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# Ethnic Construction of Technology

## Technics Ikechi Nwosu

The African Science Fiction Project, Owerri, Nigeria. Email: frontpagetechnics@gmail.com

Ethnic construction of technology is an approach to technology starring African ethnic nationalities in the face. This is an approach that demands immediate propagation in African politics. *Intelligent ethnicity* or *positive ethnicity* is yet farfetched in Africa's sociopolitical life. One group is ready to destroy a technoscientific breakthrough achieved by members of another group. The technological artefact will not go through the prototype stage if it is not a product of a member of the ethno-religious group that has the upper hand in the politics of that state. In this way, African countries (which incidentally are multiethnic) suffer from technological backwardness resulting from their own internal sociopolitical controversies. National technological innovation agendas, where conceptualized at all, exist only on paper. Ethnicity and ethnocentrism therefore must be engaged in the social construction of technology theory by Science and Technology Studies (STS) scholars to transform same into Africa's most important field of study in the 21st Century, to hone its political value in the continent as she struggles to initiate a technology manifesto and to end the Third World's technological dependence on the industrial and super-industrial countries. As a multi-disciplinary field of study, political scientists (especially in Africa) can move STS more away from the neutrality philosophy (something to study) towards the commitment philosophy (something to encourage) to expand and consolidate its political value in third world technology politics. The commitment philosophy of STS if propagated in Africa and the Third World will create STS of technological takeoff which will be the most valuable contribution of STS scholarship in technologically backward countries. Engaging STS of technological takeoff for Africa and the Third World is an important contribution of this research. This paper weaves *ethnic construction of technology* into the social construction of technology theory and conceptualizes ethnic nationalism or ethnic consciousness as possible 'momentum accelerator' in the evolution of technology in African states, drawing on historical evidence of ethnicity as a key driver in the evolution of technology in Europe. The Igbo ethnic group comes into focus as an example of this perception. The Igbo ethnic group made Africa's first modern technology in the years 1967 to 1970 when that ethnic identity sought to establish the Biafran State – *a scientific state* that would have triggered the *Japanization of Africa* within a decade of its establishment. Thus, the Igbo Biafran State initiated the Igbo technoscientific image-identity carried by the people well into the 21st Century, such that they produced the prototype of Africa's first car (Z600) in 1997 and created a new Physics (Emagnetodynamics) in 2006. Though Emagnetodynamics technology has been patented in about 139 countries including the United States, in the local economy it is unknown and unsung and considered a failed technological artefact along with the Z600. Nigeria's ethnic politics is a social force at the root of the present condition of these two technological artefacts. The Z600 would have been Africa's $2000 car affordable by 200 million Africans, and the self-sustaining Emagnetodynamics Machine has the capability to make Africans pay nearly nothing for constant electricity and drive millions of their cars without petrol. These two Igbo inventions would have spawned a thousand other technological inventions, for invention seems to be a marked prowess of the Igbos. Yet ethnicity in Nigeria stands in the way of this immense technological harvest that would have been the lot of Africans, leaving the continent a dumping ground for technological latecomers. Thus, the salience of ethnicity in the social construction of technology theory becomes obvious. Ethnicity first exists as a social phenomenon before it finds expression in the political sphere. Retrogressive ethnicity exists in the Nigerian social sphere in the form of ethno-religious bias; then it is extended to the political front where it re-emerges as ethnic politics in the competition for political power whereby members of one group or allied groups use political power to suppress and destroy technological innovations achieved by some members of the rival groups of a political state. This work belongs to the general category of political impediments to technological development. Using the Igbo experience, this paper argues that Africa's technological backwardness which has lingered well into the 21st Century is produced by domestic technology politics.

**Keywords:** Technoscientific Identity; Ethnic Constructionism; Identity Technological Artefacts ; Technological Ethnocentrism; Embeddedness; Ethnic Branding.

## INTRODUCTİON

In 1997 a car was made in Igboland, in Owerri. Z-600 was presented to the public and everybody clapped. The military governor of the state (of Hausa ethnic extraction) clapped and the people were excited. This car got the attention of the BBC because it was 100% made in Igboland, in Africa. Will Africans now start making cars, their own cars? Of course this will not be good business, neither will it be good politics for Africa's automobile importers and their foreign partners. The maker of the car is Engineer Ezekiel Izuogu, an Igboman.

The Igbos in Nigeria have a technological legacy. This legacy is the product of an accidental self-discovery in the years they established the Biafran State (1967-1970). They made Africa's first indigenous war missiles known as the Ogbunigwe which were manufactured as surface to air and surface to surface models, armoured personnel carriers (APC), and they refined petrol and diesel out of palm fruits (Jannah, 2017). It is on record that the "Ogbunigwe was the most effective Biafran weapon during the war and the Nigerian forces were not able to find an efficient defence against it" (Wikipedia [1]). It is revealing that "in Biafra (1967-70) …indigenous scientists and engineers performed socially relevant science without the preconditions conventionally perceived as necessary for technological development" (Ukaegbu, 2005).

Unfortunately, the Igbo technological prowess has made them the target of ethnic politics in Nigeria. The Igbo elite were co-opted into Nigerian politics and bought over as it were so they can keep quiet while their kit and kin are oppressed and shortchanged. The Igbo political elite are aware that Igboland represents the Japan of Africa. For instance, Nnewi – a city in Anambra State, one of the five core Igbo states – has this stereotype as the Japan of Africa (BusinessDay, 2014). The Igbo political elite seem to have promised the Igbo oppressors that the *Japanization* of Igboland by the Igbos will be stillborn. One after another, the elite from Igboland signed into the Nigerian scheme to keep the Igbo technological energy in check and in exchange they got contracts with extra zeros added. The Igbos have in countless circumstances labeled them saboteurs or simply 'sabo' in the local dialect.

After the war in 1970, the Nigerian government till date does not know what to do with Biafran technological geniuses. Of course, the army occupied the government from 1970 to 1979 and again from 1984 to 1999 to ensure that the technological temper of those geniuses dies down and rots away, to kill the will of the people. For without technological genius how can the Igbo talk about their political and economic freedom? What instrument can a people deploy to acquire economic and political freedom other than technoscience or science and technology in the old parlance?

Ethnic schisms and struggles – in a word, ethnic competition – is positive for the evolution of technoscience in multiethnic states such as Nigeria if the relevant ethnic identities competing for relevance would focus on the real essence of competition. Competition produces insight and imagination and resourcefulness and self-reliance; it propels people to become producers of resources (including knowledge resources) and not necessarily to get the most share of resources that have already been produced. For competition produces the desire to become the pathfinders, the parameter setters, and the real leaders are those who are able to determine the parameters for competition, those who are able to take this competition to the higher levels, the real productive levels.

Ethnic competition that is valuable therefore must manifest as ethnic technoscientific competition. Other forms or directions of ethnic competition only manifest in ethnic violence or ethnic repression which are essentially unproductive. I have suggested in my paper *Ethnic Science Fiction in Africa's Political Sphere: the drivers of Technoscience* (Nwosu, 2018) that ethnicity is very positive for Africa's technoscientific evolution and that an ethnic innovation policy should be deliberately engineered in African states deeply divided along ethnic lines and that such states should stop wasting public funds in ethnic unification programmes but rather channel such funds towards constructing the sociopolitical environment necessary for such competition to thrive, such as the propagation of the relevant ethnic science fiction stereotypes which serve as the necessary combustible material for the flame of ethnic technoscientific competition.

European ethnocentrism in the form of racism is at the centre of the African colonial experience of technological repression: that is the deliberate suppression of native technologies by the colonizers in the guise of commerce. The contemporary African experience is the suppression of ethnic technological genius by counter ethnic forces in collaboration with foreign and advanced technoscientific centres of the world. This is usually achieved through the business and political elite of the counter ethnic forces through the instrumentality of the deception known as free trade, which itself is enshrined in the doctrine of globalization. Neocolonialism is a broad concept that best captures this unfortunate African experience.

My argument here is that Africans are not technological laggards but the aforementioned social forces have played the destructive role of suppressing ethnic technoscientific genius among the ethnic groups that have it. Usually members of the ethnic group – especially elite members – constitute the connection point with the outer groups to disarticulate their own ethnic genius, with politics as the playing field.

## Theory of the Social Construction of Technology

The field of Science and Technology Studies has produced this all-important sociopolitical theory of technical change and the evolution of technology in human societies. The theory of the social construction of technology (SCOT) argues that technological artefacts are culturally constructed and interpreted. It describes the interpretative flexibility of a technological artefact which itself refers to the changes in designs and structures – the metamorphoses of an artefact so to speak – resulting from diverse perceptions by social groups connected to that artefact.

> In a wider dimension, SCOT argues that "science and technology are themselves socially produced in a variety of social circumstances" (Bijker, 1993, p.20). In other words, "…both science and technology are socially constructed cultures and bring to bear whatever cultural resources are appropriate for the purposes at hand" (p.21).

Social construction of technology differs from innovation studies and critiques the latter because of its inherent weakness, which is that "… in the economic analyses of technological innovation, everything is included that might be expected to influence innovation [favourably] except discussion of the technology itself." Social construction of technology rather argues that "What is needed is an understanding of technology from inside, both as a body of knowledge and as a social system" (p.21). SCOT must include an examination of the contents of technological innovation. In the perspective of the social construction of technology, this is "a deficit" in innovation studies which mostly create linear models to describe the innovation process and from which they deduce the conditions for success in innovation (p.22). The theory of the social construction of technology argues that greater attention be paid to social forces surrounding technological innovation.

SCOT therefore asserts that "…the success of an artifact [is not] an explanation of its subsequent development. …the manifest success of the artifact [is not the] evidence that there is no further explanatory work to be done." (p.22). Rather the success of a technological artefact is the very thing that requires an explanation and in doing this one encounters sociocultural and socio-technical factors that shape technological innovation.

> The systems approach to technology relates closely to SCOT (p.24), for example its "consideration of the effect of labour relations on technological development, and detailed studies of some not-so-successful inventions," while SCOT understands "technological artifacts as social constructs" and "treats successful and failed artifacts in an equivalent way." (p.25).

## The Embeddedness of Ethnicity in Social Constructionism

Ethnicity is a political phenomenon much as it is a social phenomenon. It operates in the political sphere where it shapes and shortchanges national politics such that national development agendas are distorted and disarticulated by elite competition. Similarly, it manifests as a social reality defining interpersonal relations and producing negative outcomes such as ethno-religious violence, human rights abuses, underdevelopment of the law and enthronement of impunity in governance, etc.

Ethnicity as a social phenomenon rudimentarily exists as language identities. Those who do not speak the language of the in-group are excluded from the group and labeled outsiders or the out-groups and mutual suspicion originates here. There could be divisions within the in-group manifesting as sectionalism or clannishness when political resources are distributed, yet the in-group immediately knows its own by the language identity. In colonized societies where a foreign language is usually introduced as the lingua franca, the language culture group remains the first insignia of an ethnic nation that informs an in-group in its policies of exclusion of the out-group. These schisms and ethnic idiosyncrasies are replicated in internal technology politics of countries bedeviled with ethnic pluralism, of which sub-Saharan African states are excellent archetypes.

