

TECHNOLOGICAL DUALISM: PERSPECTIVES AND PROSPECTS FROM THE EAST

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INTRODUCTION

Conceptual Background

In analyzing the politics associated with technological dualism and underdevelopment whether in Africa, Asia or Latin America one can do so well to draw on ideas and thoughts of Guyanese Scholar and activist Dr. Walter Rodney. In his book *How Europe Underdeveloped Africa*, Rodney observes that:

Underdevelopment is not absence of development because every people have developed in one way or another and to a greater or lesser extent. Underdevelopment makes sense only as a means of comparing levels of development. It is very much tied to fact that human social development has been uneven and from strictly economic viewpoint some human groups have advanced further by producing more and becoming more wealthy. He goes on further to point out that in some quarters it has often been thought wise to substitute the term “developing” with “underdeveloped” to avoid any unpleasantness which may be attached to the second term which might be interpreted as meaning underdeveloped mentally, physically, morally or in any other respect. (2001:23-24)

Smith and Wallerstein observe that one of the basic processes of the historical trajectory of the capitalist world-economy has been the deepening of the distinction between, and the polarization of, core and periphery. They further continue to show that core and periphery are not discrete entities but rather a relational antimony and that peripherality exists only in relation to, and by contrast with the, coreness (1992:225).

What is Dualism?

Dualism is a concept widely discussed in the Third World economics. It represents the existence and the persistence of increasing divergences between the rich and poor nations and peoples of various levels. Specifically, the concept of dualism embraces four key elements:

- 1 Different sets of conditions, of which some are superior and others are inferior, can co-exist in a given space at the same time for example, the co-existence of modern and traditional methods of production in urban and rural sectors

- 2 This co-existence is chronic and not merely transitional. It is not due to a temporary phenomenon which in time will eliminate the discrepancy between superior and inferior elements
- 3 The degrees of superiority or inferiority not only fail to show any signs of rapidly diminishing, they even have an inherent tendency to increase.
- 4 The interrelations between superior and inferior elements are such that the existence of the superior elements does little or nothing to pull up the inferior. In fact, it may actually serve to push the latter down (Todaro, 1982:92-93)

Higgins (1999) in his book, *Economic Development: Problems, Principles and Policies* illuminate J.H Boeke one of the proponents of social dualism theory based primarily on his studies of the Indonesian economy. Boeke emphasized that, western economic theory is totally inapplicable to the underdeveloped areas. In general, his conclusion was that the kindest thing the Western world can do for the underdeveloped areas is to leave them alone; any effort to develop them along Western lines can only hasten their retrogression and decay (229).

Theory of Technological Dualism

As an alternative to Boeke's social dualism, Professor Higgins developed the theory of technological dualism. Technological dualism implies the use of different production functions in the advanced sector of an underdeveloped economy. Higgins builds his theory around two goods, two factors of production and two sectors with their factor endowments and production functions. Of the two sectors, the industrial sector is engaged in plantations, mines, oil fields, refineries, or large industry. It is capital intensive and is characterized by fixed technical coefficients. The rural sector is engaged in producing foodstuffs and handicrafts or very small industries (Jhingan, 2007: 203-206).

Higgins theory explains the nature of developing society's economies especially in Africa where you find advances in technology say in manufacturing and low levels of technology use especially in agriculture with many people in rural areas using hoes and other simple tools for farming. The intermediate technology model postulated by E.F Schumacher provides room for full employment and technological advancement in developing countries.

The Role of Intermediate Technology in Economic Growth

The originator of the concept of intermediate technology was E.F. Schumacher who correctly pointed out that the chief problem before the underdeveloped labour surplus economies was to provide employment to the people. For a poor man the chance to work is the greatest of all needs, and even poorly paid and relatively unproductive work is better than idleness. According to him, *"if we define the level of technology in terms of equipment 'equipment cost per work place', we can call the indigenous technology of a typical developing country-symbolically speaking... a £1-technology while that of developed countries would be called a £1000-technology. If effective help is to be brought to those who need it most, a technology is required*

which would range in some intermediate position between the £1-technology and the £1000-technology. Let us call it again a symbolically £100-technology. Such an intermediate technology would be immensely more productive than indigenous technology but would also be immensely cheaper than the sophisticated highly capital-intensive technology of the modern industry (Misra and Puri, 2006:111). The question of using intermediate technology or appropriate technology is not the main issue but rather the issue should be does the technology provide enough room for advancement? Time tested business and entrepreneurial concept of start small, with whatever you have, where you are is ably illustrated here.

