

**Evolutionary Economic Theory and the National Innovation System
Perspective for an Integrated African National Structural Transformation**

Mammo Muchie

Coordinator DIIPER Aalborg University

NB. Draft- Not to be Quoted!

Paper to be presented at the Oxford University Conference “ Confronting the Challenge of
Technology for Development: Experiences from the BRICS”
Department of International development, Oxford University
May 29-May 30

Inspiring quote

“The three principal reactive-reactionary theses, which I call the perversity thesis or the thesis of the perverse effect, the futility thesis, and the jeopardy thesis. According to the perversity thesis, any purposive action to improve some feature of the political, social, or economic order only serves to exacerbate the condition one wishes to remedy. The futility thesis holds that attempts at social transformation will be unavailing, that they will simply fail to ‘make a dent.’ Finally, the jeopardy thesis argues that the cost of the proposed change or reform is too high as it endangers some previous, precious accomplishment.”¹

I should add to Hirschman’s three theses, a fourth one: and that is what people often say when I argue for an integrated African economy, they say it is too unrealistic and even illusory. Thus I encapsulate their worries as the ‘illusory thesis’, which says that the pursuit of African integration is too pie in the sky dream, fantasy, utopian, unrealistic, which distracts from taking realistic incremental actions and thus by foreclosing such options becomes itself dangerous!

“The elevation of an agricultural people to the condition of countries at once agricultural, manufacturing and commercial, can only be accompanied under the law of free trade, when the various nations engaged at the time of manufacturing industry shall be in the same degree of progress and civilization; when they shall place no obstacle in the way of the economical development of each other, and not impede their respective progress by war or adverse commercial legislation.”²

1. Introduction

A brief overview of the African economic picture reveals a paradox where the continent that has rich mineral resources, nearly a billion people and a land mass which includes the sizes of China, USA, India, Western Europe, Argentina (see map fig.1) together and still is larger than the sum of these regions is in the an unacceptable state of being an object of aid, debt and loans despite the vast resources both known and yet to be explored in it for the whole post- colonial period. Africa should have been a production and innovation centre not a charity and aid centre of the world where

¹ Source: ALBERT O.HIRSHMAN, “ The Rhetoric of Reaction:perversity, Futility, Jeopardy, Cambridge, Belkan Press,1991. pp.7

² Friedrich List, The National System of Political Economy, trans. By G. A. Matile (Philadelphia: J.B. Lippincott (Translation of : F. List: Das nationale System der Politischen Oekonomie, 1841): pp.72-73

'donorship' has replaced African national ownership' of not just Africa's resources, but even more worse Africa's own agency, autonomy and independence to shape policy and direction to undertake national development. The main thrust of the African quest to unite both the politics and the economy flows from a recognition that Africa must organise a production, economic and innovation system by integrating producers with producers, producers with users, users with users in Africa and for Africa. This is both desirable and possible and knowledge of how to do it- know-how- must be assiduously cultivated so that the continent emerges fully as a region free from the donorship gaze it suffers from so cruelly at the moment by cancelling its national agency and independence.

This is no exaggeration to state that African political and economic arrangements today are characterized by internal pervasive and schizophrenic disconnections, mismatches, fragmentations and external dependence. Nearly 70 % of Africa's overall population exist in subsistence and primary resource and agrarian condition. Where a country has the overwhelming portion of its production as agricultural, that country invariably remain vulnerable even to feeding itself, conversely where a few percentage of a nation's population is working on the land and is engaged in manufacture and services for the most part, that country is more likely to feed itself whether it rains or not.

The main pattern of Africa's economic relations with the world economy is through what makes Africa permanently remain vulnerable unless it changes its conditions through continued unequal primary agriculture and mineral exports for the products manufactured elsewhere. African countries produce similar primary products for the same market and compete against each other thus accentuating and deepening their fragmentation.

Africa faces a true dilemma: if it is able to insulate itself from the world economy, it can incur possible welfare, income and knowledge losses. If it integrates on current dominant patterns of relating on the basis of primary commodity transactions with the world economy, it faces continued economic dependence and fragmentation and lack of structural transformation of its fundamental economic structure.

Africa's current pattern of insertion in the world economy comes at the cost of fragmenting the African economic and political space. It appears the continued cost of fragmentation is supposed to be offset by Africa being in the international aid system. Whether African fragmentation can be

offset by dependence on aid or national development should be a genuine issue for investigation and reflection.

The problem is that after nearly 50 years of post- colonial independence African economies continue to be fragmented in spite of the AU/NEPAD salutary processes. The more the fragmentation amongst African economies deepens the harder for each of the fragments not to be supplicants to the aid system. Africa thus also faces another critical dilemma of being addicted as a long-term victim of the burgeoning aid industry that has created a business of what is known as ‘technical assistance’ where those who provide the aid consume mostly the resources allocated, and the recipient Africans continue to be in a vulnerable position as long-term aid receivers without a way to get out of this dependency situation. “Charity corrupts, long-term charity corrupts long-term.”³ In general, it may not be easy to disprove aid is not useful to some within the recipient countries, this does not validate, however, aid or the aid system per se, since it is not also difficult to show, that the long term impact of aid is negative, if we proceed from the normative preference that the recipient countries options to plan their development free from conditions imposed that often do not take the specific context of the countries can be misdirected by aid system. Recently Tanzania announced to all the donors that they want time to think and cope with the influx of hundred of donor inputs. They said they needed time to work out what this all means and made a moratorium on donors’ visits to Tanzania!

It is thus no exaggeration that a country relying on aid is most likely not to develop a national strategy without the interference and the factorings of the interests and policies of the aid system. Being a recipient in an international system for many African countries has not brought development but corruption and poverty. It undermines the country from making mistakes and learning from the routines and practices of the possible economic evolutionary activities. Africa cannot afford to continue to suffer the opportunity cost from continuing to receive aid only to defer building the much needed ability to create the capacity, capability, competence, learning and innovation to transform the largely agrarian and subsistence economic system.

Much of existing development theory is no help when it comes to addressing with a root cutting perspective of how Africa might increase its possibilities given impossible constraints on its

³ See David Elleman: *Helping People Help themselves: from the World Bank to an Alternative philosophy of Development*; Michigan University Press, Anarbor, 2006, p.12)

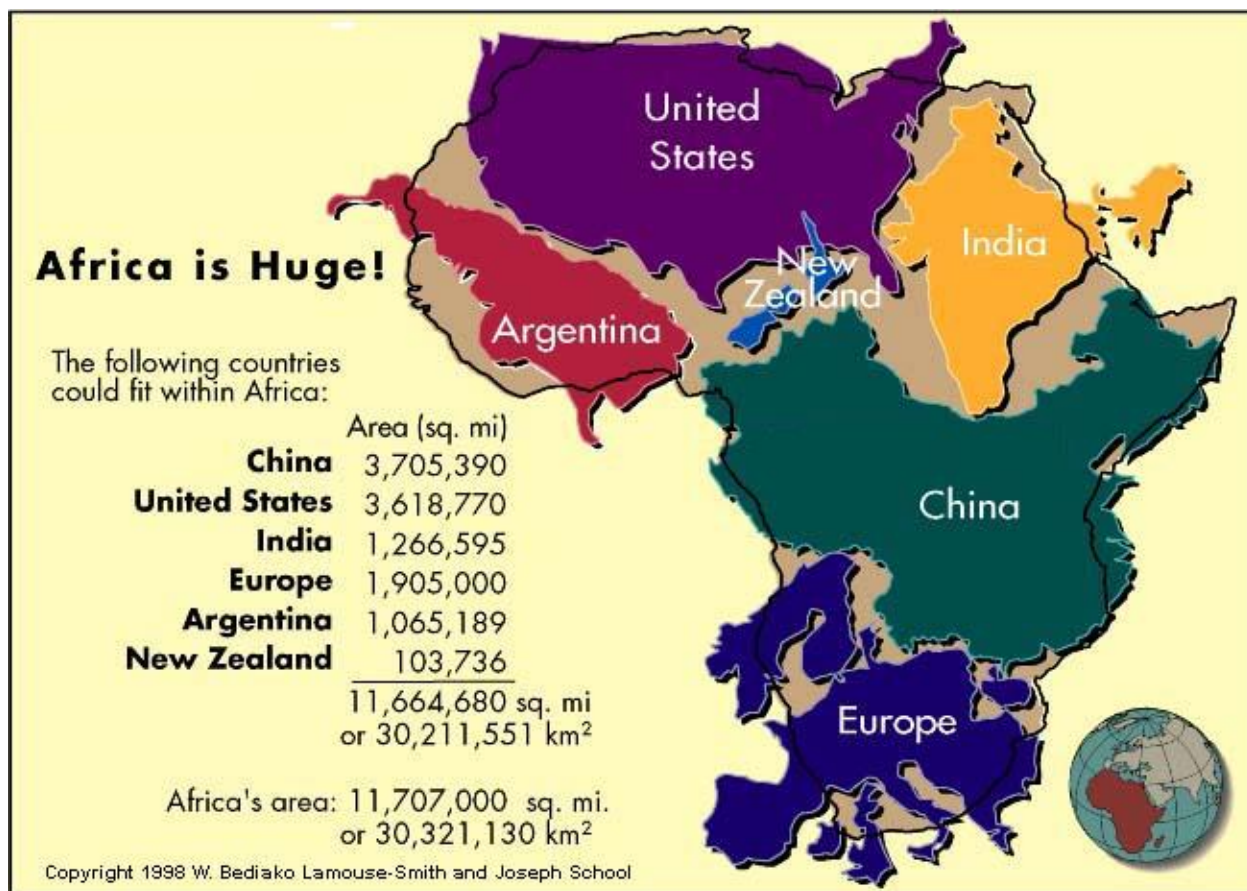
transformative potential the existing pattern of relationship- fragmentation needing the aid system, and conversely the aid system deepening African economic fragmentation- imposes.