Added to this is the religious dimension of ethnicity. Ethnicity becomes more engaging as a social phenomenon when it is accompanied by religious homogeneity. The degree of religious similitude of an ethnic identity determines how powerful it can render itself as a social force. Ethnicities that are total ethnicities combine the language similitude factor. For instance in Nigeria, two major ethnic groups stand out in this perspective – the Hausa/Fulani ethnic group who are 99% Muslims and the Igbo ethnic group who are 99% Christians. The Igbos cannot accept anything originating from the core Hausa/Fulani group and the Hausa/Fulani group would quickly discredit and possibly disinherit any idea or programme originating from the core Igbo ethnic group. My observation is that the Hausa/Fulani group are more of politicians (African style politicians) than anything else whose interest lies in the accumulation and control of political power, while the Igbos are more of makers of things than anything else. This is probably because Islam is a conformist religion, producing more of followers than thinkers, while Christianity is an individualistic and egalitarian religion, producing more of thinkers (and therefore more deviants) than followers. While these two groups are at polar extremes, the Yorubas (another dominant ethnic group in Nigeria) do not exist as what I

have labeled *total ethnicities*. While the language factor remains the unifying factor among the Yorubas in western Nigeria, the religious factor of unity is missing as around 30% of this group are Muslims while 68% are Christians. Traditional religion constitutes around 2% of the Yoruba population. Traditional religion in both the Hausa/Fulani and the Igbo ethnic groups is too insignificant to constitute a mathematical ratio of their populations.

Unfortunately, ethnicity has not been clearly represented in the social construction of technology theory by STS scholars. I have not personally come across any 'round' work on this conceptualization. This lacuna could be a function of the cultural backgrounds of STS founder-scholars who come predominantly from ethnically-homogeneous political societies and so are driven to focus only on the social dimensions of technology observable in their immediate societies. The onus therefore lies on African scholars to refocus STS to engage with ethnicity as the most salient of all social forces existing in their local societies.

Technological innovation of both successful and unsuccessful artefacts does not occur in a vacuum but in a complex web of non-technical factors such as social forces. Ethnicity is one of such social forces. Ethnicity is also classable as a sociotechnical force. Ethnic pluralism in sub-Saharan Africa is so powerful that one can safely say that technology is an ethnic thing, an ethnic creation, an ethnic possibility. Technology domestication in Africa is critically impeded by ethnic pluralism; yet ethnicity and ethnocentrism remain African technology's greatest prime mover. This is a paradox. Ethnicity as a social force shapes the political psyche and perceptions of the people which directly impinge on the technological possibilities of the people. More so, ethnicity's management is more critical in the explication of its role in the social constructionism (or constructivism) paradigm, wherein the outcome of the ethnicity-technology construct could either be a tacit agreement by the contending ethnicities to import all technological artefacts and make none or a stiff competition for ascendancy and prominence in the creation and recreation of technological artefacts. The latter scenario is the positive and desired outcome wherein mutual animosity (being ethnicity's basic instinct and therefore drive) creates superiority or competence competition in the technological sphere. The former scenario is the negative possibility outcome determined by a pattern of managing ethnicity wherein mutual animosity creates superiority competition for political power. Why would the basis for ethnic competition in sub-Saharan Africa be political power and not technological power? Which is more certain to provide food on the table of Africa's ethnicities – political power or technological power? The truth is that ethnic struggle in African countries is on the wrong path, yet it is an excellent social force capable of lifting these poor and dependent Third World countries of Africa into emerging technoscientific and rich states of the world. The contending ethnic identities in various African countries are busy with the contest for the capture of political power, such that we have a brand of democracy in Africa called ethnic democracy which is basically hegemonic democracy with the attendant power-sharing arrangement. This democracy is retrogressive and concentrates on how to capture and manage political power through deception and propaganda so that the ethnic group whose members occupy certain political positions would use those positions as much as possible against the interest of the other ethnic groups, even if those interests are technology business interests which are beneficial to all. This democracy is a product of politics of status quo which kills technological innovation. Ethnic democracy is the democracy of power and power-sharing and compromise and not the democracy of ideas and issues. Ethnic democracy as a concomitant of ethnic pluralism has destroyed golden opportunities to articulate technological take-off in African countries. The Nigerian authorities for example do not possess the vision and tact to harness ethnic pluralism for the country's technological development. The Nigerian technological frustration can be addressed by injecting *ethnic science fiction* into the sociocultural space to divert the energy and attention of the ethnicities away from extreme political consciousness and political competition into technological consciousness and technological competition (Nwosu 2018).

The evolution of invention and the governance of technoscience in Africa are problems of 21st Century political imagination. The invention space must be liberalized and taken out of its perceived political sphere to the social sphere where it can be *ethnicized* and fraternized to ensure that technoscience grows with the values and temper of the specific ethnicities that created it, whether religious, social, or economic. This technique ensures that as technoscience emerges it is bound by the collective ethics of its owners, being the owner-ethnicities. This transforms invention from a purely capitalist or business phenomenon to the realms of ethics and society (which includes her ethnic convictions and propensities), and to the essentially social realm where other values beyond business values apply to create the necessary people-sustained and people-directed technoscience such that other centres of power than the political that can emerge to absorb the attention of the ethnicities can be created. Centres of power outside the political sphere constituted by the ethnicities are in effect *a signature control* of the political sphere and in effect Africa's corrupt political elite who are the players therein.

Is social construction of technology relevant in the study of the evolution of technology? Is social constructivism relevant as a paradigm or theory in the study of the evolution of technology in political systems? The ethnic factor in the evolution of technology in Third

World countries, with the Igbo ethnic formation in Nigeria as a case study is my focus in this paper. Now, I am looking at the evolution of technology basically in political societies where technology has not taken off, and those societies are easily classable as Third World countries. I am looking at the applicability of the social constructivism theory in the evolution of technology (technology generally, that is technology as a collective) in Third World countries. My yardstick for measuring what I call 'technological arrival' in Third World countries is a country's ability to achieve breakthrough in mechanical engineering, whether through governmental corporations or through indigenous private companies. Mechanical engineering is basic in all engineering because the mass production of all technological artefacts involves machines which themselves are a product of mechanical engineering. If you think about, say, the processing industry or the chemical industry you have to have machines that will run chemical processes. These machines can simply be purchased from China or Germany and installed. For instance a Nigerian entrepreneur can go to China or Germany and procure machines and install and run them, machines that will process, say, local palm oil into world class cooking oil that is exportable to even the United States. The businessman only needs to get the machines in place and manufacturing commences, but those machines when they break down may not be able to be serviced locally. The machines could be so highly automated and computerized that local technicians may not be able to handle their maintenance and servicing. These machines are a product of mechanical engineering – the machines that undertake the entire process of transforming the local palm fruit into exportable first-class cooking oil. Now, we can have a paint industry that makes world-class exportable paints. There are machines the entrepreneur can import and install that undertake the entire retinue of processes in the production of high quality paints. The making of these world-class exportable paints involves machines that are not made by the local technology, the people themselves. As far as this study is concerned, such a country has not arrived technologically, insofar as it is unable to fabricate these machines that make things.

A country that is able to do something in mechanical engineering, some tangible work in mechanical engineering, has achieved technological arrival. So I use automobile engineering as my yardstick to measure technological arrival; automobile engineering because it is the making of machines that do work. For instance, Nigeria has companies that make automobile parts at Nnewi; companies that make motorcycle parts at Nnewi – all the parts of the motorcycle engine are made by certain companies at Nnewi. This means that the entire engine of the motorcycle has been made at Nnewi but as different parts of the engine made by different Nnewi companies as engine spare parts. One can proceed to assemble a two-stroke engine by coupling the different parts made by different Nnewi companies and an engine has been made. That engine will now run the motorcycle and it is basically and rudimentarily technological arrival because the body can now be shaped – you can have any contraption as the body (such as the traditional motorcycle body or the three-wheeler contraption popularly known as *keke*) using the two-stroke engine that is made at Nnewi to drive it. That vehicle now does the tremendous work of transportation. The making of machine-engines that do work is rudimentary in mechanical engineering, and I describe it as technological arrival. My study indicates that in Nigeria, the Igbos have achieved technological arrival for Nigeria and Africa. Then, why is this technological arrival not known and not properly adapted, exploited, expanded, invested upon by the country to make the country self-sufficient in the production of technological artefacts? For instance, why does Nigeria still import the three-wheeler two-stroke vehicle (popularly known as *keke*) that is used in the country for public transportation mostly within cities when practically the basic components of that vehicle – the tyres, the wheel and wheel drum, the tarpaulin, and all the parts of the engine which when coupled forms the engine itself – are made at Nnewi? Why does Nigeria still import this vehicle (*keke*) from India? What remains? Is it not to construct the body respecting world patent laws? It can be done in three months. It's a three-month project for any of those companies – to come out with their own body design of the *keke* and begin to mass-produce them. So why is the market not open for them to move to the level of making the whole *keke* or the whole motorcycle? Nnewi has companies that make the best motorcycle chains, tyres, motorcycle wheels. Motorcycle chains and sprockets are made at Nnewi. Motorcycle engine blocks are made at Nnewi. Motorcycle pistons and rings are made at Nnewi. Nnewi companies have been making them for the past twenty years. So why has the country not taken off technologically? I say the answer is ethno-religious bigotry. Ethnicity in Nigeria destroys technology. Ethnic pluralism in a political society produces ethnicity. Ethnicity in a political state has the potential to destroy its own technological arrival. Nigeria's ethnicity, Nigeria's ethno-religious politics, Nigeria's ethnic chauvinism, Nigeria's ethnic consciousness destroys her own manifest (not potential, mind) technological arrival. The country has arrived technologically and by now should be making helicopters, engine-powered boats that can transport goods and people across her vast riverine areas. The country should have been making technological artefacts that run on combustion engines for the past ten years – if you ask me I will say for the past twenty years. Why is it difficult for Nigeria to lead Africa's technological revolution? While the Nnewi pathfinder-companies are there, the country's

ports are generously open to foreign companies to throw in their own products that are probably superior in refinement but may not be more durable than the Nnewi-equivalent products. There is no national technological patriotism. Technological patriotism when it is evident at all is highly sectional and designed to promote a particular ethnic group using the country's resources.

A cursory overview of companies in Nigeria attempting to make an inroad in hard technology leads one to conclude that yes indeed ethno-religious bigotry (embodied in Nigeria's ethnicity) is the problem of technology in Nigeria. Ethnicity will enable foreign subversion and control of the country's efforts at technology domestication. Technology domestication includes technology reproduction for mastery through imitation or faking, though this may be illegal, and the discovery of new terrains and new applications of existing terrains.

Imperialism works through the country's ethnicity. The neocolonialists know the ethnic group that will be in power to create an easy road for them to manipulate the country's technological destiny. Ethnicity therefore is an enabling social force for the external suppression of emerging technology in Third World countries by the neo-colonizers. For instance in Nigeria, the Hausa/Fulani ethnic group is very important to the British government to suppress the Igbo technological entrepreneurship which has already achieved technological arrival for Nigeria, Africa and the Third World or at least the Black nation-states of the world for the past twenty years. So the British and other imperialists take advantage of the primordial hatred of the Igbo Christian ethnic group by the Hausa/Fulani Muslim ethnic group to wreak havoc on the technological destiny of the Igbos and their aforementioned connections.

