objective the offering of recommendations for optimal social systems for African societies that now exist in a world of novel technological ideas and structures. The solutions offered would no doubt deal with each received social science singly. In this context, discussion of anthropology, history, political science, and political economy follows.
We begin by noting that colonial anthropology was essentially founded on principles of ‘race’. The question for increased African research into the anthropology of Africa is whether there is any genuine objective validity for it. The fundamental question is: ‘does race exist’? In fact, despite attempts at debating the issue, the idea of race as an objective social marker is still much in practice. The dominance of the post-colonial literature on Africa is much in evidence when Western funding agencies such as the IMF and the World Bank are considering the prospects of African countries. Only pseudo-racial considerations explain the bifurcation of the political economies of the African continent into ‘Sub-Saharan’ Africa (SSA) and ‘Middle East and North Africa’ (MENA). Surely, the economic interactions between, say, Senegal and Morocco are much greater than that between Iran and Morocco. It should be noted too, in this regard, that African researchers for the most part casually accept this Western geopolitical structuring of the African continent. One expects that more critical research from African researchers would argue for more rational and objectivist statements on the peoples of Africa.

The casual appellation for Africa’s linguistic and other groupings is commonly that of the sociology of the ‘tribe’ still described according to the intricacies of ‘kinship’ linkages. Are such qualifications justified or not? A more scientifically disposed social science research would operate on the principle that more epistemologically robust results would be obtained if more universalist and comprehensive the theoretical terms were used. In other words terms such as ‘tribe’ and ‘kinship’ become more scientifically acceptable the more they are applied universally in whatever society. Thus, one would expect under these circumstances to see such relational terms applied not only with regard to African society but similarly with Western societies. It would also would, for instance, be a meaningful question to ask about any intra-national tribal groupings in France or Spain. In the same context, one would want to know about the structures of kinship relations in Germany. If such terms were not explanatorily adequate then alternatives would be investigated.

Similar issues arise concerning the structuring of the linguistics of Africa. Classifying languages according to the Hamitic hypothesis has been shown to be theoretically faulty. Joseph Greenberg has introduced a different model according to which a novel nomenclature has been formulated to describe Africa’s languages. One instance of that is the old ‘Hamito-Semitic’ language grouping being transformed into ‘Afro-Asiatic’ by Greenberg who is viewed by language theorists of Africa as having developed the extant paradigm for the classification of Africa’s languages.
The African contribution to language classification in Africa has been mainly that of Cheikh Anta Diop and Theophile Obenga, but there has been little continuity along these lines. Greenberg’s thesis remains essentially unchallenged, with some modifying input by Christopher Ehret. The ‘Afro-Asiatic’ model remains in vogue despite the fact that all members of that linguistic grouping are indigenously African with the exception of Arabic, which being of Semitic classification has its proto-Semitic roots in East Africa (Ehret 1995). There is much basis for critical analysis in this instance on the part of African researchers.

In the case of history the situation is more balanced. During the colonial times the issue of whether there was an African history was one of much contention. It could be assumed that what was meant was whether there were events in the macro-political sense of the term ‘history’. There were numerous such events from North Africa to Southern Africa. One set of such events were the state formation events that led to the founding of states such as medieval Ghana, Mali, and Songhay. And before that there was the chronicled history of the Egypto-Nubia complex that had its recorded inception some three thousand years earlier. In the southern part of the continent, there were historical movements that were recorded as oral history too. But the recorded histories of other parts of the continent were archived in written texts. The various Tariqs by authors such Kati and Sadi inform on the events that took place in the areas just north of the Equator over a substantial time period. Before that, of course, the Ibn Khaldun text, *Al Maqadima*, published in 1373 offered a detailed history-cum-sociology of Africa north of the Equator.