A critique of the development theory that has evolved over the past half century takes as given this myopia of the 'fragmentation-dependence'(F-D) dilemma or situation that account for most of what is proverbially known as the unchanging African predicament, or crisis. There is a need for a fresh approach, a new departure to embark on an intellectual search for concepts, theories and strategies to convert the 'fragmentation-dependence' dilemma into an enabling 'integration-self-sustaining capabilities building' system to re- launch African development on a secure pedigree.

The paper argues that the challenge of addressing fragmentation and dependence whilst learning to integrate the African economy on a new basis with the world economy requires the rethinking and circum-framing of main stream development theory as it currently stands. One way in which this re-orientation can be advanced is through the appropriation (not mimicry) of the knowledge that has emerged from evolutionary economic theory and the application of the national system of innovation framework for an integrated African system of economy, production and innovation...

The paper will try to undertake a brief critique of existing theories that have informed policy in Africa in order to define a new research agenda to provide metaphors, heuristics, alternatives and the resources for an emancipatory epistemology and practice in the rebuilding of African integrated national systems of political economy, production and innovation.

Figure I



2. Overview of the Problem for theorising African Development

We ask the question of how development economics has framed or mis-framed the development question in Africa. Has it been a help or a hindrance? Why is that after nearly half a century the continent has no substantial model of success to show as we see in East Asia, and now China, India, and in Latin America such as Brazil? Was the knowledge needed for changing and structurally transforming African society being developed or was there something flawed in both the production and utilisation of this knowledge that technical assistance motivated development economists injected in Africa without any significant results to show for it in the end?

Has development economics and development theory in general addressed the problems of structural transformation of developing economies by building in the overall dynamics of change knowledge, innovation, learning and competence building in the process of economic development by studying the processes of economic change, and the economic and non-economic institutions and

incentives supporting or hindering the transformation of varieties of social economies. It appears that much of conventional development economics lacks both the 'words and the grammar' to use a Heideggerian metaphor to address the being and process of social-economic change. The conceptual preference to use evolutionary economic theory together with studies of economic and non-economic institutions, markets, policies, incentives, knowledge, innovation and learning, competence and capability creations, accumulations, diffusions, flows and implementation processes is in part to find 'the words and the grammar' in order to develop fresh insights on the problems and challenges of economic development in Africa. The goal should be to move beyond the tinkering of existing arrangements characterised by deep fragmentations and dependence to overcoming these and find the know-what, the know-why, the know-how to understand the technologies, routines and practices for the making of an integrated and independent African national economic system.

A critique of development economics is followed by the suggestion that both evolutionary economic theory and the system of innovation framework may be appropriated usefully to re-imagine and re-articulate an African system of economy, production and innovation.

Briefly, according to Richard Nelson, evolutionary economic theory sees the economy in the process of change and holds that economic activity cannot be assumed to take place in an economic context already familiar and also readily understood to economic agents. This contrasts with neo-classical theory that views the economy in a state of rest and assumes a context where agents make decisions based on relevant experience or on past knowledge. Formal modelling for evolutionary economic theory begin from assumptions of dynamic systems that may be far from the state of rest, while neo-classical theoretical models assume that a state of rest will or can obtain always. Both also differ in the way they understand economic behaviour with evolutionary economic theory introducing to the rationality of agents bounded and creative and innovative behaviour, while neo-classical theory assumes agents face given and familiar choice sets allowing them the opportunity to make optimum choices.

The application of an evolutionary economic theory to generate insights for the making of an integrated transformation of largely agrarian Africa into a modern economic system invariably throws up challenges. The process will be complex throwing up both myopia and varieties that require evolutionary mechanisms of selection and self-replication. The process of integration is

itself evolutionary. Evolutionary economics theory has built a body of knowledge on evolutionary processes. The creation of distilled knowledge using evolutionary economic theory for integrating the African economy by opening various options will help to probe the trajectories of Africa's overall transition from an agrarian structure to an industrial-cum-service structure of the economy.

Evolutionary economic theory will be used to capture the key parameters that can articulate as real a picture as possible regarding what is actually taking place in the African fragmented and disarticulated real economy in order to identify the key variables and determinants that can stimulate an overall better economic performance and economic progress. African economies are fragmented, are largely skewed and lack inter-African integration. Both economic and non-economic institutions are weak in Africa. The interaction of markets and policies, or economics and politics, the internal and the external, the domestic and the international has a lot to be desired even in the better economy performing parts in Africa. There is thus a need to undertake a radical re-conceptualisation and attempt to create freshly a body of high quality scholarship on African economic growth by considering the co-evolution technologies, firm and industry structures and supporting economic and non-economic governing institutions in each African economy by starting, first and foremost, with the most advanced economy of South Africa.

The innovation system framework is an off-shoot of evolutionary economic theory applied to the organisation and interactive processes of the significant variables that generate economic development. The framework suggests that theoretically development is not only a process of production but also it is a process of knowledge, innovation, learning and capability/competence building. This means developing economies cannot grow only by using already produced knowledge, but they must also be involved as producers of knowledge. In Africa, the challenge is to create economies that are driven by indigenized systems of innovation. The question of how to bring this about and opening basic research programme to identify the significant determinants and examination and mapping of the co evolution of technologies and institutions become worthwhile. In the African context, there is a need to begin with a scepticism that viable and functioning national systems of innovation are far and in between. Even in the economies such as South Africa, they exist in bifurcated, lop sided and fragmented patterns. Intuitively, in many other African economies they are either dysfunctional or weak, or hardly no-existent. This makes the challenge a different one: rather than studying an already existing and well-developed national system of

innovation, institutions and technologies, the intellectual challenge becomes one of how they can be created and sustained given the African environment as a constraint.

The approach taken here is exploratory and not conclusive choices of theories. The idea is to search and look for fresh insights to address how an evolutionary economic theory and systems of innovation framework perspectives together can shed new light in making an integrated African national economic system of production. What are the likely evolutionary paths, variations and selective mechanisms that can facilitate manifold inter African interactions, producer to user interactions, user to user, user to producer, and producer to consumer, and producer, and producer to knowledge creators and public policy makers that spill over borders that are, extend over the existing arbitrary boundary constraints in Africa.

From fragmentation to integration, from dependence to independence requires searching for appropriable models as metaphors to create knowledge that can be fed into policy to yield tangible impacts in helping change the reality on the ground. After fifty years of disintegration, conflict and poverty, it is long overdue that Africans begin to think out of the box in order to stimulate new thinking and policies whose impact will make a difference.