The point is to establish the ontological suitability of the social construction of technology in studying the evolution of technology in political states, especially Third World countries. For instance, social construction of technology includes issues such as gender in the development of technology, which implies the shaping of technology. Social construction of technology talks about the shaping of technology, not its formation. A piece of technology or a technological artefact is already in existence but in view of gender issues, moral issues, environmental issues – these issues constrain engineers or inventors to go back to the drawing board to reshape the artefact to emerge in a particular form. These are the issues I have so far noticed that are treated in social constructivism. These are social forces in the construction of technology. But there are social forces too that operate even at the initiation of a piece of technology, not just its shaping, and can stimulate or kill off such technology at the outset. My contention is that social constructivism entirely leaves off or glosses over ethnicity (and its myriad forms) in its definition of itself. My contention then is that ethnic forces

are social forces (like gender, ethics, age, etc., extensively treated in social constructivism in the analyses of technological development) in a political state that can cause a piece of technology not to succeed at all. For instance, in Nigeria which is a forced federation of several unwilling nation-states, ethnicity causes the stagnation and even retrogression and death of tangible technological success achieved by certain sections or tribes of the country. The country is highly tensed up with ethnic consciousness, ethnic mistrust, and ethnic hatred. A few days ago, I read in the newspapers that the Federal Government is arranging a loan of $25 million to push into the power sector for the importation of prepaid electric metres from China. This is a piece of electrical engineering. Now, are there no Nigerian companies that can produce and supply these prepaid metres? I say Nigerian companies that can design prototypes and mass-produce the specific required prepaid metres right away are available within Igboland. Just give them just give them the challenge and they will throw out several prepaid metre designs at various costs within three months. Sound technology incubation policy demands that when the federal government wants to do something, say a national programme involving technological production or reproduction such as a massive deployment of a technological artefact, that national programme and its technological artefact should be used to stimulate and launch the domestication of the production of that artefact by indigenous companies. But this ideal science and technology policy is quickly jettisoned in the face of ethnic hatred when the people that have the ability to make technology are not the people in power to give the contract, by ethnic configuration. The federal government of Nigeria under a Hausa/Fulani Muslim president for instance cannot give out this job to an Igbo company, especially when that company is domiciled within Igboland, though this company has all the credentials to make the product one hundred percent at home. In ethnicity, it is better the capital flies to China and Nigeria loses the product value chain as well as the technology value chain if the presidency cannot find a Hausa/Fulani Muslim-controlled company that can make the prepaid metres. Ethnic hatred in Nigeria readily kills the country's technological growth.

Ethnicity is political and social, heavily political and heavily social at the same time. It is there in the multiethnic society and worse when the ethnicities have uniform polarizations, such that a particular ethnic group is readily identified with a particular religion. When citizens get into the political sphere such as the centres and corridors of power, they begin to manifest what they picked up in the environment when they were ordinary citizens; they begin to manifest their ethnic loyalties and idiosyncrasies. And these idiosyncrasies and loyalties are elements of socialization that they picked in the

environment, the society, which become social forces that become obstacles to technological development in the multiethnic political state. So, ethnicity is social, a social force first and foremost. Being social, it is intrinsically embedded in the social construction of technology theory. That is my argument. Being social, ethnicity should be part and parcel of the social construction of technology paradigm. But Western scholars of social constructivism have not made it apparent that ethnicity or ethnocentrism or ethnic consciousness – anyhow you define it – is indeed embedded in the social constructivism analyses of technology. Ethnicity, which embodies three dimensions – ethnocentrism, ethnic consciousness, and ethnic nationalism – truly belongs to the social sphere. It subsequently finds its way to the political sphere through the ethnic-human political actors. I take on ethnicity and establish ethnicity as a factor to study in the social construction of technology in ethnically plural political states. The formation or causation of technology or technological growth from the social dimension, from the nontechnical (the nontechnical determinants of technology, the nontechnical forces of technological evolution) must include ethnicity as a major factor in the equation determining the causes, momentum, and direction of technology. Ethnicity is ontologically, epistemologically, and philosophically part and parcel of the social construction of technology paradigm.

**Historical evidence of ethnocentrism as a key driver in the evolution of European technology**

It is not the Scots that ensured the survival of English inventions in the formative years of British technology. English inventors first relied on fellow Englishmen for support and identification with their inventions. English inventors relied on fellow Englishmen for immediate investment in their inventions during the 1500s and 1600s. Early English inventors did not look up to the Welsh or the Scots for approval and identification with their works or even for commercial deployment of their inventions. Rather they found immediate acceptance and recognition from other Englishmen, and English businessmen first took interest in the discoveries and mechanical contraptions of their fellow Englishmen. Yet these three ethnic groups of Britain had existed in a political union since the 1200s and by the 1400s both the Welsh and the Scots now spoke the language of the English people as their mother tongue. So by the 1600s the three ethnic groups of Britain had melted into one ethnic identity and could be called the British.

Today the British people can speak of 'British engineering' or 'British technology' as their technological identity. The British today are not seen as English or Scots or Welsh but simply as British since the three language groups have fully absorbed a common

language group with one religious identity, being Christianity. The point here is that ethno-religious homogeneity is the soul of technology. *Technology's most fertile soil is ethno-religious homogeneity*. Countries concurring with the ethno-religious homogeneity-technology complex include old technoscientific countries of Europe such as Sweden, Norway, Finland, Germany, Austria, France, Italy, Spain – essentially Western Europe – and the descendant countries of Britain which are Australia and New Zealand. A later group includes Japan, South Korea, Taiwan, and China, while recent technological states include India, Malaysia, Singapore, and Brazil. The common factor in these sets of countries is ethno-religious homogeneity of each country.

In the historical development of technology, it is ethnic identities that evolve, own, and propel it. The first creators and owners of technology are ethnicities/ethnic identities. National forces, if at all significant, come in at a much later stage and still do not increase in salience beyond the owner-ethnic forces. Technology is an ethnic child, an ethnic creation.

Indeed, historical evidence abounds that the story of science in Europe is incomplete without her ethnicity. Ethnicity propelled science and invention in Europe for a period of two hundred years.(research and furnish data here). Being essentially homogeneous ethnic-nation-states, *ethnic markets* emerged in these countries to ensure the mass distribution of artefacts of technological innovation at home and to close the ethnic-nation-state boarders from the inflow of competing artefacts from abroad to ensure critical capital accumulation in the industries that made those artefacts at home, from which sustained development of the artefact becomes possible and comes off rather quickly. Again, there is the psychological satisfaction provided by ethnic markets to inventors and technological entrepreneurs which comes with the knowledge of acceptance by their kit and kin, the very people who are their kind and speak their native tongue and who they can see eye to eye. Thus, the Poles gave their money to Polish inventors and technology entrepreneurs in exchange for their artefacts. The Swedes took the technology products of their fellow Swedish-speaking people, and the Norwegians, the Finnish, the Germans, the Italians, the Spaniards, the Portuguese, and the Hollanders (all ethnic nation-states in themselves) each formed the first and most critical markets for their kinsmen whom Providence had formed into path-finding inventors and technology entrepreneurs.

German inventors were aware of the strides made by English inventors and vice versa. Danish inventors knew about English and French inventors and were aware that they were not alone. There was marked competition for superiority in technological inventiveness among the ethnic identities of Europe. Ethnic homogeneity incidentally worked to the advantage of European nation-states, such that ethnic forces were also national forces

and ethnic consciousness could easily mean national consciousness and ethnic agendas could easily be described as national agendas. All over Europe, the awareness of technological inventions of one tribe was common among other tribes. Men and women in or outside government were worried about being outpaced by the inventions of some other European tribes. Ethnicities became synonymous with specific technological inventions and the common conversation of ethnic members took the form of 'we the French invented this' or 'we the English invented that' or 'the Italians learnt to make this from us.' Ethnic pride was tacitly embedded in the consciousness of Europeans. The source of this pride was not political but technological. European ethnicities were proud of the technological accomplishments of their people right from the early days of modern technology. In addition, the knowledge that technology could be deployed to discover and capture the unknown world increased the drive for technological competition among Europe's ethnic nation-states. This way, ethnic consciousness drove technological growth in Europe for at least a period of two hundred years and even till this day.

## The Embeddedness of Identity Technological Artefacts in European Ethnocentrism

Technoscientific entities comprise of "scientific laws or facts", "technological artefacts", and technoscientific institutions or policies (De Albuquerque et al, 2013, p.3). Having set off an ethnic technological competition among various European ethnicities, ethnic consciousness in Europe moved to the next all-important stage, which is its role in identity formation or identity reconstruction. The latter is a better term than the former – the systemic reconstruction of the identity of the various ethnicities. Once technological entities were created by specific ethnicities, they became embedded in the identity of those ethnicities and by which identity reconstruction occurred such that the technoscientific entities in themselves became *identity technoscientific entities* which found strong manifestation in European ethnocentrism. Whether they

are laws of Physics discovered by Germans or English scientists (that is scientific laws or facts) or the emergence of the Royal Society of England (technoscientific institutions or policies) or the invention of the engine-driven carriage by Mr. Carl Benz which metamorphosed into Mercedes Benz (which became Europe's first and most reputable car and which became the identity of the Germans), technoscientific entities emerge in the historical development of technology by ethnic identities to become or assume the very identity of those ethnicities that produced them, and the most powerful of these in identity construction and reconstruction are technological artefacts. Artefacts are physical entities the vast majority of members of an ethnic group can interact with. Being physical entities, artefacts too are sold abroad and this way other ethnicities and nationalities interact with them on a large scale. *Identity technological artefacts* therefore became a necessary and vibrant component of European ethnocentrism. For example, the ethnic nations of Europe, driven by their ethnocentrism, started to organize auto racing competitions wherein various *ethno-cars* could compete for technological superiority. The ethno-cars were the pride of their ethnic-group makers. Thus the German Benz, the French Peugeot, the Swedish Volvo, the Italian Fiat, etc, became vibrant components of their ethnic consciousness, their ethnocentrism, their ethnic pride, their ethnic identity, such that in those auto races the defeat of Fiat by Volvo and Mercedes would mean the defeat of Italy by Sweden and Germany by a tacit and subconscious interpretation. The major peoples of Europe brought up automobiles which would represent them as signatures of their techno-cultural superiority or at least maturity or even mere arrival.

The history of European technology is replete with tacit and silent ethnic connections, connotations, and metaphors. What drove European ethnic identities to acquire identity technological artefacts goes beyond economic forces or the laws of economics. What is the economic rationalization of a force such as pride? When pride operates among a people in an ethnic identity it becomes a social force and finds its way into the quest for technological production and subsequent adoption of such production as identity technological artefacts.

**The Igbos and their technologies: the Z-600 and Emagnetodynamics**



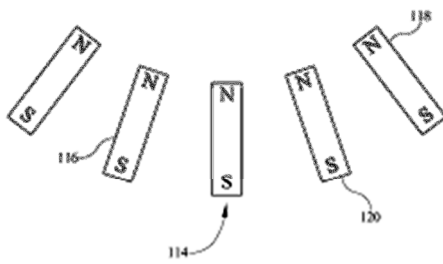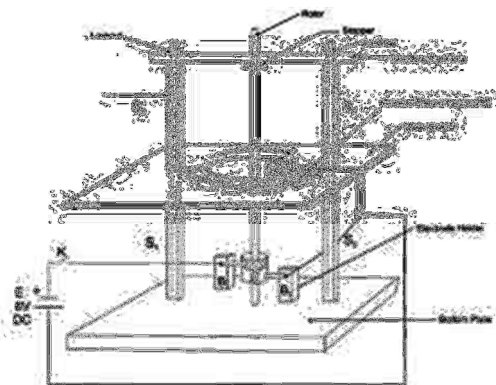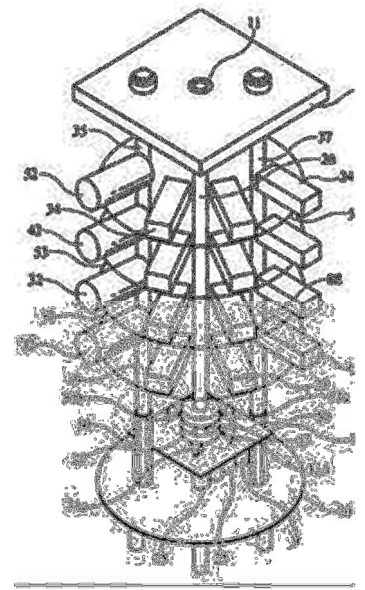**The Z-600 and its inventor**



FIG. 2A



FIG 12 - Fully set up machine.