These facts did not, however, impede European writers such as Hegel from formulating their own versions of African history which he expressed in his *Philosophy of World History* (1837, 1975). The Hegelian thesis was that regardless of events that took place there, African history was just not an integral part of world history. The same trope was assumed by British historian Hugh Trevor-Roper when he argued that no African history of note existed other than that made when Europe entered Africa on its colonising mission. In a set of lectures delivered at the University of Sussex in 1963 (later reprinted in the *Listener* magazine, November and December 1963), Trevor-Roper argued that history as ‘purposive action’ could not be discerned from events in so-called ‘black Africa’. This Hegelian approach to African history has indeed been rectified; but a set of problems still remains. No specific schools of African historical writing according to research paradigms have been developed. There is little recognition of the fact that African history could be approached from a Pan-Africanist angle.
as was the case of Cheikh Anta Diop or from the local particularist angle as is the case with most African historians in contemporary times. Diop’s *L’Afrique precoloniale* and *L’unité culturelle de l’Afrique noire*, together with Joseph Ki-Zerbo’s *Histoire de l’Afrique noire*, constitute good examples of the Pan-Africanist approach to African history. But such approaches are rare given the petty nationalisms that are the post-colonial vogue in Africa in contemporary times. Another problem is that the writing of African history has been structured along the lines of the colonial model. So-called Francophone historians hardly ever research topics out of the ex-French colonial areas and vice-versa. And even so, the research topics are locally derived. West African historians are not particularly known to write the histories of East Africa, North Africa, or Southern Africa and vice versa. Nor have West African historians extended the colonial model of African history to cover the continuation of African history across the Atlantic and into the Americas. Thirdly, compared to the number of history texts written by European historians on their specific nations as part of the European tapestry, relatively few texts have been attempted by African historians. As a result of the dearth of historical research, continental historical consciousness among Africa’s populations is much reduced. This just sets up the conditions for unrewarding conflicts founded on ethnic and sectarian particularities. The solution is that the Pan-African models established by theorists such as Cheikh Anta Diop and Joseph Ki-Zerbo must be readopted and African history taken seriously.

In the area of political science, models of analysis are orthodox, reflecting the influence of existing Western models. Current models of analysis are founded on the realist or liberal schools of thought. There is also an increasing tendency to develop quantitative models that are hardly descriptive of reality. Imitations of these models are increasingly the norm in research on African topics. There have been a number of articles though on the issue of democracy and ‘good governance’ but such models hardly take into consideration the problematic nature of the organic composition of Africa’s states, created as they were by colonial fiat. State formation in Europe was determined by internal political forces for the main part but there have been noted instances of exogenous forces in play. Such instances occurred when the larger powers of Europe imposed their will on smaller territories. The result has been bouts of instability. Similar considerations apply to modern state formation in Africa where extra-continental forces have created the contours of its existing states. There have been some readjustments here and there but still extra-continental forces were at work. Cases in point are Ethiopia and Eritrea, and Sudan and South Sudan.
On account of the fact that African states have been exogenously created, contemporary ideas about how the modern state should be configured optimally have been borrowed essentially from the West. Ideas such as ‘African socialism’ and the ‘one-party state’ which had some intellectual adherence in the immediate post-colonial era have now been abandoned in favour of ideas that promote ‘democracy’. ‘Democracy’ in this sense would mean a set of political practices determined by optimal agency on the part of the people as ‘voters’ who select by choice those who would represent them at the governmental level. Assumedly, the choice of particular candidates would be determined by promises regarding issues affecting the commonweal and known competencies to effect such. But such is not the case as a rule concerning the selection of candidates for governmental positions. Choices are usually effected principally on the basis of ethnic or regional affiliations. This would not augur well for good governance.

In the more industrialised areas of the world, political parties are usually structured on economic considerations mainly. The public in general choose their governmental representatives on the basis of what portions of GDP should individual voters be entitled to receive. Thus some voters may favour socialist-type parties while others may show preference for parties that support neo-liberal or conservative type policies. This is generally not the case regarding Africa’s voting exercises. Candidates are voted for principally on the basis of their ethnic, religious, and regional affiliations. Clearly, this approach would not bode well for good governance principally because the key issues that should determine whether a particular candidate is fit for some governmental role concern matters of economic management and the distribution of resources and revenues.

The question then is what are the remedies for such discrepancies within the practice of democratic exercises in Africa. Given that the problem derives principally from the fact that the modern African state did not derive from internal developments but from external impositions, any optimal solution would necessarily require that the political consciousness of populations be transformed through civic education and the nurturing of civil society. It would follow that the more the populace is subjected to new knowledge through education the more effective would be novel inputs in civic education. The fundamental question would always be: what are the most effective modalities for effecting optimal human welfare both the political and economic spheres within a given circumscribed political and economic space? In this regard, much more research is needed on the part of Africa’s political orientation emanating from increased number of political science
research centres. Following the various works by Claude Ake, researchers such as Mkandawire (2001) and Edigheji (2005) have followed up with interesting analyses, but their efforts need to be replicated manyfold. The result of this paucity of research efforts, especially in the analytical sphere, is a palpable loss of historico-political consciousness. For example, the classic works of Fanon, Memmi, Ake, Nkrumah, Hountondji, Mamdani are not yet universal standard fare in African university offerings.