3. Development Economics and Its Problems in Relation to African Development

It has been claimed that just as economics can be defined by what economist's do, so also can development economics be defined by "what development economists do"⁴ The interesting issue is what did development economists do? Some development economists accept that 'development economics has not produced the results expected of it'⁵ According to Hirschman the problem has to do in part with the expectation of performance from developing countries: the latter were 'expected to perform like wind-up toys and 'lumber through' the various stages of development single-mindedly... these countries were perceived to have only interests and not passions."⁶ Arthur Lewis attributed it to the lack of historical perspective of economists⁷. Krugman attributes the problem to lack of rigour and claims that what remains heuristically valid from the development economic

⁴ See A.P.Thirlwall, *Growth and Development: with Special Reference to Developing Economies*, 8th edn. Pelgrave Macmillan, 2006, p.8

⁵ *Ibid*, p.9

⁶ A Hirschman, "The rise and decline of Development Economics' in *Essays in Trespassing: Economics to Politics and Beyond* : Cambridge: Cambridge University Press, 1981

⁷ A.W. Lewis, "The state of development Economics", London, Hobart, 1984

theory and modelling is the following: external economies, increasing returns, complementarity between sectors and linkages.⁸ Reflexivity by the economists about the work they do should be commended. But what all of them did not address is that development economics framed development of the agrarian transition under a capitalist political economic framework. It arose in part in response to what seemed to be a relative success by those who framed development not under the capitalist form but in opposition to it. The charge by advocates of mono-economics why there is a need for a separate economics is in part related to the fact development economics ought not to be radically different from any other economics since much of the problems and themes relate to developing within capitalism and not in opposition to it. Development economics set itself for attack by both those who argued that the transition and transformation of developing countries may be hindered by capitalism and those who see no hindering from capitalism. Development economics could have done to capture a domain that can justify its special identity by framing the challenges of development and transformation as national whether that national is framed within capitalist or other variants of political economic system. In the African context, if there is a criticism of development economics it is because it is not Listian- Schumpeterian and more over the national in Africa needed to be understood beyond the existing states in Africa.

Hirschman has a point that it would not be complete to take the assumed interests of developing countries and expect economic development to be the outcome. It is also critical to understand and contextualise interest with national passion. Development economics ignored national passion. In Africa the key matter is how to overcome the dependency and colonially sanctioned and legitimised and post- colonially bequeathed political, economic fragmentation into account along with the passion to remove these by bringing about comprehensive integration and capability to deal with the technical assistance or donorship dependency imposition and continuation for unlimited time. Lewis is right to raise the lack of historical perspective, but this is not simply a matter of lack of history learning by economists, it is more the lack of historical contextualisation of and for development. The lack of contextualising development economic theory to the specific conditions requiring change and transformation is what made much of the insights from development economics not useable both to policy making and real impact with tangible results.

⁸ P. Krugman 'Towards a Counter-Revolution in Development Theory', World Bank Economic Review(Supplement): Proceedings of the World Bank Annual Conference on Development Economics, Washington Dc, World Bank, 1992

Krugman's point of lack of rigour does not address the core dilemma: what difference does pushing externality costs matter to those who produce the same commodity for export by undermining each others' producers' world market prices on the primary goods that fetch them the countries principal foreign exchange?

What the quotes from these three eminent development economists show is development economics has problems, what each has observed to be the problem does not, however, go far enough to address the core issues that block transformation and poverty eradication in Africa.

The rationale for moving from economics to development economics is to highlight the fact that development challenges perforce involve the marriage between theory and the reality in the analysis of the condition of underdevelopment to the transition to development.

There were three sources for developing theories: the first is to draw upon the classical economists such Adam Smith, David Ricardo, Thomas Malthus, John Stuart Mill, William Petty and Karl Marx whose main concern was to understand the causes and determinants of wealth making and economic progress. The second is to draw upon the experience of the currently industrialised countries that have undergone structural transformation from an agricultural economy to an industrial economy. The third is to address the context and issues and not overlook them of the underdeveloped regions themselves. Where it seems development economics did not succeed at least in the African case is to fail to historicise and contextualise Africa's development dilemmas and assume that reworking and adapting classical theorems and lessons from the developed economic advance will provide the tools, models, metaphors and heuristics to inspect the specific development challenges of developing economies suffering from dependency and fragmentation at least in the African case.

The various models that were generated from development economic theory and research are welcome contributions to see different aspects of the development and economic growth problematic: low level equilibrium trap, the big push, dynamic externalities, dualism, circular and cumulative causation, growth pole, rural-urban migration, impact of population on growth and the

vice versa, social cost benefit analyses, immiserising growth, dual gap analysis, missing markets and rent seeking and so on.⁹

The core themes of development economics have changed over time. In the 50s and 60s which Paul Krugman calls the years of “high development theory,”¹⁰ and with examples of successful extensive industrialisation in the former USSR the role of the state, import substitution industrialisation, planning were emphasised amongst the choices of development themes. Analysts put the influence of the former Soviet Union’s efforts at industrial development as follows:

“It should never be forgotten, however, that no country in the world ever made such an economic advance in such a short space of time as the Soviet Union did after 1918, through a planned allocation of resources that favoured investment at the expense of consumption. The fact that planning may be operated too rigidly, or for too long and go wrong, should not be allowed to obscure the fact that it also has merits, and that unfettered free enterprise can also lead to economic disaster and social deprivation.”¹¹

Some of the themes that early development economists addressed include the following: rural underemployment and disguised unemployment, late industrialisation, the utilisation of underemployed manpower, acceleration of capital accumulation, deliberate intensification and guided effort, and new rationality for protection, planning and industrialisation.

The development strategies related to the development themes above were the following:

- a) industrialization
- b) Rapid capital accumulation
- c) Mobilisation of underemployed manpower
- d) Planning and an economically active state

The early development economy theory equated development more or less with growth and industrialisation as developing countries were seen as ‘primitive versions’ of developed countries with time to grow into the civilised status of Europe! The rapid industrialisation of the former

⁹ Perkins, Radelet, Snodgrass, Gillis & Roemer (eds.), *Economics of Development* (5th edn.), W.W. Norton & Company, 2001,

¹⁰ Paul Krugman: op.cit.

¹¹ A.P. Thirlwall, op.cit. p.6

USSR was an example serving a lesson not to ignore state intervention even though not as totalitarian as it was in that part of the world.

There were criticisms not to treat social consequences simply as appendages of underlying growth theories. Industrialisation was seen as unsustainable if it comes with human cost (e.g. population, inequality, urban bias, unemployment). There was a move not to treat education, health and other issues subordinate to economic growth. Later populist theories like that of Schumacher questioned economic growth theories altogether. The notion that the development of agrarian economies can be considered as backward version of western economic development was also challenged by structuralists who suggested structural problems are both distinctive and specific requiring differentiated modelling and explanatory structures. Later on neo-classical economists began to mount critiques on state intervention and planning claiming dirigisme is more of a problem to development than a help.

What is interesting about development economics is that the normative stance of the particular theorist clearly informs the choices of issues, themes and remedies preferred.

In the 80s arguments from the Right stressed the neglect of the market and the unacceptable state activism in the economy as the problem for economic development, not economics, not the market not equilibrium or neo-classical economics. In fact the neo-liberals argued that more of neo-classical economics, less development economics is the way forward for dealing with growth and poverty problems. In fact Hirschman explained the “alleged demise of development economics” to the “resurgence of neo-classical orthodoxy” on the one hand, and the “neo-Marxists who reject the claim of mutual benefits “from the integration of developing countries in the world economy.”¹²

Amartya Sen came up with an argument of taking the issue beyond the simple state and market dichotomy and opening development to themes to what may prolong the life of development economics. His was work that extended the thematic choices for development economics by adding development as freedom, development as entitlement, development as democracy and finally development as capability. But the theoretical challenge is to provide a general framework for an understanding of structural transformation and development, and at the same time provide an adequate explanatory power on the nature and dynamics of the transformation processes.

¹² A.P.Thirlwall, op.cit., p.7

What Amartya Sen did was however concentrate on extending the choice set for themes and issues that economic development can incorporate. Sen admitted that traditional development economics may not have been as dismissible as various trends suggest. Instead he acknowledged what he calls 'thematic deficiency' at the core of development economic theorising. He argued concentration on national product, aggregate income; total supply of public goods, capital accumulation, and the creation of surplus may be necessary but not sufficient to get development that includes the least advantaged. He stressed entitlements of people and capabilities these entitlements generate are the relevant thematic choice for development economics.

Sen said the process of economic development has to be concerned with what people can and cannot do or to use his words have reason to value and choose to do!

Development economics has bifurcated into neo-liberal versions (Poverty of Development Economics, 1981) and its critiques (The Dilemma of Development by John Toye, 1987) on the one hand, and the Amartya Sen. thematic extension from national product to entitlement, freedom, democracy and capability leading to human development and inclusions of social specific themes such as gender, deprivation, hunger, basic needs and environment.