## Emagnetodynamics Technology (the IZUOGU MACHINE)

I hereunder reproduce accounts of the Z-600 by Wikipedia [6], BBC News (1998), and Hillso (2009). While the renditions by Wikipedia and the BBC represent an outsider's view, Hillso's rendition is an article on a popular Nigerian blog representing the detailed view of an educated and unbiased Nigerian as an insider's view. Of course 'Hillso' is but the author's penname on the blog adopted possibly for security purposes.

<u>The Wikipedia Account</u>

### Izuogu Z-600

The **Izuogu Z-600** prototype was the first indigenous Nigerian car, and the first automobile of indigenous all-African technology. It was the brainchild of engineer Ezekiel Izuogu. Launched in 1997, the car caused a stir in the Nigerian media, and was touted by the then Nigerian chief of Staff General <u>Oladipo Diya</u>.

### Design and specification

The prototype was equipped with a self made 1.8L four cylinder engine that got 18mpg and allowed the car to achieve a top speed of 140 km/h (86 mph). Front Wheel Drive (<u>FWD</u>) was chosen over Rear Wheel Drive (<u>RWD</u>) because a transmission tunnel, which RWD would require, would be more expensive to fabricate. 90% of the car's components were made locally.

The design of the car was very utilitarian resembling a <u>Renault 4</u> with its upright stance and a front end that vaguely resembles the locally assembled <u>Peugeot 504</u>.

To be priced at $2000 it would have been the cheapest car in the world. Clever features like a door bell used in place of a horn ensure it achieves its low price target. Mass production was planned under Izuogu motors located in Naze, <u>Imo state</u>, but too many financial and political hurdles prevented the car from proceeding past the prototype stage.

### Current progress

In 2005 interest from other African countries arose about the Z-600 and Dr. Izuogu was invited to South Africa to give a speech on science and technology. The South African government showed keen interest in the car and wanted Izuogu to build it in South Africa.

Optimism surrounded the car until March 11, 2006, when no fewer than 12 heavily armed men raided the factory of Izuogu Motors in Naze taking with them the molds for the engine blocks and crank shaft, mudguards, the design history notebook of Z-600, the design file; Z-

MASS (containing the design history for mass production of the Z-600 car) and other components. This was a big setback for the project. Since then not much is known on the status of the car.

<u>The BBC Account</u>

### The all-African dream machine

It's African, it's new and it's different. The latest - and the first - in the Z series, the Z-600, is the first ever all-African car, reports the BBC's correspondent in Lagos, Hilary Andersson.

It was designed and made in Nigeria for the family market and has a top speed of 140km (86m) an hour.

Ninety per cent of its parts are locally produced - it has a doorbell for a horn. And if it ever goes into mass production it will cost just $2,000 (£1,195), making it the most affordable car in Africa - and probably the world.

The Z-600's inventor, Dr Ezekiel Izuogu, says that many Nigerians simply cannot afford a car. He believes his home-grown machine will be an instant hit.

"The common man is very, very keen. He's very interested. Many of them have dreamt of having their own cars over the years," he says.

The car is already an icon in Nigeria. The prototype received a rapturous reception on the streets of the capital, Lagos.

But back at the workshop, Dr Izuogu is working on another idea designed to appeal to the "common man". He is adapting the engine to allow the Z-600 to double up as a lawnmower - or even an electricity generator.

<u>The Hillso Account</u>

### What Happened To Izuogu's Z-600 Nigeria Made Car?

I like asking questions. And I don't know why. But I seem to think that it has got to do with my quest to understand. I reckon it has been said that he who ask questions rarely misses his way. I sure agree with that in the same way I have come to read Bernard Lonergan and his treatise in epistemology. He creates the levels of knowledge to indicate that there are questions for understanding and questions for knowledge. In this regard, I am asking the question for understanding and I believe somebody somewhere has the capacity to make me understand.

I was thinking of what next to write about when my thoughts feel on Z600. I did not immediately recall exactly when that identity hit the national scene but I recall it was associated with an Igboman, Ezekiel Izuogu of Izuogu Motors Limited. I recall also that the hype then was that an Igbo man had built Nigeria's first car using bare hands. I mean, without any robots or superior technology and a fantastic workshop like you would find at any of the

auto makers shop out there in USA, Europe or Asia. The thought of Z600 kept hitting me like it was my invention. That forced me to do a little internet search on that brand of car which never saw the light of day.

My internet search led me to a page on Wikipedia, an internet encyclopedia of knowledge. What it told me about the Z600 was at first encouraging, and latter, disturbing.

The Wikipedia said this of Z600: "The Z-600 prototype was the first indigenous Nigerian car. It is also the first automobile of indigenous all-African technology. It was the brainchild of Engineer Ezekiel Izuogu. Launched in 1997, it caused a stir in the hearts of many Nigerians who hope for a personal car and stimulated the Nigerian media. The car was touted by the then Nigerian chief of Staff, General Oladipo Diya."

Describing its design and specification, the Wikipedia said: "The prototype was equipped with a self made 1.8L four cylinder engine that got 18mpg and allowed the car to achieve a top speed of 140 km/h (86 mph). Front Wheel Drive (FWD) was chosen over Rear Wheel Drive (RWD) because a transmission tunnel would be more expensive to fabricate. FWD avoided this. 90 percent of the car's components were made locally. The design of the car was very utilitarian resembling a Renault 4 with its upright stance and a front end that resembles the locally assembled Peugeot 504.

"To be priced at $2000 it would have been the cheapest car in the world. Clever features like a door bell used in place of a horn ensure it achieves its low price target. Mass production was planned under Izuogu motors located in Naze, Imo state, but too many hurdles mainly financial and political prevented the car from going past the prototype stage."

I have highlighted two issues that caught my fancy as I perused the Wikipedia. Information that 90 percent of the car's components were made locally and that both financial and political hurdles prevented the car from going beyond the prototype stage, got me worried.

I also learnt from Wikipedia that the South African government in 2005 invited Izuogu to deliver a lecture on African technology at which they sold the idea of moving over to SA and manufacturing the car from there as a made in South Africa car. Izuogu refused the offer. I am just imagining what would have become of the car had he agreed to dump Nigeria in 2005 for SA.

My curiosity however is that Nigeria ranks among world biggest consumers of auto. We have some form of mad rush for the latest designs and models, yet, an idea, which has been said to be what rules the world, sprung up in Nigeria, was nurtured in Nigeria and later killed in Nigeria by Nigeria.

By killing Izuogu's idea, we gave visa to Asians, Americans and Europeans to flood our markets with their own cars. As we do that, we also forget that these cars we rush to patronize and enjoy actually started off as

ideas espoused by an individual. Let's not talk of the capital flight involved. In India for instance, Tata brand of cars started off as a family business. It was the brainchild of Jehangir Ratanji Dadabhoy Tata who died in 1993. He started off as an engineering and locomotive company. Today, Tata Motors has consolidated revenue of $16 billion after the acquisition of British automotive brands Jaguar and LandRover in 2008.

But what makes me feel like hating Nigeria is that the Wikipedia records that 'financial' and 'political' issues killed Z600. I am amassed because the amount of money stolen from public coffers since 1997 alone, would have handed Nigeria, and indeed Africa, a world class motor company with all the necessary robots and manpower to make it competitive. On the 'political' dimension, I can only summarize that the idea was killed simply because Izuogu is an Igbo name. I have a feeling that Z600 would have been a national pride if the name behind it derived from the caliphate. I strongly challenge Nigeria to prove me wrong on this.

Today, Nigeria is all hallow to Jelani Aliu, Sokoto state born guy for designing the Cherry Volt for General Motors in the US. Remember, he only designed it with the aid of modern technology and everything he needed to work with. But Izuogu not only designed but also assembled raw materials, built from scratch and test drove the Z600 with bare hands. I am not sure Izuogu and those who worked with him on the Z600 had all the robots and additives that Aliu is exposed to at GM.

Beyond Izuogu's Z600, Nigeria also has, in the same GM motors family, another Nigerian of Akwa Ibom state, Dr. Patrick Usoro, described as a prolific inventor, an expert in mechanical and powertrain systems at GM. He holds more than 160 U.S. patents and has published more than 50 technical papers and reports. Many of his innovations have been implemented on GM products and have earned him the GM R&D Master Inventor Platinum Award, Campbell Award for Outstanding Contributions to Science and McCuen Special Achievement Awards for Extraordinary Technical Accomplishments. In 1996 he was recognized as the U.S. Black Engineer of the Year for outstanding technical contributions. Yet, he remains unsung by Nigeria. Does it stop him from being who he is?

Still pained that Z600 was killed for 'financial' and 'political' reasons, I feel something of mental recolonization whenever I see the sort of glory the Nigeria government is giving to Chery Volt made by GM in the USA. In fact, we can argue that what we are doing with that re-branding advert on television (sorry, I keep referring to rebranding) is glorifying American products as ours. Those at GM, whose task it is to market the Cherry Volt to Nigeria, would only but be all thanks to Dora Akunyili and her campaigners for giving them primetime mention on national television for dash.

Akunyili keeps advertising an American car for free on

NTA sustained with tax payers' money. Yet, the same government would see ingenious local efforts at technological advancement to the cemetery and ensure that the grave is laced with sulphuric acid such that nothing of it resurfaces.

While I weep for Nigeria over the Z600, I remember that thousands of Nigerian youths, especially from our numerous universities of technology, had made innovative discoveries during their time in school. Some of them had inventions that earned them first class degrees or doctorates. Those inventions end as matters of academic pursuit. These young men graduate to join the army of job seekers or swell the rank of kidnappers, hijackers, advance fee fraudsters or even seek to create their own bank of crooks and criminals. Yet, we go to China to hire scientists to host a satellite for us. We run to Asia, America and Europe to import cars. Shame. I am sure some of the factories that produce the cars we gladly showcase on our roads started about the same time Z600 was premiered.

I present here an account of Emagnetodynamics invention by The African Science Fiction Project gleaned from Emagnetodynamics website (Emagnetodynamics.com) and Rexresearch (rexresearch.com).

**Emagnetodynamics Technology**

Ezekiel Izuogu is the inventor of the subject of *Emagnetodynamics* – the branch of Physics that studies the conversion of the energy of static magnetic fields into work. The inventor has demonstrated that the self-sustaining Emagnetodynamics machine is, indeed, the famed but elusive PERPETUAL MOTION MACHINE.

More importantly, the theory of Emagnetodynamics violates the foundational laws of Physics and Engineering, namely the Law of Conservation of energy and the Second Law of Thermodynamics.

The subject of Emagnetodynamics presents some earth-shaking implications for scientists the world over, namely: the science textbook you are reading may be outdated and incorrect!!