Similar considerations apply to the practice of economics as a social science in Africa. The neoclassical modelling of economic behaviour and phenomena has been the orthodox norm from the early post-independence days to the present. This could be easily confirmed by simply perusing the course offerings of any department of economics on the African continent. For the most part, they mirror the course offerings of most departments of the neo-liberal West. Alternative modes of economic analysis such as institutionalism, Marxian analysis, and socioeconomics are rarely countenanced. Such pedagogical lacunae could be remedied by creative instruction in areas such as the history of economic theory. It is only in this regard that the ideas that led to the development of modern microeconomic analysis and modern macroeconomics could be adumbrated and discussed.

At the moment, economics as a social science is treated in Africa’s universities like a species of engineering as it is treated in the West. Economic phenomena are reduced to thickets of mathematical equations that bear little relationship to empirical reality. This is in total disregard for the methods of scientific research. The symbolic languages used by empirical science become significant only when they are employed, mirror and grasp the relevant portions of the empirical world. Without the empirical world as content the various research sciences would not be empirically meaningful at all. The theories of neoclassical economics – with the possible exception of monetary and finance economics – are not at all anchored on portions of the empirical world of actual human behaviour. This is a situation in need of rectification; hence, there is this task ahead for economic research in Africa’s universities and research centres.

At present the original programme formulated by the Economic Commission of Africa in 1980, called ‘The Lagos Plan of Action’ has been replaced by the neoliberal ‘New Economic Partnership for Africa’s Development’ (NEPAD) which stresses open cooperation with Western corporations, privatizations, reduced role for the state in development goals, and open markets. But this approach – originally touted by the World Bank in 1980 by way of the Berg Report – has not been successful. A ready proof of this claim is available in a study of the economic performance of
nations according to the UNDP’s Human Development Index. The Human Development Index measures the economic performance of nations according to a set of criteria that focus on human welfare metrics instead of just economic growth. These human welfare metrics include indices such as years of education, life expectancy, living conditions, health, disposable income, and so on. The truth is that the majority of the occupants of the fourth tier are the nations of Africa. Clearly, it is incumbent on Africa’s researchers in economics and political economy to derive new models that would help reduce the dire economic conditions of the nations of Africa. The immediate goal is the kind of economic modalities that should be put in place in order to get the nations of Africa making the transition from primary product-producing nations, to nations at the industrial and technological level of a Korea or a Taiwan.

Any new model of analysis must recognize the fact that economics in its most meaningful guise is political economy and not symbolic representations of fictitious agents in an imaginary world. There must also be innovative research into the dynamics of currency exchanges and the ways in which the values of currencies are determined. The fact that we live in a world where some currencies are convertible and others not is a matter of research concern. The longstanding issue of structural unemployment in Africa’s economies should also be examined in depth and remedies developed. Neoclassical economics has failed to provide the answers for real economic problems. The failure of neoclassical economics has been most recently underscored in the exhaustive text by French economist Thomas Piketty (2014) in his *Capital in the Twenty-First Century* in which he excoriates neoclassical economists for their near-obsession with irrelevant and petty self-regarding mathematical problems and their flight from the real world derived from ideological considerations. Picketty’s thesis is that market neoclassical political economy has led to increasing wealth inequalities over the decades. The reason, simply put, is that over the decades the returns to capital are outstripping the rate of economic growth. And with regard to Africa the stark reality is that most of the investment capital in Africa is not indigenously owned. It is obvious that the answer to a ‘what is to be done’ question must include accelerated research in economic issues.

In this regard, the collection of essays in this special issue of *Africa Development* proposes the way forward. Amin begins with the observation that given Africa’s present economic and social problems the existing social science education for future African cadres is inadequate. University education is not geared to produce individuals with the proper skills to
engage in critical analysis of Africa’s economic and political structures. His analysis is structured from a flexible Marxian position which states categorically that there is no pure economics relevant to social conditions but only a specific political economy which seeks to unpack the relations between humans as social beings via the intermediary of capital in the specific form of dynamic capitalism whose historical goal has always been profit, not production for the sake of the masses. Amin traces the present economic impasse in which Africa finds itself, to its integration in the world system beginning with its mercantilist phase dating from the sixteenth century onwards. This integration was based on an unequal exchange which manifested and still manifests itself according to the well-established model of the ‘centre-periphery’ economic relationship. Amin informs us that the second phase of this dependency relationship began in 1880 and ended in 1960, but still continues in its neocolonial guise. According to Amin, Africa is fully integrated in the world economic system contrary to what is being argued but on very unequal terms. The most viable path forward he argues would be intellectual, political, and economic cooperation.