What is missing with both filling in the missing themes or extending the list is the very framework for conceptualising the economic progress of nations and how their national transformation can be theorised with a view to understand and explain the pace and rhythm of the development process during the transition from largely agrarian socio-economic historical existence to a post- colonial industrial economy and liberation. The fundamental categories of analyses can be illuminative and insight generative when the analyses start from the specific historical experience with a normative commitment to generate knowledge for policy with relevant impact to bring about development, transition from agrarianism to industrialism...

4. Can Evolutionary Economics Theory succeed where development economics theory fail?

“Reconsidering the history of development economics provides valuable opportunity to challenge (orthodoxy).”¹³ Orthodoxy has spawned what has been described as the “new development

¹³ Jomo K. S., The Pioneers of Development Economics: great economists on Development, Tulika Books & Zed books, London & New York, p.vii

economics”¹⁴ or what others call the neo-liberal development counter-revolution. The debate has gravitated between the Washington and Post Washington consensus or showing the history of economic ideas is the history of economic development and not the abstract formalisation of neo-classical static equilibrium economics. There is a third option where evolutionary economics can either align its framework with development economics and refine and appropriate its analytical categories to address beyond issues and themes of development how a framework for the pace, rhythm and dynamic evolution of development takes place, or development economics can renew itself by incorporating or redefining the development question with evolutionary dynamics. Both possibilities are open and should be pursued. Development economists should reach out with a view to revitalise and redefine the whole framework of development economics on a new axiological foundation. Conversely evolutionary economists should reach out to development economics and find ways of incorporating some of its insights to redefine the development framework altogether on a new and robust intellectual foundation.

Evolutionary economics built its metaphors from evolutionary biology as neo-classical economics tried to build its metaphors from physics. What is needed is an economic theory or a synergy of economic theories that can build their models and metaphors from history, specific context of countries in transition from an agrarian condition to and industrial- manufacture condition, from fragmented states into the transition to an integrated state, from a state of dependency to the transition to independent states to discover insights for a combined solution to the problem of heterogeneity and change.

Evolutionary economists built evolutionary economics mainly as a reaction to neo- classical economics. As Krugman puts it: They reacted as follows:

- 1) They want to get away from the idea that individuals maximize. Instead, they want to represent decisions as the result of some process of groping through alternatives, a process in which it may take a long time to get to a maximum - and in which the maximum you find may well be local rather than global.

- 2) They want to get away from the notion of equilibrium. In particular, they want to have an approach in which things are always in disequilibrium, in which the economy is always evolving.

¹⁴ Ibid.p viii

Latterly there have also been some economists who want to merge evolutionary ideas with the Schumpeterian notion that the economy proceeds via waves of "creative destruction".

3) Their field is about the interaction of self-interested individuals - who are often thought of as organisms "trying" to leave as many offspring as possible, but which are in some circumstances best thought of as genes "trying" to propagate as many copies of themselves as possible. The main difference between evolutionary theory and economics is that while economists routinely suppose that the agents in their models are very smart about finding the best strategy - and an economist is always defensive about any model in which agents are assumed to act with less than perfect rationality - evolutionists have no qualms about assuming myopic behaviour. Indeed, myopia is of the essence of their view.¹⁵

No where do we find agents with myopia than in Africa that includes both externally, i.e., those who sell charity to Africa whilst allowing continuing plunder of its natural resources and the elites that are often bereft of an African national spirit and consciousness unable mostly to develop a national development framework for Africa's transformation.

Some of the features that can be incorporated also to a development economic framework from evolutionary economics are as follows:

- 1) Stimulate and understand inter economic and non-economic actor interactions and dynamics,
- 2) Co-evolution of economic and non-economic governing institutions, practices and understanding (Richard Nelson)
- 3) The interaction of policies, knowledge, incentives, institutions, practices and the understanding involved in the process
- 4) System building, to identify significant interactions and interfacing of parts,
- 5) Bridge the gap between theory and reality,

¹⁵ Paul Krugman ,WHAT ECONOMISTS CAN LEARN FROM EVOLUTIONARY THEORISTS
(A talk given to the European Association for Evolutionary Political Economy) :Nov. 1996

6) The sources and organisation for stimulating innovation, imagination and creativity, How routines are formed and novelties emerge and selections are made

The review of development economics theories and some of the thinking of the leading theorists shows that the project to renew development economic theory is satisfied by adding new themes and selecting others. This, however, is inadequate when it comes to African's transition from an agrarian condition to an industrial economic condition. The failure of development economics in Africa has nothing to do with choice of themes; it has everything to do with failure of framework. It is not thematic deficiency as Sen puts it, when it comes to the peculiarities of the African condition, it is rather framework deficiency, i.e. , the central framework for understanding and explaining the dynamics, pace, rhythms and contradictions of the African development processes.

Why evolutionary economics may be useful in the African context is, if it can provide a framework for understanding the evolutionary dynamics of the African economy, which influence and impact states of social-economic system and given its main concerns relate to the transformation of generic ideas, social or technical knowledge with the principal overarching theme of integration rather than tinkering with the existing fragmentation. We suggest that integrating Africa or making the Africa nation itself is an evolutionary problem of dynamics, of creative destruction, requiring evolutionary approaches to understanding and creating knowledge. Evolutionary economic theory has such concepts that can be useful to stimulate research in making an integrated African economy. The African economy is in a state where it exists with a non- linear, chaotic, complex economic phenomena where the need to make products, technologies, innovations, institutional arrangements and incentives is anything but compelling. In dealing with the problem of transition and transformation of the African economy we are dealing with evolutionary processes. In Africa change is critical dependent on initial conditions and path dependence. At the moment it may be mainly destruction, Africa needs to enter the Schumpeterian process of creative destruction.¹⁶

5. National Innovation Framework

National innovation system (NIS), we would argue, is not just a tool to achieve the narrow goal of industrial/economic competitiveness, but it is about achieving a broader development and wider social benefits for a people and nation. Major elements of NIS can be identified as:

¹⁶ Joseph Schumpeter, *Capitalism, Socialism and Democracy* 5th edn. George Allan & Unwin 1942 (1976)

1) Conceptual Framing: that is, ideas, policies need to be linked to a conceptual framing of how economics and politics are co-governed and/or co-evolved. And responding to opportunities, and dealing with challenges require policies to be rooted in a conceptual framework that governs the dynamic interaction between a nation's political and economic change.

2) Co-evolution of Institutions, Technologies, and Knowledge: This needs strong interaction, linkages, synergies, and co-ordination to achieve coherent co-evolution leading to an efficient innovation system and higher level of technology/knowledge accumulation.

3) Incentives: Appropriate incentives to achieve co-evolutionary dynamics between institutions, technologies, and knowledge production by linking economic and non-economic agents to meet stated goals and objectives.

4) Implementation/ Learning/ Feedback/Outcomes: Implementation of strategies, policies, projects, and programmes should include feedback mechanisms (review, monitoring, and feedback) leading to learning outcomes. Ability to learn - self learning and ability to take corrective measures are imperative for building technological capabilities and embed innovation dynamics in both narrow industrial and broader socio-economic development. This is where implementation/practice feeds to learning outcomes and, conversely such learning feedbacks in turn feedbacks to generate deeper understanding to stimulate further and hitherto unexplored innovative practices.

5) Socio-economic Changes: Learning outcomes could lead to different types of socio-economic changes – corrective, adaptive, evolutionary, structural, contingent, and so on. Progressive Transformation: When structural change results in the most dramatic positive change of political/socio-economic system (but it is unlikely to happen often); Regressive changes: When transformation results in negative rather than positive impact on political/ socio-economic system leading very often to conflict and social-economic tensions and breakdowns.

It matters, therefore, how structures and agents interact and co-evolve in dynamic systems for the type, scale and quality of transformation that can be undertaken in specific contexts and situations. It is when all the above identified structures and elements (both economic and non-economic) enter into specific relationships in given spatial, economic, political, social, historical and cultural contexts to facilitate change or breakdown that provide the rationale to find a conceptual tool that can capture the salience and core dynamics, rhythms and paces of development processes. And that conceptual framework or concept -circumfencing has been popularised by what is known as the

innovation systems.¹⁷ (Freeman, 1987, 1985, Lund Val, 1992, Nelson, 1995). Innovation conceptualised at a nation-state level has been described as a national system of innovation. This concept has been described as the national political economy of production (List, 1852). The merit of this conception is to bring together four essential elements: space, economy, politics and knowledge and how their interactions, synergies and systemic combination generate transformation. The way the elements interact in given historical contexts that nations are in can either lead to dynamic efficiencies or inefficiencies. It matters therefore how the elements are linked and co-evolved to achieve an efficient innovation system leading to higher level of technology accumulation and economic development. This is captured by Figure 1. Linkages and co-evolution that lead to inefficient national innovation system can be shown by reversing the arrow in Figure 1!