**Facts about the Emagnetodynamics Invention**

➢  Production of electricity at zero cost. According to the inventor, "The new invention will offer uninterrupted power supply at no cost."
➢  The self-sustaining Emagnetodynamics Machine was made possible after over 30 years of research and work.
➢  Already, the invention has received patents from 104 countries and is recognized by the World Intellectual Property Organization (WIPO). In the inventor's words, "Under the direction of WIPO, patents for this invention have now been filed in

104 nations of the world."
➢  According to the inventor, "…some 33 years ago, while I worked as a missionary itinerant evangelist of the gospel in Benin City, the Almighty God gave me a vision of a machine that could help solve the energy problems of the world. Right there in 1980, I received the two laws of Emagnetodynamics." The machine became possible after he successfully turned the two laws of Emagnetodynamics into interpretable work.
➢  The inventor further explains: "By June 5, 1982 I had succeeded in turning these two laws into a working machine. It was very exciting but because of the frightening and intimidating effects of the well-known science laws, I was scared to publish my findings. I wished to work more and prove these things very well. So, I worked for another 27 years before I approached the World Intellectual Property Organization for a patent."
➢  WIPO describes this invention as "the self-sustaining Emagnetodynamics machine [which] utilizes a theory that is different from the age-old theory on which electric motors have been built for over five hundred years since the days of the great inventor and scientist, Michael Faraday."
➢  WIPO also adds: "The present invention is a magnet motor that utilizes the inventor's first and second laws of Emagnetodynamics as well as the inventor's horse orientation theory of magnetism."
➢  The implication is that the Emagnetodynamics invention can be used to drive electric cars, electric trains, trolleys, electric fans, and virtually every device that runs on conventional electric motor so that people can use these systems at no energy cost. Again, miniaturized versions of this machine can be imbedded in television sets and music systems so that these devices will no longer require external electricity to operate.

**Theorizing a Manifesto for Ethnic Constructionism: a guide for Igboland**

The essence of weaving ethnic construction of technology into SCOT, the essence of exposing ethnic forces surrounding technology formation is to enable the layman, the common man, the ethnic player in a multiethnic society to know the role he can play in technology development, in technology formation, in technology creation, in technoscientific business. There is a role he can play; that is the idea. If it were not so then the ethnic construction of technology we are weaving into the SCOT paradigm would be of no value. So what is the value of the ethnic construction of technology paradigm?

Does it have any importance? Does it have any weight? Can ethnic construction of technology create more value in the SCOT paradigm? Can ethnic construction of technology help in technology formation, technology development, in Third World countries that are multiethnic? The background of *ethnic constructionism* is multi-ethnicity or ethnic pluralism. In Third World countries that are multiethnic societies, what is the role of the common man, the average citizen? His role is to know his place as a factor in technology development in his country. When he understands that he is an important factor, he can now know what his problems are; he can now know why members of his ethnic group that are inventors for instance are not getting anywhere with their inventions. Armed with knowledge of the counterforces, it becomes possible then to organize technology business. These are some of the ideas that can now emerge from this exposure of the other secrets of technology development, the other components of technology development that are usually submerged such as the positive impact of ethno-religious homogeneity of a political state in its technology production destiny.

Now, we are talking about the formation, the first creation of technology in a society where it hitherto did not exist – technological takeoff in compressed language. For instance, the making of ceiling fan or stand fan from beginning to end. The basic technology in the fan is the electric motor. So you make the electric motor of a fan from beginning to end, one hundred percent without importing any component of it. Why is the electric fan not made in Nigeria? Is the problem the market? Why is the market not accommodating to the making of the electric fan? I think it is because the market is influenced by ethnic forces. Ethnicity is the first force that is native to the environment, the society, before other forces can come in. Ethnicity first of all opens the door for neocolonialism and imperialism to begin to tamper with the local economy. Neocolonialism is a function of the ethnic factor. If there is no ethnic coherence, foreigners will come in to further disarticulate the people and then divide and rule the place. They create local businessmen who will serve as their agents. They can give the local businessmen goods on credit to sell and pay afterwards. Some of them are arranged and influenced through the governments of those imperialists. This is possible because there is no ethnic coherence at home. And the common man at home does not know that he can fight the government of his state that has become an important ally in the imperialists' technology stagnation scheme in the Third World. The common man can fight against his government's corroboration with imperialists by gathering around his own technology business. He can know that it is important for him to gather around his ethnic group and make his technology product and buy it. This is because the first thing is the market. Once you gather around and make products, you will also be the

first to buy the product you have made, as the first market is producer of the product. You can gather around your inventors, your scientists, your technologists, your fabricators and patronize what they have. And this forms the first market which I call the *ethnic market*. The first market of the inventor is, and should be, his ethnic market. The first people to understand him and accept him are his ethnic folks. So it should go on to become his first market, his first large market, from which he can break even. This is when that technological artefact is mass-produced and the product-line as an investment breaks even or achieves a break-even point at which the product-line is no longer running a loss. From break-even point it can proceed to make profit, from which expansion becomes possible.

This is a home-thinking idea. Instead of thinking about your technological product selling in this place and that place, you concentrate on how to mobilize your people, your ethnic group, not to buy rival products but to buy your own, because you are fighting an ethnic war, the war to suppress your people's technological development. For instance, the Nigerian government's policy on auto spare parts does not in any way protect local manufacturers in Igboland. Igbo companies are processing locally-made parts to exportable standards and the Nigerian government still gives foreign exchange to favoured businessmen from the North to import auto parts. The Igbos are making auto parts and the Nigerian government is importing auto parts through their cronies. The idea should be how to create the ethnic market for auto parts such that there would be ethnic consciousness of the product – ethnic consciousness attached to the ethnic product. Herein lies the concept of ethnic patriotism for ethnic products. Ethnic patriotism for ethnic products is what constitutes ethnic markets. Therefore ethnic innovators do not need to have a national government policy on protection of infant industries in place to sell their products; in other words ethnic innovators or ethnic innovator-companies do not need external competition to be removed for them by national government policies in order to survive. The fact is that the said external competition can be killed by the crystallization of the innovator's own ethnic market for the said ethnic product. Technological innovation in the Third World therefore can be accelerated through the instrumentality of this socioeconomic phenomenon I have christened *ethnic markets*.

So the ethnic market must be formed. The common man in a multiethnic political system must know that his first duty is to his ethnic group and to his ethnic market. In ethnic innovation theory (Nwosu, this volume), your first loyalty of course is to your ethnic group and then to your ethnic market. So what product are your people making? You go and buy them. What companies are making technology in your ethnic group? You invest in those companies, whether good or bad, because that is your

first responsibility – that is your ethnic identity. So the idea is that ethnic technologies (i.e. technologies originating from specific ethnic groups in a multiethnic state, for instance Emagnetodynamics as a piece of high technology or the car Z-600) have guaranteed survival and do not need national protection or do not need to be keyed into the national agenda to survive. To make the Z-600, every Igbo citizen must be involved in the effort to mass-produce and market it because it is his identity as an Igboman. Therefore, ethnic mobilization for the vehicle, for your technology, will involve two things.

The first thing is investment. Every ethnic member must purchase a piece of share or unit in the company organized to make their ethnic technology. The entire Igbo ethnic group can invest USD 50 per capita in this technology. This is the technology of your people, technology developed by your own kit and kin. We are talking about 50 million Igbos achieving a fresh per capita technology investment of $50. The achievable average investment should be far above this benchmark when the Igbos in diaspora are factored in, and considering the revolutionary value of the Emagnetodynamics technology in the world. For instance all Igbos in the United States could be given a benchmark of $100 per person to pick up some shares in a piece of Igbo technology that has been discovered and defined in their ethnic homeland. Ethnic technological nationalism can be constructed by the Igbos in the United States this way.

Then the next thing is to buy the technological artefact as soon as mass production of it commences or as soon as it hits the market. For instance, the Z-600 as the Igbo car will be purchased by every Igboman who can afford a first car or a second car. It is the Igbo car. Every Igboman will buy the Igbo car, not just because it is a $2000 car, but because it the first time the people's indigenous effort has metamorphosed into a practical vehicle. Affordability and ethnic passion are the two prime components of the Z-600's ethnic market. Every Igboman will buy the Igbo electricity machine – possibly a compact, portable form of the Emagnetodynamics machine which generates electricity without any inputs such as petrol or oil and is noiseless. Two models of the Z-600 can imaginatively be created and marketed simultaneously – a combustion engine version and an electric version. The electric version can be sold along with the Emagnetodynamics machine which the buyer can use to charge the vehicle's battery system at home, especially in view of the redundant and undeveloped power system of Nigeria.

Ethnic mobilization must involve the common man in that ethnic society to be active and proactive in buying into his own technology. He sees an invention by a member of his ethnic group as his own invention. He considers it as an invention or technological innovation by his own son and so he has no other option than to patronize it and create the first market for it. The market that will enable the invention or technological innovation

to survive is your market – the first market, the ethnic market. The market that will enable the technological artefact to become profitable, to break even and to become very profitable, is your market – the ethnic market. In ethnically polarized political systems, the business of the inventor or technology innovator is not to be looking at the national situation for attention and investment and importance, but to focus on his kit and kin and to render his artefact as the technology identity of his people, both the elite and the common man. Technological innovations in states burdened with ethnic diversity must be rendered in their full tribal colours – by this I mean that such inventions must be *tribalized* to sell it to the hearts of the vast majority of the ethnic group that owns the inventor-innovator.

The foregoing is like a sample manifesto of the ethnic construction of technology that I have managed to weave into the social construction of technology theory. I have already established, albeit theoretically, that ethnicity in its divergent manifestations plays a role, a central role, in the development or underdevelopment of technology in Third World multiethnic societies or in multiethnic societies generally. Other manifestos could imaginatively be constructed in explicating ethnic constructionism with respect to specific technological potentials of specific ethnic groups. The inventor leaves off the political sphere (the government) and deals directly with the people, his ethnic group on the social sphere. The governmental-political sphere does not guarantee the survival and success of the inventor and his invention because it is composed of ethnic elites whose sole interest is their wealth and can align with rival ethnic groups to protect and expand their wealth. The ethnic elite, especially in Africa, do not have the overall interest of their groups at heart and can kill the efforts of the inventor-innovator where such created technological artefacts will conflict with their vested interest, being their wealth and its expansion. They usually achieve this through their access to political power and will use such power to kill emerging ethnic technologies or technological capabilities that will frustrate their free flow of cash and business.

## Awakening the Igbo-Japanese spirit

This section examines the Igbo and the Japanese as relatives in terms of the inventive spirit. Diverse evaluations of the Igbos have revealed that the Igbo nation can be likened to the Japan of Africa. With Nnewi alone acknowledged variously as *the Detroit of Africa* and *the Japan of Africa* (BusinessDay, 2014; Onwutalobi, 2014; Omokri, 2017; Nairaland Forum, 2015) the rest of Igboland shares in this rich image of Africa's technological leaders. The Igbos apparently have the most mechanistic mind in, say, the West African region. This mechanistic mind mixes with their well-proven venturesome spirit to produce a race that can be

described as Africa's Europeans. There is no record of any ethnic-nation in Africa more adventurous than the Igbos or even close to the venturesomeness of the Igbos. The Igbo are the only people who can be found in virtually every African town and village. They buy land and build their own houses and settle down in every corner of Christian Africa where they carry on their economic enterprise. Where the locals find impossible to live the Igbos transform and conquer the environment and build and live in it to the shock and dismay of the nationals and locals. The intimidating enterprise of the Igbos has contributed immensely to the xenophobia in South Africa. For example the Ohaneze Ndigbo alleged that 85% of those killed in 2019 xenophobic attacks in South Africa are Igbos (Scannews, 2019).