The intermediate technology model advocated E.F. Schumacher fits well in the context of Indian ideological leader Mahatma Gandhi often cited as the "father" of the appropriate technology movement. Gandhi advocated for small, local and predominantly village-based technology to help India's villages become self-reliant. He disagreed with the idea of technology that benefited a minority of people at the expense of the majority or that put people out of work to increase profit.¹ In 1925 Gandhi founded the All-India Spinners Association and in 1935 he retired from politics to form the All-India Village Industries Association both organizations focused on village-based technology similar to the future appropriate technology movement.²

Critics of the dualistic nature of developing countries' economies need to contend with established schools of thought, some western that have come to accept that authentic development begins with what people believe is important to them. To the outsiders the technology used in production of goods and services may appear backward, traditional and archaic but therein lies the science and power for progress.

Central to this discourse is the belief that Africa still has what it takes to move forward by tapping its abundant labour force for production of goods and services utilizing locally available resources in the most efficient and sustainable way. Colonial historical process and politics of labeling Africa a backward, dark continent, where rudimentary tools are used for production has contributed to the abandonment of indigenous technology and capabilities in favor of the sometimes incompatible western technology.

Lessons from Mao Tse-tung Chinese Model of 'Walking on Two Legs'

Inspirational leader Mao Tse-tung aligned China's policies on development centered on "walking on two legs" which seed the technological dualism of parallel development, mass scale development activities and community focused development initiatives to uplift the socio-economical standards of rural China. China's encouragement of small-scale industries based on

¹ http://en.wikipedia.org/wiki/appropriate_technology#cite_note-Akubue-1

² http://en.wikipedia.org/wiki/appropriate_technology#cite_note-mkgandhi-4

appropriate technology created jobs for rural population and enabled China to avoid some of the worst aspect of urban-rural polarization (Long, 1980 as qtd by Chandana Perera & I. Mahakalanda, 2008).

The concept walking on two legs within the appropriate technology discourse serves as a constant reminder that, even when modern methods of production and way of life are adopted, local and traditional aspects should never be discarded. Perhaps African societies can learn a lesson of the Chinese who have never discarded their traditional heritage in favor of western culture and values.

The Chinese are dominating modern traditional medicine in the world with strong presence in Africa. This trend has led many in the medical field to rethink their therapeutic approaches to some of the ailments that affect communities. It is now a common tendency for people to mix traditional medicine with western medicine, while some have abandoned modern prescribed drugs in favor of traditional remedies. As a result of this trend a renewed interest in local traditional herbs has swept Uganda. Many Radio and Television programs air every day showing herbs as a perfect replacement to western medicine. This renewed interest has also given value to the once neglected shrubs and bushes as people search and try to preserve particular tree species and green grass.

Fair to say that this industry has also registered success with some non-communicable diseases such as diabetes, high blood pressure, cancer and many others in medical units majorly using traditional medicine. However due to the not so favorable government policy towards indigenous knowledge the story is unfolding at a slow pace. It may also come as no surprise that the official government road map (Vision 2040) that aims to transform Uganda from a peasant to a modern and prosperous country within 30 years is silent on harnessing and developing indigenous technology.

The science and technology envisaged in Vision 2040 is one of the most important drivers en route to a modern and prosperous economy given that agriculture is the main stay of the Uganda's economy employing 65.6 per cent (UBOS 2010) of the labour force and contributing 21 percent to the GDP³. But this should not in any way take away the need to develop and recognize indigenous capabilities predominant among the population for they form part of the heritage and identity of people in Uganda.

Lessons from Japan: “Japanese Spirit and Western Ability”

The late 19th century slogan, “Japanese Spirit and Western Ability,” symbolized the succession of Japan in adopting foreign technologies and practices without giving up its indigenous culture thereby becoming the first society of non-European origin to carry out industrialization and modern economic growth. The ability of the Japanese to absorb foreign influences and

³ VISION 2014 Pgs. 45

technologies while maintaining their cultural core arose from having a strong sense of identity (Rosser and Rosser, 1996:129).