¹⁷ See Freeman, *The Japanese System of Innovation*, Francis Pinter, 1987, Lundvall(ed.), *The Theory of the National System of Innovation*, Francis Pinter, 1992, Richard Nelson(ed.), *National System of innovation*, 1995

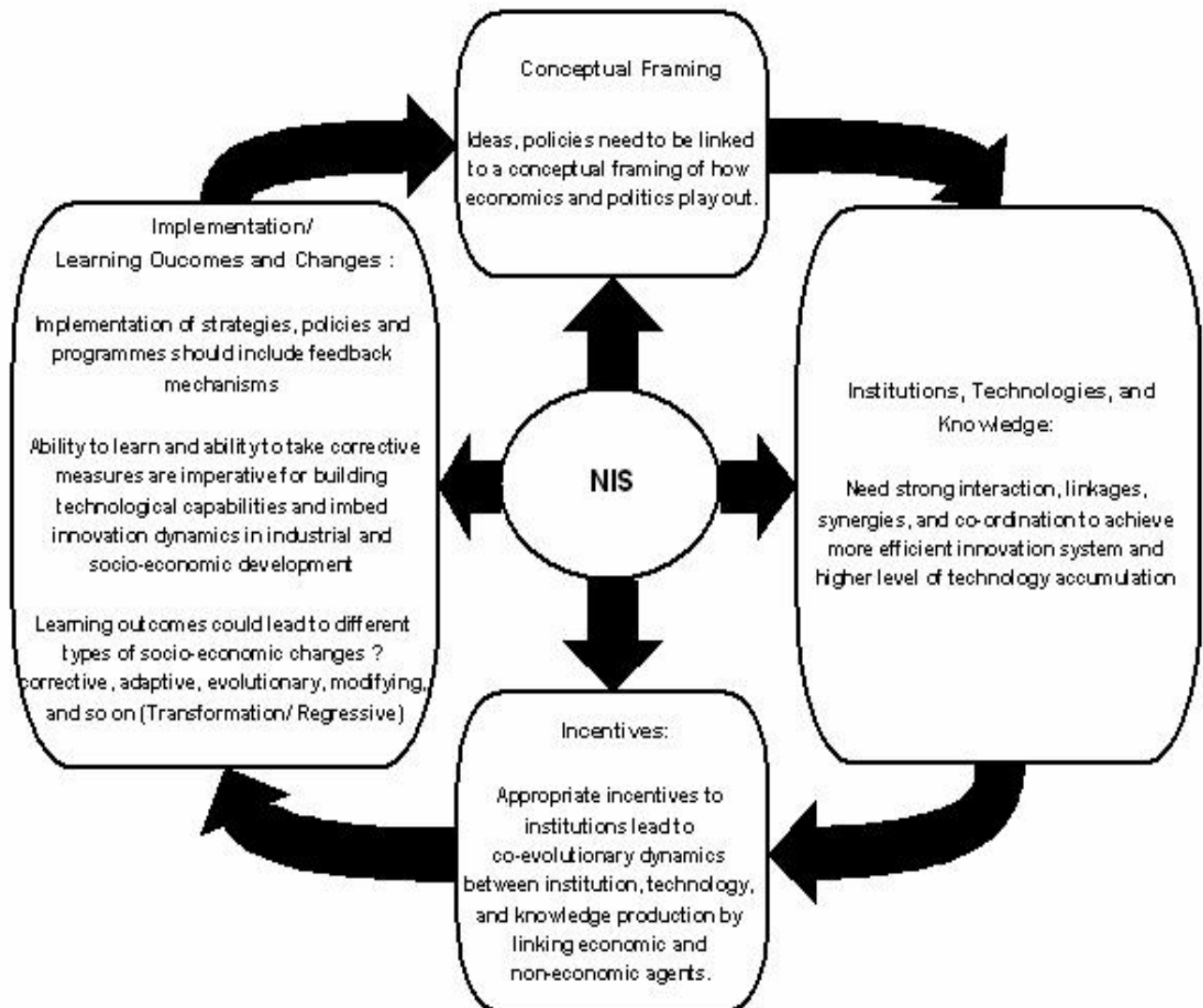


Figure 1: Major Elements of National Innovation System (NIS)

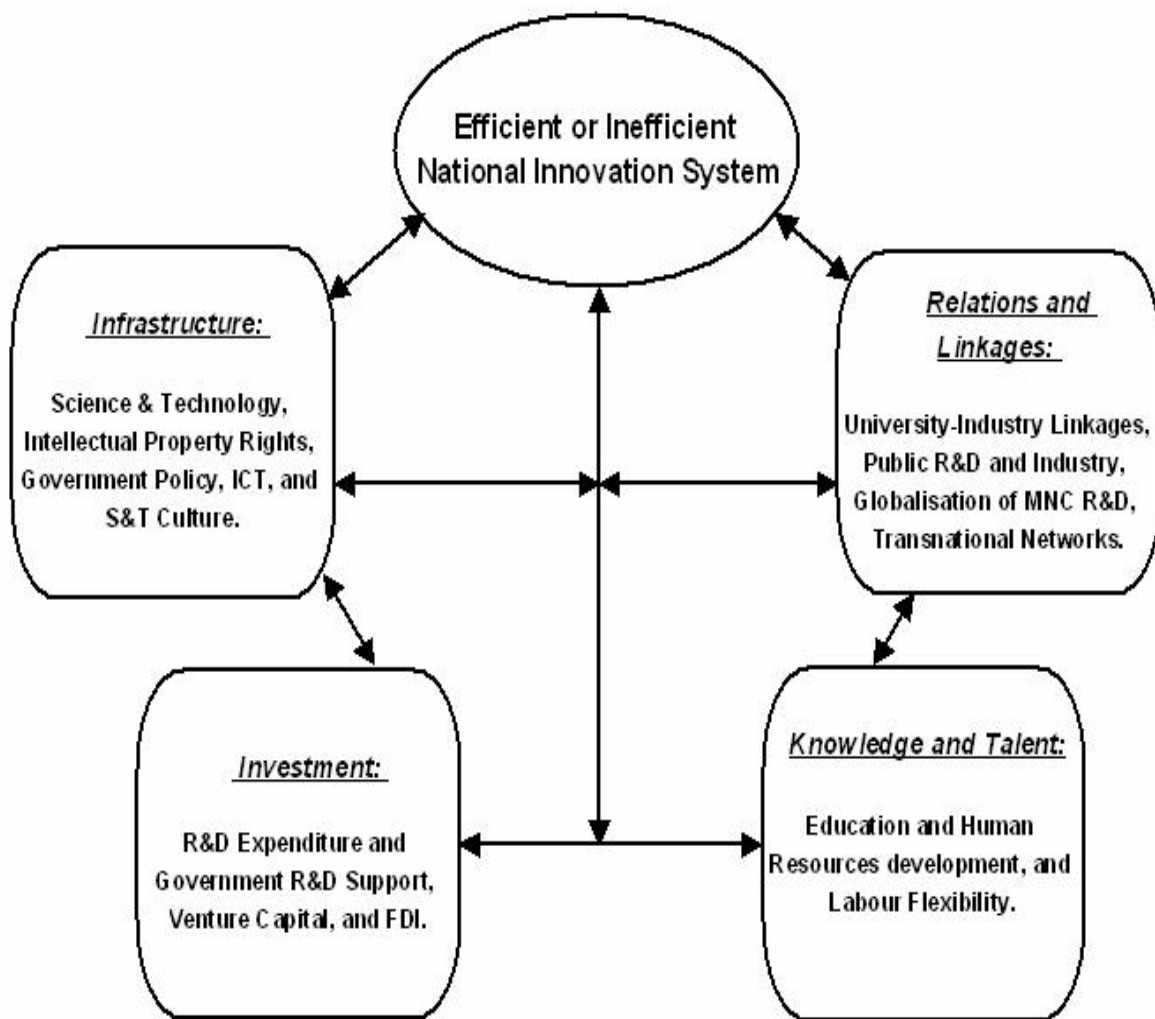


Figure 2: Linkages between Institutions, Technologies, Know ledges, and Incentives in NIS

From a developmental perspective there is no doubt a need to establish a unified conception of the system of innovation concept where the politics and economics, the internal and the external, the domestic and the international interactions are duly included. A political economy perspective of systems of innovation is critical to develop to shed new light and insights on the development, transition and transformation processes of agrarian societies into manufacturing nations. A comprehensive model that unifies how within the context that establish a system of innovation what fall properly in the domain of politics and what fall also in the domain of economics are interlinked with knowledge, technology, R & D and together all are interlinked to national, regional, global and local, specific technologies, sectors, firms and innovations including the feedback, the outcome and impact that can influence further interactions. This model that unifies the key variables

and their interactions is critical to identify and arrange in order to understand and explain the factors and dynamics of the development process with fresh insights.