The Igbos are the most inventive people in Africa, but they lack an independent political state to unite them as a nation-state. However, they occupy a political enclave as five neighbouring federating states in the southeast of Nigeria. Yet the notion of ethnic construction of technological take-off states that an ethnic-nation must not necessarily form a political state to manifest its technological identity. What is required is an organization that can articulate a common front for the Igbos. The *Ohaneze Ndigbo* exists as a sociocultural organization of the Igbos apparently made up of crème de la crème of Igbo political leaders. The problem remains that this organization lacks the technoscientific vision and leadership that is desperately needed to propel and galvanize a people with high technoscientific temper and pride as the Igbos. This organization therefore is inadequate for crafting the technoscientific agenda of the Igbo people. This function accurately belongs to Igbo technoscientific leaders whether within the *Ohaneze* or on a different platform of their own. Drawing on the postwar experience of the Japanese, Slucher ( 50) identifies the work of technoscientific leaders in directing and shaping ethno-national agendas:

> Yukawa Hideki, a theoretical physicist and Japanese Nobel laureate, inspired many Japanese people and helped them get through the sobering defeat [of World War II]. Akasaki Isamu, who also received a Nobel Prize in physics [much later] stated [that] Yukawa winning the Nobel Prize helped him "get better." Yukawa "carried the heavy burden of expectations of a nation defeated by war on his shoulders." Yukawa not only inspired many people to go into the field of physics, he also attracted international attention [and admiration] to Japan. Only four years after the war [when] people were still searching for a new national pride, Yukawa's Nobel Prize gave the Japanese people something to be proud of. This was a Japanese physicist who was able to keep up

with the West in physics with his research. He inspired many Japanese people with his award and helped pave the way for technology as part of the Japanese national pride.

The role of technoscientific leaders in crafting and shaping technological nationalism or ethnic technological nationalism in ethnic heterogeneity is that they apparently "carry the burden" of defining and finding the path of the technoscientific agenda of the ethnic-nation or the ethnic nation-state on their very shoulders. Not all political states are blessed with the type of leaders that Japan had in the prewar years and after. Africa's peculiar circumstance, and in fact most of the Third World, demands that science and technology leaders of the respective ethnicities should spearhead the 'crafting' of their people into technological identities. The technoscientific leaders themselves are apparently visionless to continue to berate their governments for the absence of a functional science system because everyone knows that Africa's politicians simply do not have it, and one cannot give what one does not have. Africa's politicians, driven by 'stayism' and 'grabism' agendas are completely clueless on how to achieve the technoscientific transformation of their political enclaves.

The collective acumen of ethnic identities if it is high enough seeks to manifest in technological artefacts. An ethnic identity, especially if it is incidentally a political state, asserts itself and makes its mark in the world in a technological identity. To this end, there are conscious and unconscious ethnic identities. Conscious ethnic identities, whether in heterogeneous political states or as independent political states in themselves, identify with and take pride in technological artefacts made by one of their own. It may be a replication or imitation technology (that is, the making of an existing technological artefact head to toe, in and out, with local fabrication and skill) or a replication with improvement or a new technological invention based on existing scientific facts. Unconscious ethnic identities are not aware of or worried about their technological potentials. They neither invent, fabricate, nor replicate technological artefacts. Unconscious ethnic identities cannot celebrate or recognize their own technological star when one of their own emerges as one and such a star is quickly absorbed by the conscious ethnic powers. Unconscious ethnic identities simply produce technological human powerhouses for the conscious ethnic identity-groups such as ethnic nation-states or superpower political states. Unconscious ethnic identities simply exist in the world because they occupy some physical space and add their own bit to world confusion and Earth destruction and only that. Ethnic identities are supposed to make their existence marks as signatures on the science and technology landscape of the world.

The Igbos are the ethnic relatives of the Japanese by

spirit. The Igbos then are the African equivalent of the Japanese. In the Far East the Japanese themselves are the European equivalent of the Germans, again by spirit. The Igbos picked up Physics textbooks (of course written in the foreign language of English) for the first time in their primordial history in the 1930s and by 1968 (during the Nigerian Civil War) they had made Africa's first indigenous war missiles known as the Ogbunigwe, being applications of advanced Physics as pieces of war technology. It is most important to note that the Igbos, much unlike the Japanese, had no writing, no printing or publishing technology and no general writing system of their own as a means of translating Western science into their language for the propagation of knowledge and as the first domestication process of Western scientific knowledge. What this means is that the Igbos traversed a huge obstacle the Japanese were not confronted with. The Japanese experienced the translation advantage so that their people learnt Western science in the language wherein they were already literate. However the Igbos scaled this hurdle very easily and in roughly thirty years they were playing with applied Physics and applied Chemistry in the war economy to fight for their political independence from Nigeria, to fight for their freedom. The Igbo war experience is the accidental self-discovery by the Igbos of their huge technological potential that was apparently natural to them. No one knows whether the Nigerian military occupation of the country's political space in protracted transition programmes from 1966 to 1979 and again from December 31, 1983 to May 29, 1999 is not a well scripted and sponsored scheme by the northern elements and their compradors to trap and clamp down the Igbo technoscientific temperament, to nip all hope of the Igbos achieving technological take-off for Africa in the very bud. Military regimes obviously repressed the high technoscientific genius of the Igbos which was demonstrated to the world during the civil war years of 1966 to 1970.

Ethnic identities are nations within political states. These nations can find better friends and mentors than their primordial neighbours, or discover kindred ethnicities with whom they share ethno-cultural similarities outside their political states. Many political states, especially former colonial African states, are not natural creations and very many African ethnicities today could have emerged as much smaller but highly functional political states if their European colonizers had considered their *nationness*.

The primordialism effect works on ethnic formations in a multiethnic state and becomes very salient and destructive at the stage of articulating technological take-off, at the point in the country's technological history when identify-technological artefacts are about to be created. You cannot force ethnic identities in a political state to work together when they do not feel themselves to be relatives, when they do not feel themselves to be

connected. With ethnic identities falling in unipolar religious groups the problem becomes more complex and difficult to solve. In Nigeria, the Hausa-Fulanis of northeast and northwest Nigeria who are one hundred percent Muslims find it impossible to work with the Igbo who are one hundred percent Christians on a national agenda like technoscientific identity-construction. The Yorubas of the southwest are about thirty percent Muslims and are therefor more probable to work with the Hausa-Fulani group to lead Nigeria's technoscientific transformation, but none of these two large groups seems ready or seems to have a distinct appetite for technoscientific agenda, unless such appetite is grown, built and developed through acculturation. However, it is obvious that the Igbo group have this taste naturally, and have maintained and even advanced it in spite of every discouragement from the Nigerian political system.

Ethnic formations can find their ethnic relatives outside their political state and work with them, not for cultural appetites but for technoscientific transformation agendas of their people based on relatedness in religion and technological temper. NEPAD can become the interface for achieving this trans-ethnic synergy for African ethnic collaborations through their offices in each region or province in each African country

**Brief history of science in Japan**

The Tokugawa shoguns exercised political power in Japan in the 17th Century and with an iron hand controlled the flow of knowledge and technology in the territories within their rule to maintain power balance. The shogunate permitted the study of Dutch science or *rangaku* for a period of over two hundred years (Lamarre, 499). But Dutch studies had the weakness of treating applications of the science as mere curiosities, as well as the absence of a complete conceptualization of the physical world. However it was after Japan's entry into ''unequal treaties'' with Western powers in 1853 that the shogunate started to support the public's exposure to ''books on Western science.'' But the Meiji revolution in 1868 deposed the shogunate and instituted ''an emperor on the throne as titular head of state'' who then framed government policies and programmes for ''enriching the country and building its defences'' (499-500). The Meiji government's emphasis in accordance with its policies fell on defence, weapons factories, steamship and shipyards, and general industrialization. The Meiji period (1868-1912) signifies the era of ''large-scale adoption of Western sciences and technology in Japan'' and the era in which science-thinking paradigms became established in Japan (499). The education programme of the Meiji government took a two-way simultaneous approach: the first is the massive engagement of Western instructors to teach in Japanese educational institutions, the second is the massive sending of Japanese people by the Meiji

government to Western countries ''to receive sufficient training to replace the foreign experts" (Barttholomew, 1989, 49-88). The Meiji government in 1870 published regulations for studying in Western countries under the government-sponsored programme whose emphasis was "the general advancement of civilization in Japan" which composed of "knowledge of Western manners, customs, arts, and institutions." However, because of the goals of "enriching the country and building its defenses" (*fukoku kyahei* in Japanese), and "the necessity for military and industrial development in order to overturn the unequal treaties" the majority of Japanese students were sent to be educated in the natural sciences and engineering in leading Western countries of the United States, Germany, England, and France (Lamarre, 500).

Science to the Meiji government was a practical means to an end: "to catch up with the imperial powers" of the Western world. But this utilitarian approach to science was not well grounded as the philosophy of science in the host countries of the first Japanese students. In the West this was a period of "university reforms, of institutionalization of academic disciplines, with the new emphasis on science-based technologies" (ibid.). Like the first Japanese students in the West, one can agree with the view "that Japan was entering the modern scene of science at roughly the same historical moment" as the West, with the Japanese being at an advantage, as Shigeru Nakayama (1984, 207) avers:

While science in 19th-century Europe was still in the main a cultural activity, rather than a practical means of achieving economic growth, the Japanese in the late 19th century held perhaps the most modern image of science: it was exclusively utilitarian and pragmatic, planned to enhance the national interest if not purely for profit-making, specialized and compartmentalized.

Thus, "the frankly utilitarian approach to the sciences in nineteenth-century Japan" in Japan's quest to build a modern nation through catch-up regimes is a hallmark in the development of science in the world that imparted to science its latent technological behaviour.

Japan apparently began to be reckoned as a world power upon conquering China in 1895 and Russia in 1905, thus causing Western countries to reckon Japan's rapid technological advance with "a mixture of exaltation and trepidation" (Lamarre, 501) which drove many non-Western countries to adopt Japan as their development model. While "institutional factors, prior institutions, and canny government" do account for Japan's rapid success, "Japan's entry into the modern sciences [regime] at the time of the ascendance of …technological behavior" as a function of the emergence of the utilitarian science regime is another force which propelled the nation's unprecedented scientific momentum (ibid.). So Japan joined the scientific world at the advantage time of the emergence of utilitarianism as the philosophy of science and the concomitant rise of technological

(innovative) behavior.

From the 1870s and onward the notion of scientific progress had permeated Japanese institutions under the platform of *bunmei kaika* (enlightenment and civilization) as the "catch-phrase" for the construction of modern Japanese society. This brings into focus the notion of "the radical externality of technologies and applied sciences" in discourses on perceptions of "a temporal lag between Japan and the West" (ibid.). One of Japan's prominent novelists of the past Soseki Natsume (1911, 333-34) is an acute observer of this notion of the Japanese experience of the externality of progress. Thus he observes that while modern civilization developed internally and spontaneously (*naihatsu*), the reverse was the case in Japan where it arose externally and became superficial. While Natsume is worried about the poverty of the traditional philosophical underpinnings of Japanese science (the externality of progress effect) manifesting in Japanese imperialism and militarism, Nakayama considers this "malaise of Japanese modernity" (Lamarre, 501) as an advantage. Thus Nakayama (1984, 207) asserts that ''Japanese modern science was freed from its European philosophical roots: [the] Japanese accepted the paradigms developed in Europe as self-evident and were concerned only with mastering them technically.'' This mentality sped up the adoption of modern science in Japan. Freeing science from its European philosophical roots created a value-free scientistic philosophy of science in Japan, which is an ethnic scientism embedded within the ensuing Japanese technological nationalism. Lamarre (502) is in consonance with this view: ''it is precisely such [radical] externality [of technoscientific paradigms in Japan] that translated into an ability to adopt the modern image of science, or technological behavior.'' Thus, ''the modern experience of the radical externality of scientific paradigms and technological applications'' means that Japan was at once behind and ahead of Western science'' (ibid).

The notion of the externality of technoscientific paradigms is the reason scientism as a doctrine and theory of technoscientific development thrives more in political states that are not part of the indigenous creators of modern science (that is political states described as the adopter-countries). The adopters obviously have the advantage of meeting science at its plug and play reality, with a few adaptations to fit properly and reside in the specific cultural milieu, thereby saving hundreds of years in science-building.