Governments in low developing countries have yet to fully appreciate the fact that indigenous knowledge or appropriate technology for that matter requires nurturing, protection and enhancement backed by investment in research and development programs. For the Japanese technological adoption and diffusion of foreign ideas depended on how much it will be able to transform homegrown technology. Given the same philosophy many African countries would not have stagnated at the 'Take Off' stage for a lack of technology to spur growth.

This situation was not helped by the selfish approach and policies that many colonial powers used on the Africa continent where they opted to transfer raw materials and manpower to their industrial economies leaving Africa weak and vulnerable.

To take an example the Baganda community used to and still makes backcloth from a local tree called 'Mutuba'. This technology has existed for centuries and back-cloth serves several important purposes such as; clothing people, it is also used in traditional ceremonies such as the coronation of the King in Buganda not to mention that many communities in Uganda use backcloth to wrap and clothe the dead.

This therefore means that the backcloth industry in Uganda did not receive enough enthusiasm from colonial masters and hence they passed it off as another backward activity. Strangely enough the back-cloth industry has still not been given enough attention by government. Part of the reason lies in the fact that the government of Uganda does not have a comprehensive indigenous technology policy. This leaves many indigenous and traditional practices, activities and innovation unattended to.

The table below adapted from a chapter *Japan: Traditional Elements in a Planned Market Economy* in Rosser and Rosser (1996) provides illustration from Japanese traditional art, aesthetic principles to how it feeds into business applications that helps to illuminate the viewpoint that what seems traditional and backward can be transformed into modern and useful instruments for growth especially for future generations.

Table 1.1 Cultural Foundations of Japanese Technological Innovation

The Cultural Foundations of Japanese Technological Innovation		
<p>Sheridan Tatsuno argues that the Zen Buddhist tradition of Japan underpins a cultural tradition of technological innovativeness. He points out connections between Japanese traditional arts and areas in which Japanese have been successful in modern technologies.</p>		
Traditional Art	Aesthetic Principle	Business Application
Wood Carving	Miniaturization	Pocket TV
	Animism	Video animation
Bonsai	Miniaturization	Electronic products
	Trained Growth	Bioengineering
Flower Arrangement	Creative forms	Robot design
	Naturalism	Commercial landscaping
	Asymmetry	Amorphous crystal growth
Rock gardens	Reductionism	Home construction
	Aesthetic asymmetry	Science city design
	Meditative space	Research lab design
Architecture	Multipurpose rooms	Apartments housing
	Open to nature	Office complexes
	Natural materials	Office interiors
Paper folding	Manual dexterity	“transformer” toys
	Complexity 3-D forms	Computer-aided design
Hand-sewn juggling balls	Aesthetic play	Educational toys
Abacus	Manual dexterity	Calculator keyboards
	Visualization	Computer simulation
Chopsticks	Manual dexterity	Robot fingers
Folding fans	Collapsible space	Laptop computer design
	Aesthetic function	Ergonomic furniture
Japanese characters	Visualization	Fifth-generation computers
	Image recognition	Visual scanners
Wrapping cloth	Multipurpose; compact	Folding solar panels
<p>Source: Sheridan Tatsuno, <i>Created in Japan: From Imitators to World-Class innovators</i> (New York: Ballinger, 1990), p. 57</p>		

SUMMING UP

Africa is undergoing a vigorous renewed interest for natural resources. As governments and citizens wakeup to this new trajectory it will be disastrous to make mistakes that may be avoided by creating economic and social partnerships that do not respect the identity and sovereignty of the parties involved because this runs counter to the principles of social justice and sustainable

development. It is time for Africa to pursue a paradigm shift by seeking technological transfer and building economic and social partnerships based on mutual trust with countries from the East. The Chinese model of non-interference in the political affairs of developing countries is worth mentioning here. The BRICS (Brazil, Russia, India, China and South Africa) together account for more than 40 per cent of the global population, nearly 30 per cent of the land mass, and a share in world GDP (in PPP terms) that increased from 16 per cent in 2000 to nearly 25 per cent in 2010 and is expected to rise significantly in the near future. This provides huge opportunities for African States to construct meaningful socio-economic ties with the BRICS. It is also worth noting that China, followed by India, are the fastest growing economies in the current decade (BRICS, 2012).

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