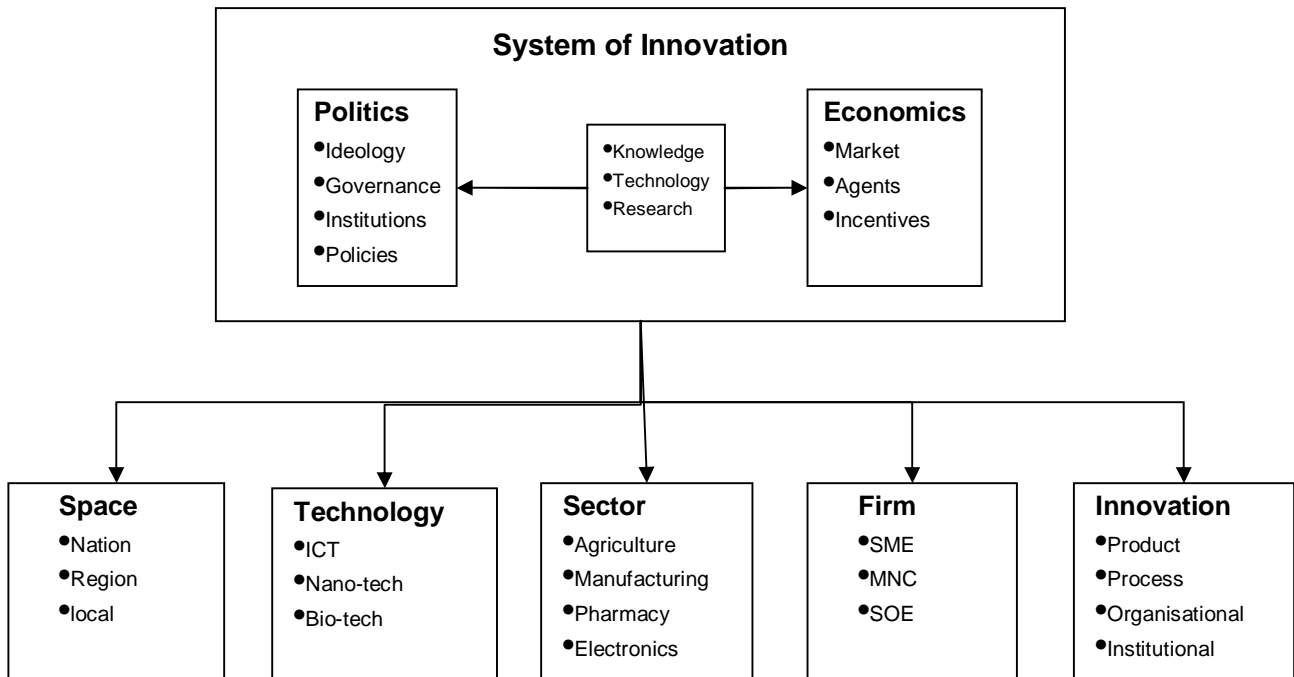


Figure 3 Unified Model of System of Innovation

6. Integrating the African Economy: Bridging Rhetoric with Practice

This year on May 25, it will be 45 years since the Organisation of African Unity was formed, but the African economy is neither organised nor united. This is in spite of the various attempts that have been made by the officials in Africa to unite the continent’s infrastructure and economy.

On the 50th anniversary of Ghana’s independence, the AU put one and only one agenda: the grand debate to unite Africa. The question became not whether or not to unite or not unite Africa, it became a question of when and how to do it. I participated in the African pre Summit meeting in Accra where we passed a resolution with a series of recommendations. It looked the only item on the agenda: the African Union Government: towards the United states of Africa may permit Africans to go beyond their day to day problems and seize the bull by the horns and attempt the long delayed and inspired pan-African vision promoted so consistently by Kwame Nkrumah,

George Padmore. Could the African leaders possibly go for a big bang burst into a Pan-African history in practice or will they resort to the usual invention of hundred good or not so good reasons why Africans should continue to talk unity while keeping separate and apart from each other.

As expected they agreed to form a commission how to build African unity rather than going for unity itself.

We must be aware that all times are times of transition, but after 500 years of oppression, over 100 years of pan-African revival, 50 years after Ghana's independence, nearly 40 years of the OAU, and 5 years of the AU, the current moment is not a moment to say let us be cautious, let us be incremental, let us go slow and let us not speed up and get on the slow lane of history. No, the moment requires that Africa should not throw its destiny as hostage once again to the misfortune of the slow pace and the incremental. Time and time again we have seen such calls for the slow lane have become the wrong lane of history. The peculiarities and specific condition in Africa call exactly for the opposite to the slow that has also become unfortunately and invariably very often the wrong lane. If Africans go slow and one by one as we are certain a number of countries may wish or are likely to prefer, they would always end up being open to one form of interference to another, one form of conflict to another.

What is needed is the substance of unity and not the talk for unity. Seize the fast lane of history. Move fast into the fast lane. Only then can history move forward. Failure to seize the moment now, is to invite disappointment. Africans have had expectations to come together and achieve collective self-respect not by giving what they have and begging from those who have taken their resources and even their agency embedded in the logic of their 'giving.'. This giving of Africa's resources and begging for donor support can only stop if Africa pursues an African national strategy. Everyone has a strategy on Africa; Africans have yet to evolve a strategy to build the African national home by dealing with a difficult and contradictory world by revealing their freedom, agency and independence.

Recall India during the Cold War. It managed to maintain a democratic national strategy by keeping the Soviet Union happy by accepting planning for the commanding heights of its economy, and by appealing to the USA by its convincing electoral democracy. Africans, on the other hand got caught in the Cold War and lost entirely a national agency and strategy. Today Africans are also lured to follow policies and strategies by allying with others such as USA, China, EU, and the World Bank and so on and not Africa. Each of these countries has a strategy on Africa, but Africa's united strategy is hard to see. When Africans unite, it pays off handsomely. The best case is when Africans united to recommend Kofi Annan to be UN General Secretary. There are many things Africans can do together that will be hugely beneficial to the people of Africa. That is why the urge to reveal African will and agency to communicate better with each other and the rest of the world with self-respect does not brook any delay. Africa should have moved into the fast lane of history. Today is late but not too late, as long the Africa moves into the fast lane of history finally. This is no wrong turn to move fast. It is the right turn. Only staying in the slow lane of history is to bet misfortune.

It is high time that Africa must unite now without any procrastination to stand up free and independent in a turbulent world. African unity is the rock-base for the production of Africa's agency and communication with African self-respect. If no unity ensues, it will certainly disappoint Africans the world over. Unity will be the beginning of the end of African common suffering. It

will begin our common joy and celebration. There is no doubt the world will not be the same once Africans unite and create a strategy for change of Africa's current unacceptable condition. There will be indeed an earth-shaking dramatic change when an African strategy towards Africa and the rest of the world is born with protocols and institutional norms and enforcement mechanisms. It means the moment has been seized. No longer will Africans undercut each other to beg others, once they freely and willingly choose to come together, enter into dialogue and work for the people of Africa by aligning, uniting their interests and their aspirations. That is indeed a grand historic moment. Will it take place in Accra or not- that is the grand question? Two obstacles remain as a sore preventing Africa from entering the phase of self-reliant development: irrational fragmentation from a casual tearing up of the continent into incoherent real estates of the African peoples, and dependence on donors to finance African development. The first is a result from monumental historical-political crimes whose only rectification demands a big-bang decision to annul, reject and overcome the boundaries with fierce intellectual, moral and political vision to fulfil the constitutions of the Africa-nation while allowing voluntary free movement of people making the boundaries innocuous to Africa's peoples.