## Ethnic construction of technology in Japan

The value of national pride in technological development of a political state is an important episteme in ethnic constructionism as exemplified in the case of Japan. Ethnic cohesion and homogeneity however are

the natural foundational structures of national pride. In ethnic innovation theory (Nwosu, this volume), technology grows on pride and pride feeds technology. Ethnic innovation theory reduces nationalism to its basics, namely ethnic nationalism. Therefore, technological nationalism in most cases is actually and indeed ethnic or ethno-racial technological nationalism. True nationalism is ethnic or even racial in origin. What is then labeled national pride has its roots in ethnic pride.

An exposition of shame as an important psycho-cultural element of the Japanese society needs deep exploration. The deep sense of shame in the Japanese society seems to be the magic potion behind their technoscience. A people with very deep sense of shame are apt to be natural perfectionists and silent achievers. The Japanese deep sense of shame in their backward technologies compared with the West became their internal drive during the war and postwar years. A deep sense of shame is a cultural resource that is tremendously positive for ethno-technological nationalism that should constitute a serious component of sociocultural forces driving technological development and therefore it should occupy an important place in social constructionism. But this cultural element of pride-and-shame has unfortunately been glossed over by STS scholars of the West. Shame presupposes the prior existence of pride: the loss of the latter produces the former. Shame is an introvertive attitude that drives perfectionism, which is a powerful psycho-social and psycho-cultural force that drives technological self-expression and technological-identity assertion in the historical development of technology-identity artefacts. Ethnic self-esteem comes from ethnic pride and low ethnic self-esteem is a reality created by ethnic shame. Ethno-national shame comes to introverts as drive for perfectionism in their own created identity-artefacts. The Igbos are frustrated in Nigeria because the Nigerian system through its politics does not give a broad room for technological self-expression. Unfortunately for the Igbos, they are laden with a high quotient or aptitude for the expression of the technological-self. The quest then by the Igbos today for political sovereignty is a psychological need-drive for technological sovereignty and technology-identity manifestation which they believe would be better negotiated under a political state of their own within regimes of technological nationalism.

Technological nationalism is one of the many axioms embedded in the notion of the Scientific Revolution. When the Scientific Revolution is domesticated within a political state it could be described as technological nationalism, and if it is domiciled within an ethnic-identity state (as in Japan) it could be called ethnic Scientific Revolution or ethno-technological nationalism.

Japanese technology started with replication without improvement and thereon proceeded to replication with improvement and innovation in the postwar years. Improvement of imported technologies such as guns did

not start in Japan until the Imperial period. This indicates that ''the post-war advancement of technologies [experienced in Japan] is not a long-standing historical tradition'' and the manufacturing boom that started during World War II was new (Slucher,47). The *Meiji Restoration* itself was driven by the Japanese pride in their technoscience. This pride was ''a more technologically powerful force driving Japan out of seclusion.'' As Slucher (47) further remarks,

Pride and interest in technology in Japan was not a new phenomenon in the post-war years. In the beginning of the Meiji era, the Meiji leaders saw the importance of technology in the process of modernization and sent missions to Western countries to learn from them.

Similarly, the Pearl Harbor attack by Japan was a source of intense pride to many Japanese in their warplane technology. Two points become notable to Slucher (48):

> One, the government of Japan, ever since the Meiji era actively sought out technology for national defense and war capabilities of Japan. Two, pride in technology was present before the post-war technology boom, embedded within the framework of imperialistic-nationalism.

Thus upon the country's defeat and unconditional surrender through hydrogen bombs dropped on Hiroshima and Nagasaki, the Japanese people lost their high sense of national pride and identity, and being resilient people they traced their doom not to the many atrocities they committed during the war but accurately to their ''lack of technological prowess'' (ibid.,46) or ''the backwardness of technology and science in Japan''(ibid, 48) and thereafter proceeded to build an era of democratic, people-driven and people-directed technoscience. Instead of pride in military technology and conquest, the Japanese upon their devastation and defeat channeled their energy towards constructing technology as their new source of national pride and identity through a transformed view of technology. The implication is that the sensibilities of the Japanese people in relation to their technoscience point to the fact that the public was very advanced in science consciousness before World War II (see Nwosu, 2019 for a full discourse on the science consciousness regime). Compare the Japanese reaction to their defeat with Nigeria's and most African countries' publics who are quick to point to politics and government policies for their inability to deal with, say their security issues (in Nigeria this is principally about the Boko Haram and the menace of Fulani herdsmen) and their hunger and unemployment issues instead of locating these shortcomings as a backwardness of their technoscience regimes. African publics only perceive politics instead of politics through their science and technology capabilities.

Ethnicity in ethnic competition is a social force that makes or mars technological attainment in multiethnic states. In multiethnic political states, the centre cannot hold on matters of national importance and technoscientific agendas cannot take prominent position in the list of matters of national importance. This is because no group trusts the other and national identity is only on people's lips and not in their hearts. There is no unifying native tongue and no unifying cultural practice. The disunity is heightened by the polarization of ethnic enclaves as either Christians or Muslims which amounts to trying to mix oil with water. These two religions have been known the world over to create in their adherents mutual fear of and animosity for the out-group. So ethno-religious forces combine to cripple the rise of technoscience in multiethnic political states. In treating social constructionism in technologically backward states then, there is the need to formulate STS of technological takeoff which meets these backward states at their most acute point of need. Constructionism of technological takeoff leads to the discovery and grounding of ethno-religious forces as the most critical and most salient of all social forces that engage with the citizens of these states to shape their technological aptitude and technological behaviour to ultimately set and define their technological destinies. It is discovered therein that the technological need of these populations is principally technological takeoff and that this is something the citizens do not know how to get a grasp at. Technological takeoff as a need is not even articulated at all in some of these backward states and the new social constructionist will begin with investigations to discover why take-off remains unstated, unarticulated, and unenvisioned in such political states. Where technological takeoff is already articulated in some form, the work of the new social constructionist is easier and he can directly delve into the investigation, analysis, and framing of social forces impeding or accelerating this takeoff. I refer to such an investigator as the new social constructionist because social constructionism as it is only focuses on the social construction of technologies and technological systems, which all-in-all leaves out technologically backward states entirely and makes both STS and the constructionist approach irrelevant to the developmental problems of these states. I refer to such an investigator as the new social constructionist because it is his research that will demystify the mirage of technological take-off as experienced by these backward states through his discovery of political, ethno-political, ethno-religious, psycho-social, and cultural algorithms of technological takeoff.

The technological take-off regime of the Japanese ethnic-nation was defined by the heavy presence (and the intense work) of technological nationalists, whether as Japanese intellectuals or Japanese politicians. The void left by the collapsed state-led technological nationalism following the defeat of this ethnic-nation in the war was quickly filled by the emergence of technological nationalists who as intellectuals ''encouraged Japan to build a new national spirit linked to [attainments in] technology'' (Slucher, 49). Technological nationalists are a social group, indeed a sociopolitical group that is yet to emerge at all or yet to emerge in significant numbers in technologically backward states. Their personality-type needs to be fully studied, as well as the socio-cultural environments wherein they thrive. Technological nationalists fertilize the sociocultural and political atmosphere necessary for incubating technological revolutions. Technological revolutions however go beyond achieving technological take-off and drive the state to the age of the scientific state. Technological take-off itself is the point of no return in the technology domestication process in a political state. The scientific state regime then goes beyond the technological society. The scientific state is the higher-order conception of the technological society. It is the stage where science and the state merge in a social contract authored by the people. It is the democratic-state contraption wherein science is governed for the people by the people as both the object and subject of the state. Science in the scientific state regime becomes the unseen state, that is the state behind the state. When the identity of the state becomes technological, when national identity is proudly defined by technological attainments, the foundation of the scientific state is laid. For example by the agreement of the Japanese people to rebuild their identity after their defeat in World War II from the image of technological inferiority to the United States to technological superiority to the United States, the Japanese at that point have agreed to build the scientific state of Japan.

Technological nationalists then are indispensable to the technological revolution and the technological take-off regimes. The Japanese ethnic-state had already achieved technological take-off at least thirty years before World War II. Technological nationalists drove the ethnic-state to take-off, and from take-off beyond emphasis on militaristic technology to the framing of the age of the scientific state immediately after the war. For the Japanese the victory of the United States was ''a victory of its technology over Japanese spirit, meaning that a war could not be won with spirit alone'' (Slucher,49). For the Japanese, a war is not won with the spirit of determination alone, but also with superior technology made possible by the spirit of invention. So the Japanese after the war faced their future squarely wherein ''technology and science was seen as a way to rebuild and repair Japan's economy'' (ibid.). One of Japan's prominent technological nationalists, Prime Minister Suzuki Kantaro, claimed that as the Japanese people ''blamed their defeat on inferior technology, Japan saw the weakness in their previous war identity in technology

and not the atrocities committed in the name of Japan'' (ibid.). The Japanese seemed to be blind to everything else but technoscience. The war crimes committed by Emperor Hirohito was overlooked by the Japanese. The libertarian and democratic temperament of the Japanese obviously was underdeveloped and in place was the scientific and technological ideology. The scientific and technological culture of the Japanese was well ahead of all other cultural elements of civilization such as the democratic doctrine, and this enabled the ethnic-nation to concentrate on their universal agenda.

Japan's new national pride in non-militaristic technology in the postwar years was first expressed in train technology. Upon the collapse of state-led technological nationalism at the end of World War II, ''the Japanese people were free to insert themselves into the [science and technology] system and have their voices heard'' (ibid., 50). Thus the dangerous wooden Japanese trains came under heavy public criticism. Hundreds of Japanese people were either injured or died in countless accidents. One incident provoked *The Daily Yomiuri* (1945) to declare that ''[this] murderous train shames our Japanese population'' and added that the problem was peculiar to Japan in the whole world. Democratic governance of technology most of the time is an impetus to its development.   Thus, ''[o]rdinary citizens involved themselves in the decision-making processes and pushed for better trains, leading to Japan adopting [the] all-steel car trains'' (Slucher, 51). Wartime engineers who had joined railway companies responded by applying their wartime experience and in a very short time they had developed steel train-cars that were lighter and safer. It is now on record that the ethnic-nation state of Japan which learnt science and technology from the Europeans and the Americans became the first country in the world to upgrade its national rail system to all-steel train-cars. In this connexion, Slucher (51) further draws attention to shame and perfectionism as anecdotes in Japanese cultural identity:

> The shame from dangerous trains was linked to the Japanese identity… This shows that in the shame of defeat, Japan heavily criticized its own science and technology. This example of developing and implementing the all-steel [train] car demonstrates that this shame brought about the [clamant] desire to improve, and in this the identity of the Japanese people was liked to technology.

Technology feeds and grows on pride. The Japanese pride in their steel trains propelled them to achieve yet another milestone in train technology – the making of the *shinkansen* (translated as 'bullet train'). The metaphor 'bullet' connotes 'high speed' and so the *shinkansen* became the fastest train on Earth. Its development of

course ''was steeped [and soaked] in nationalistic sentiment.'' The JNR (Japanese National Railways) put its full weight behind the research and development of the *shinkansen*, with a full engagement of nationalistic rhetoric and set up the ''High-Speed Rail Study Club'' (Nishiyama, 2007,193). The Tokaido bullet train then was launched just before the kick-off of the Tokyo Olympics in 1964 in Japan's proud calculation to show the new train technology to the whole world. Thus "[t]he games gave Japan the opportunity to show off [the] new train technology to boost their own morale as a global technology provider" (Slucher, 52).