Bond’s paper argues against the notion that South Africa’s social and economic structures touted against bare growth rates affords evidence of the ‘Africa rising’ mantra promoted by neoliberal economic orthodoxy. According to Bond, the post-independence economic facts point to an increasing gap between the economically better-off classes and the poorer classes. What the economics of post-Apartheid economics has wrought is the development of small comprador classes as facilitators of the ongoing economic exploitation of Africa. The revolutionary thought of pre-independence Africa has been jettisoned in favour of new class interests. But the workers of Africa have not been passive in light of the worsening situation. There have been ongoing revolts and protests as in the case of South African workers.

Jane Gordon offers a novel way to hasten the process of decolonisation by way of ‘creolisation’. According to its definition, creolisation in this would refer to a kind of transdisciplinary and synthetic mixtures of the social scientific disciplines through which African intellectual structures are constructed – all with an intensity of interaction. This creolized social scientific method would be much more than the casual cohabitation of social and political worlds for those disciplines that treat of African social science issues.

Lewis Gordon broaches the issue of knowledge from the context of what he calls ‘colonial impositions’ of the already received disciplines which breed ‘disciplinary decadence’. For Gordon, this ultimately leads to
the ‘fetishisation of method’. He argues that the incipient moribund nature of such disciplines could be overcome by a ‘shifting of the geography of reason’ by way, not of interdisciplinarity, but by transdisciplinarity. This approach to knowledge by way of transdisciplinarity rather than by interdisciplinarity leads to the teleological suspension of disciplines and can be rightly called ‘epistemic decolonial acts’. Gordon applies this new approach to the field of Africana philosophy yielding interesting results.

Keita’s input is that of an unpacking of contemporary economic theory and its role in social science development. The dominant neoclassical theory presents itself fundamentally as a species of robotic engineering with a programmed ‘rational economic man’ as main actor. This is highly unrealistic and hardly descriptive of the actual often fallible choices of actual economic agents. He points out that economics as political economy offers a more realistic and comprehensive study of human economic behaviour. Given the problematic nature of the economies of the South, especially those of Africa, more comprehensive paradigms of economic phenomena are indeed preferable especially in the area or pedagogy. Keita offers a close analysis of the structure of neoclassical analysis in order to point out its explanatory weaknesses as a viable ‘science’.

Michael Neocosmos takes up the issue of the aftermath of African independence after almost 100 years of colonial domination. At the eve of independence there was a palpable Pan-African spirit as the colonised peoples of Africa militated for independence. The awaited promises were political freedoms as the prelude to economic development. But the masses were disappointed in how the new states operated both politically and economically. Neocosmos places much of the blame on African social science theorists who demonstrate what he calls ‘demophobia’ towards the masses. Post-independence African social science has linked up ideologically with the new states and their statist approaches to politics and economics. The masses feel betrayed because promises made by their political leaders and governments were not met. As a solution, unacceptable to Neocosmos, is the embracing of xenophobia as in the case of South Africa. A revised social science for post-colonial Africa should be one based on the premise that ‘people think!’ and that reason should not be the monopoly of university academics and politicians. Neocosmos’s recommendation for a genuinely liberated Africa is that a Pan-Africanism of people rather than states represents the way forward.

Sanya Osha presents a study of the technological development of the South African economy from the perspective of evolutionary economics from 1916 onwards. The backdrop for this appraisal is Mario Scerri’s work,
The Evolution of the South African System of Innovation Since 1916, on the technological and industrial development history of South Africa from the early part of the 20th century up to recent times. Crucial in Osha’s work is his analysis of the neoclassical factoring in of the problematic concept of innovation in its explanation of economic growth and development. In his analysis of South African technological and industrial development Osha points out the directive and planning roles played by government leaders such as Jan Smuts and H.J. van der Bijl. This was first attempt according to Scerri to develop a certain sector an economy using a planned system of innovation but fitted into the paradigm of neoclassical growth theory.

The varied nature of the above essays would no doubt set the template for Africa’s continuing efforts to narrow the research gap between itself and the rest of the world.

References