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The second is to create a unified African strategy and unified approach to dealing with the outside donor world with an African strategy by neutralising the poison from within money as honey that donor aid has come to be in Africa. The two are dialectically linked. Weak and fragmented states depend on external sources of aid largely unable and not often in a position to mobilise internal resources. Political fragmentation has created unviable economic entities. Conversely lack of success in economic development has created weak political structures, developments and so-called failed states that fall prostrate with begging bowls. African fragmentation liquidates African agency whilst bolstering donor agency. Africa's position as a donor recipient accentuates inter-African fragmentation and destroys the chance to evolve a unified African strategy. Donor econocentrism destroys Africa's logocentric imagination, vision and strategy to evolve a unified and Africa-centred development. The two inter-related challenges confronting the African world is to build the unified African logo and beat back the divisive temptation of succumbing to donor's econocentric logic, devices and schemes that fragment space and people.

A related critical issue is how Africans must come together with a world economy that has crushed them into debt since the 1980s, and how they can follow Sun Tzu's principle: the supreme art of fighting is to win without fighting. How can Africans evolve a strategy to win in spite of the fact their position in the world economy is unflattering? The world economy cannot be said to support the integrated African economy, which is necessary to build Africa's aspiration to create the infinite well being of African people.

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What the external world may do that it deems good for Africa often has turned bad to Africa. What Africa thinks may be good to it by receiving aid may in reality be bad to Africa.

The G8 meeting in Gleneagles promised 50 billion and remains unfulfilled. The recent G8 meeting in Germany promises much but one is sceptical by past accounts whether it too will be fulfilled. The grand lesson is this: Africans must rely on Africans and must build their unity to own their mineral and agricultural wealth and manufacture that into value-added wealth.

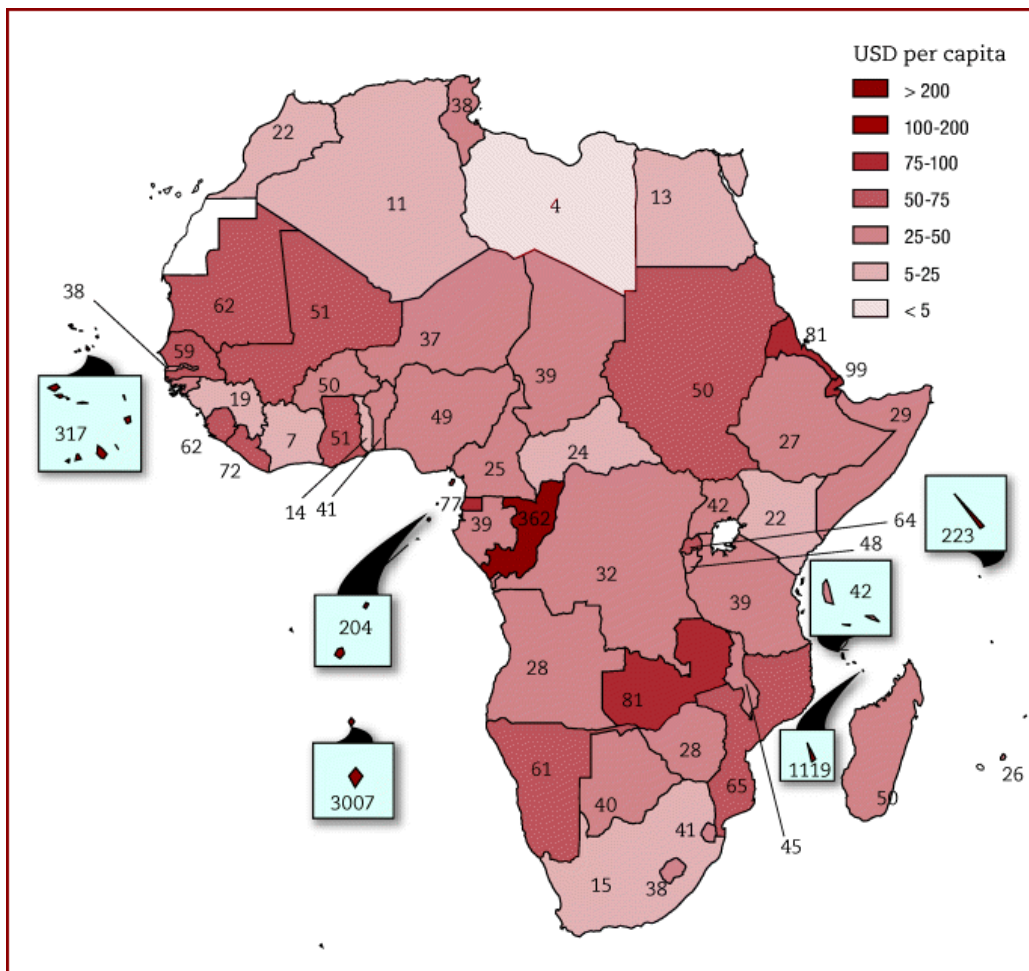
We shall include a few data to show that a unified system of innovation in Africa would have created better possibilities for many countries in Africa in terms of GDP per capita, ICT connectivity, less donor dependence in terms of ODA per capita, regional integration efforts most of them are still plans rather than activities and projects that have been implemented.

Average GDP per capita Growth (1996 - 2005)

Little or no growth countries 20% of Africa population		Slow growing countries 16% of population		Sustained growing countries 36% of population		Oil countries 29% of population	
Swaziland	2.8	Namibia	4.0	Mozambique	8.4	Equatorial Guinea	20.9
Kenya	2.8	Zambia	3.6	Rwanda	7.5	Angola	7.9
Lesotho	2.7	Guinea	3.6	Cape Verde	6.5	Chad	7.8
Eritrea	2.2	Niger	3.5	Uganda	6.1	Sudan	6.4
Comoros	2.0	Togo	3.3	Mali	5.7	Nigeria	4.0
Seychelles	2.0	Madagascar	3.3	Botswana	5.7	Congo, Rep.	3.5
Cote d'Ivoire	1.5	Malawi	3.2	Ethiopia	5.5	Gabon	1.7
Burundi	1.2	South Africa	3.1	Tanzania	5.4		
Sierra Leone	1.1	Sao Tome and Principe	3.1	Mauritius	4.9		
Central African Republic	0.9			Mauritania	4.9		
Guinea-Bissau	0.6			Benin	4.8		
Congo, Dem. Rep.	0.0			Ghana	4.7		
Zimbabwe	-2.4			Senegal	4.6		
				Burkina Faso	4.6		
				Gambia, The	4.5		
				Cameroon	4.5		
Simple average	1.3		3.4		5.5		7.4
Median	1.5		3.3		5.1		6.4

Source: World Bank WDI Database, but 2005 data are from Africa SPA country data sheets

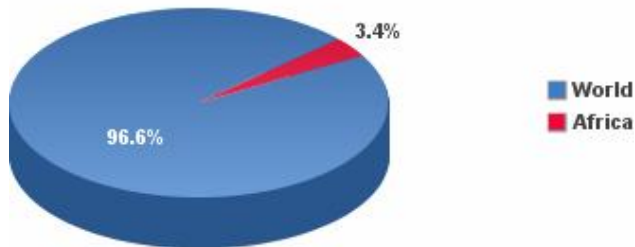
Africa: ODA per Capita



Source: Institute for Economic Research on Innovation, TUT, Pretoria, 2008

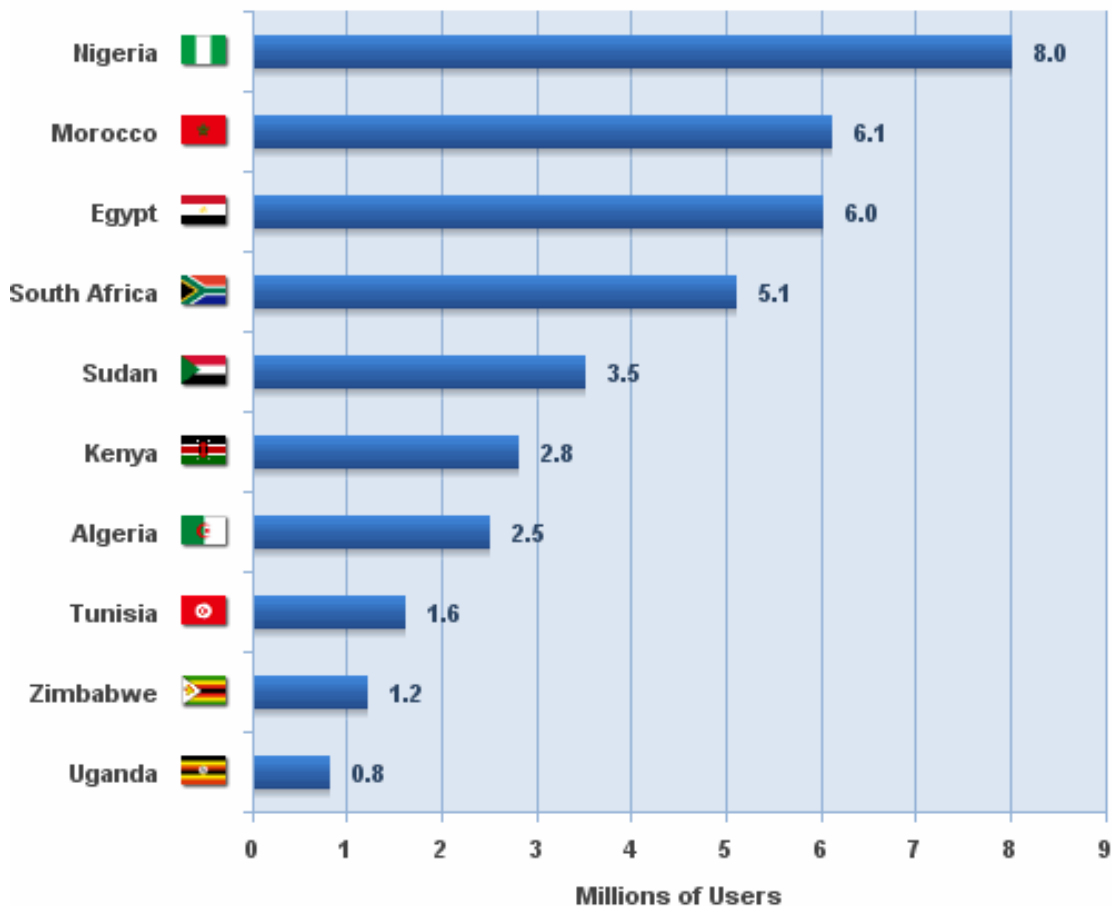
Internet Users	Penetration	% Users	Use Growth
(31/12/07)	(% Population)	in World	(2000-2007)
44,361,940	4.7 %	3.4 %	882.7 %

Internet Users in Africa December 2007



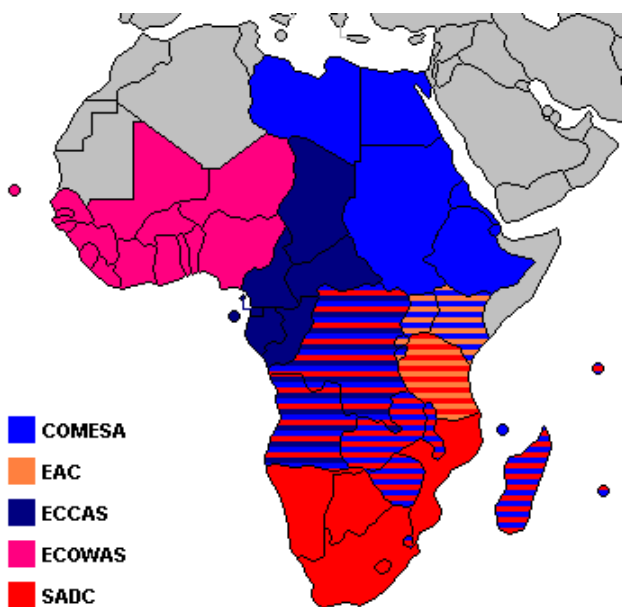
Source: www.internetworldstats.com
Copyright © 2008, Miniwatts Marketing Group

Africa Top 10 Internet Countries December 2007



Source: www.internetworldstats.com
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Regional bloc		Free Trade Area	Customs Union	Economic and monetary union		Free Travel		Political pact	Defense pact
				Single Market	Currency Union	Visa-free	Border-less		
AEC		proposed for 2019	proposed for 2019	proposed for 2023	proposed for 2028			proposed for 2028	?
CEN-SAD		proposed for 2010							
COMESA		in force ¹	proposed for 2008	?	proposed for 2018				
EAC		in force	in force	proposed for 2009	proposed for 2009	proposed	?	proposed for 2010	
ECCAS	CEMAC	in force	in force	?	in force				
	Common	proposed for 2007 ?	proposed for 2011 ?	proposed	proposed	proposed	?		in force
ECOWAS	UEMOA	in force	in force	?	in force				
	WAMZ			?	proposed for 2009				
	Common	proposed ²	proposed for 2007	?	proposed	in force ¹	proposed	proposed	in force
IGAD									
SADC	SACU	in force	in force		de-facto in force ¹	?			
	Common ^[2]	proposed for 2008 ³	proposed for 2010	proposed for 2015	proposed for 2016				
UMA									



Source: Institute for Economic Research on Innovation

If there is anything the above data show, it is how compelling and urgent should be the commitment to realise a Pan-African unity to bring about policy and strategy coordination to realise unity. There is a need to use an African national system of innovation perspective to deal with the theme of the making and organising of the political economic unity of Africa.¹⁸

7. Concluding Remark

In this brief paper we have highlighted that the problem of African development has not been addressed as it should have been. The search for solution within the existing fragmentations has been as good as exacerbating African underdevelopment rather than promoting African development.

We looked at the theories of economic development and the internalist self- critiques and found that even if there are improvements in thematic choice extension, when it comes to Africa the real dilemma is more related to finding a framework for understanding and explaining the evolutionary dynamics and processes of an integrated national African economy.

We looked for possible inspiration from both systems of innovation and evolutionary perspective and suggested that there is much these theories can offer by reaching out to redress finally the core deficiency that Africa's development has suffered to wit: the absence of an integrated and independent national development framework to address the problem of Africa's united transition from an arraign backwardness to a national industrial economy.

The task now is to show how evolutionary economics and NSI may be appropriated productively to generate new knowledge in Africa. Beyond the issue of changing and reformulating the issues and themes for African development, theories that facilitate themes that connect peoples, activities, knowledge, projects across Africa are needed more than ever to try what Africa never tried to take

¹⁸ Muchie, Gammeltoft & Lundvall (ed), the Making of African Innovation Systems, Aalborg University Press, 2003

the risk to unite and learn from that achievement lessons to make the transition to development and a fully industrial national economy.

References

1. Source: ALBERT O.HIRSHMAN, "The Rhetoric of Reaction: perversity, Futility, Jeopardy, Cambridge, Belkan Press, 1991. pp.7
2. Friedrich List, the National System of Political Economy, trans. By G. A. Matile (Philadelphia: J.B. Lippincott (Translation of : F. List: Das nationale System der Politischen Oekonomie, 1841): pp.72-73
3. See David Elleman: Helping People Help themselves: from the World Bank to an Alternative philosophy of Development; Michigan University Press, Anarbor, 2006, p.12)
4. See A.P.Thirlwall, Growth and Development: with Special Reference to Developing Economies, 8thedn. Pelgrave Macmillan,2006, p.8
5. Ibid,p.9
6. A Hirschman, "The rise and decline of Development Economics' in Essays in Trespassing: Economics to Politics and Beyond : Cambridge: Cambridge University Press, 1981
7. A.W. Lewis, " The state of development Economics", London, Hobart, 1984
8. P. Krugman "Towards a Counter-Revolution in Development Theory', World Bank Economic Review(Supplement): Proceedings of the World Bank Annual Conference on Development Economics, Washington Dc, World Bank, 1992
9. Perkins,Radelet, Snodgrass, Gillis & Roemer(eds.),Economics of Development(5th edn.), W.W. Norton & Company,2001,
10. Paul Krugman: op.cit.
11. A.P.Thirlwall,op.cit. p.6
12. A.P.Thirlwall, op.cit., p.7
13. Jomo K. S., The Pioneers of Development economics: great economists on Development, Tulika Books & Zed books, london & New York,p.vii
14. Ibid.p viii
15. Paul Krugman ,WHAT ECONOMISTS CAN LEARN FROM EVOLUTIONARY THEORISTS (A talk given to the European Association for Evolutionary Political Economy) :Nov. 1996
16. Joseph Schumpeter, Capitalism, Socialism and Democracy 5th edn. George Allan & Unwin 1942 (1976)
17. Muchie, Gammeltoft & Lundvall (ed), the Making of African Innovation Systems, Aalborg University Press, 2003