The country continued to be bombarded with the rhetorics of technological nationalists well into the 1970s when one of them named Fukunaga Kenji declared at a local conference that "Japan is advancing far ahead of Western nations, which keep watch on our linear motor technology," (that is Japan's advanced train technology) and also asserted that "Japan will lead the technology as absolutely the best in the field. [T]he Japanese race needs to demonstrate its latent strength as this national project grows'' (Nishiyama, 193). The Japanese ethnic-nation thus set the world record in high-speed train technology and started the global competition for the title. More importantly for Japan as an ethnic-nation, ''[t]he development of the *shinkansen* was seen by many as Japan passing Western technologies and therefore Western countries themselves'' (Slucher,52).  According to the rhetoric of technological nationalists, the new linear motor technology displayed the strength of the Japanese as a nation, and I would add as implicit in their rhetoric, as a superior racial identity. Political intrigues in the Japanese technological nationalism took the form of "[u]sing nationalist rhetoric [as] the tactic to gain funding" for the *shinkansen*, causing ''the *shinkansen* to become a national project with which [Japanese] people could align themselves'' (ibid.). The average Japanese politician had become an exemplary technological nationalist; thus the politicians employed their own rhetoric and threw their full weight behind the massive funding of the *shinkansen* by implicating the national identity of the Japanese with the *shinkansen*. The Japanese identity and national pride in the postwar years thus became synonymous with an advanced manufacturing technology through nationalist rhetoric.

The Japanese held the world title in linear motor technology from 1964 to 1981 when French engineers struck a new high-speed record. Pride feeds technological growth through competition, which is technology-identity competition. The French ethnic-state superseded the Japanese ethnic-state record and took the high-speed train technology title from Japan. This illustrates how international technological competition outside the Cold War framework was established and sustained by Japan, a single ethnic group, a one-language, one-religion political state. The French success

caused great displeasure, disquiet, and dissatisfaction in Japan. Slucher (52-53) captures the national reaction to the success of France:

this caused many in Japan to respond with nationalistic encouragement to regain the title. Countless people voiced their concern and claimed that the *shinkansen* [was] no longer the world's best train. Nationalists called for Japan to catch up and surpass the West once again, similar to the pre-war sentiment. Train technology was wrapped into Japanese identity. Therefore, when the French engineers produced a faster train, politicians and engineers framed the Japanese [technological] identity as inferior to the West. In response, these groups increased the amount of nationalist rhetoric they used… The rhetoric used by [Japanese] politicians incorporated elements of nationalism and technology… train technology became focal points of pride for post-war Japan. The imperialistic state-led nationalism that existed before the war was replaced by pride in peaceful technology.

The forgoing illustrates that Japanese politicians and engineers in the prewar and postwar era had the strong characteristic dispositions of technological nationalists. Their character has remained so till this day. Technological artefacts become symbols of national pride. The Japanese in the postwar years took pride in peaceful technology because the governance of technology had entered the regime of public participation and engagement. The impact of this change in science governance regime as is well known of course is the affluence of the Japanese. This is comparable to the science governance regimes of North Korea and South Korea, where the regime in North Korea is state-led, state-directed, and state-sustained, with the attendant militaristic state with poor citizens, while the regime in South Korea is people-driven with the attendant peaceful state with rich citizens.

Technological nationalists – in this case Igbo technological nationalists – is the missing link in Igbo technological nationalism. They do not thrive in deeply divided societies as in ethno-religious pluralism. Yet in ethnic technological nationalism, they are the fuel of ethnic technological temper.

Technological nationalists are ethnic leaders who carry the burden of shaping and forming the image-identity of their people. When this image is weak as in ethnic self-esteem, or poor as in unsatisfactory technological image-identity, technological nationalists become the first and natural responders who, in the fashion of pressure groups, push public attention and government policies (especially government funding) to the desired technoscientific goal.

Unlike the Japanese however, the Igbos are driven by extreme materialism. Their apparent drive for science and technology is not for ideological satisfaction, or so much as a psychological drive such as pride, but simply because they see money in science and technology. Science and technology is serious business to the Igbo people, despite the backwardness or outright nonexistence of public infrastructure especially electricity. Much as the Igbo people are probably the proudest race in Africa, the source of their pride is yet to be located in or connected directly to their technoscience ventures. Their pride rather lies more in their ability to do all things and to master every situation. It is more about their survival pride or pride in their survival prowess, their ability to make something out of nothing and to succeed where others may run away. It is said that an Igboman can make water in the desert and grow grasses therein to pasture his animals, while his contemporary tribes will travel hundreds of kilometres all over the country in search of pasture. The Igbos are attracted to anything and anywhere that contains money. In the Biafran War the Igbo people set out to fight for that nation-state to end their continued insults in northern genocides and, more importantly, it was perceived that that independence would render them extremely rich. Today the Igbos are exploring science and technology as business because they see tremendous wealth in it. In Nigeria they are the greatest importers of high-technology artefacts and in their experience some of them returned to their ethnic enclaves and attempted to make those same artefacts at home and close the market from external competitors (and the Federal Government of Nigeria ought to be happy with import substitution business, even though the Igbos are spearheading it!). Thus, the Nnewi industrial experiment is a result of this quest. The area of Nnewi today is christened *the Japan of Africa*.

The Ministry of Foreign Affairs of the immediate postwar Japan envisioned that Japan's economy would rebound through development and exportation of advanced technology, especially in view of the absence of natural resources (Ministry of Foreign Affairs, 2006, 357). According to the Ministry, Japan should maintain a technological edge in order to stay competitive in the global market. Though Japan was barren in natural resources, this ethnic-nation state probably had the highest quotient of science consciousness in the world in the immediate post-World War II era. The science consciousness regime shapes and determines the direction of 'development' towards the technological regime (Nwosu, 2019 and this volume). The government's support played out prominently in creating "a competitive spirit that would later become very prevalent in the development of faster *shinkansen*" (Slucher, 53). The Japanese government clearly defined its vision for Japan to become a technological powerhouse through leadership in manufacturing technology early in the postwar years (Ministry of Foreign Affairs). This governmental vision is simply a reflection of the public vision. The Japanese governmental technoscientific vision is not an endowment peculiar to

the Japanese but a concomitant of any public vision tied to scientistic development or scientistic image-identity construction and the embedded pride. Political leaders then are the very reflection of the prevailing image-identity of the people they lead. Political leaders will emerge as technological nationalists in response to the dominating public technoscientific consciousness.

Having quickly recovered the world title in speed train technology from France, the Japanese government in 1969 unveiled a plan to 'catch up' with the United States in computer technology. As Japan started to "close the gap," "the government helped fund this endeavour to hasten its success" (Slucher, 54). Similarly the Japanese government in 2005 rolled out a 10-year national plan "to strengthen Japanese competition in the global markets" which include biotechnology and nanotechnology fields wherein Japan today competes with the United States and Europe (ibid.). While the goal of the 1969 governmental plan was to catch up, the focus today is to stay competitive and lead, thus maintaining Japan's position among world countries as "a technological powerhouse." Thus the government deploys technological nationalism through the heavy funding of technoscientific research and employs rhetorics for mobilizing support for this vision as affirmations of "technology as an essential part of Japanese pride, identity, and nationalism" (Slucher, 55). These are important milestones in political engineering and social technology for technoscientific advance.

The Japanese government's technoscientific vision is explained as earlier noted by the high science consciousness quotient of the public sphere. This governmental technoscientific commitment illustrates the powerful effect of a unity or marriage of science and political power. Therefore, tinkering with the public consciousness towards the scientistic regime is the best method to transform the disposition of Africa's political sphere. A change in the consciousness substructure of Africa's publics will produce an avalanche that will wipe off or transmute the underdeveloped political mind of Africa's political class through certain sociopolitical and psychological dynamics.

In the mid-1950s the rise of consumerism helped to drive technology deeper into Japanese culture as part of the Japanese identity. In this decade the television, washing machines, refrigerators, and suchlike household electrical appliances became popular among the Japanese and this movement forced manufacturers to develop models that could compete on the domestic market and then on the export market. During the American occupation of Japan in the postwar period, Japanese people were astonished by the quantity of material wealth the Americans possessed. Consequently the Japanese focus turned to manufacturing technology and to build this as a source of national pride (Koizumi, 2002, 41). Consumerism too was in line with the new

national ideology of "rich nation," away from the old ideology of "rich nation, strong army" (Low, 2003, 203). Thus the Japanese consumerism upon American influence drove them towards "creating not only things Japanese people needed and wanted but also that the world wanted" (Slucher, 55). This nationalistic consumerism led to the development of newer and advanced technology such that "these technologies that were made for Japanese people could be sold in the global market, giving the people of Japan a source of national pride" (Slucher, 56). Similarly television commercials carried this nationalistic tinge. For instance a 1960 commercial by Sony declared that its portable television was one reason for Japanese people to hold their shoulders high and consider themselves first among equals (Low, 203). The Japanese intelligently used their consumerism to power their technoscience instead of expanding their importation culture as dictated by the new foreign taste as many underdeveloped countries do, thereby destroying good opportunities for their own technological take-off. Slucher's (58) concluding remarks beautifully illustrate the Japanese technological domestication and inculturation:

These TV and magazine advertisements, which came only 15 years after the war, show how technology already fueled nationalism and identity by 1960… Japan's electronics and appliances were continuously linked to Japanese culture, which gave Japan its technological strength. It did not matter that many of these technologies were not technically created by Japan but actually imported and then improved. After the products entered Japan, they became Japanese and the improvements made to them gave the Japanese people something to be proud of.

Today, technological nationalists continue to drive and inspire Japanese technoscience with their rhetoric. For example a prominent politician named Shinataro Ishihara in a speech at the Foreign Correspondents Club eulogized Japanese technology. Thus he said that because Japan "made a decision to provide technological support" the United States was able to win this conflict [the Gulf War] easily." Similarly he declared that "when you look at a U.S military plane cockpit now, all the parts are made in Japan" (Slucher, 58). This politician also asserted that "Japan has developed tremendous technologies of its own" (ibid.) and expressed his distrust for other countries' advancements as substandard and openly declared his uncertainty of the quality of genetically modified food produced by the United States. Thus all through his speech at the Club "Ishihara praised Japanese technology and dismissed other countries' technologies by either outright[ly] saying he did not trust them or… that Japan has greatly helped them" (ibid., 59).

Technological opportunity is not given; it is taken. Technological identity is not given; it is taken. As the countries of the world are locked up in the battle for

supremacy in the technological competition, the technological laggards of the world need to take a hard look at themselves and observe a thousand lessons they can learn from Japan.

**Lessons from Ethnic Construction of Technology**

The technology domestication process is incomplete without its ethnicization through ethnic competition. Ethnic technological competition could be trans-ethnic as in a multiethnic political state or transnational as between ethnic-nation states. The salient point embedded in the trans-ethnic group is that where a competing country is apparently multiethnic there must be a dominant ethnic group that has taken the technology-identity construction of the entire country upon itself. Technology is driven by identity sentiments that are reducible to primordial identity sentiments, chief of which is ethnic-identity ethnocentrism and ethnic pride. Therefore *ethnic identities rationalize their identity-images through technological expressions*. This is not vented in the construction of identity technological artefacts alone but in the attendant rhetoric of competence assertion. Fortunately SDT in psychology has fully explored this complexity of human nature. We in STS however find SDT relevant as going beyond individual drives to manifest as the collective or societal drive of ethnic identities. *Technology then must contact an ethnic spirit*. Technology must be trapped and reshaped by ethnic forces to complete the story and process of its domiciliation, domestication, and demystification.

Governmental structures for this domestication then are artificial and ineffective in the technology domestication process *unless ethnic forces are absent*. Ethnic forces are able to shape the very governmental structures towards their destruction, redundancy, or complete irrelevance. Similarly, the very governmental structures – their composition and institutionalization – are defined by ethnic forces, such that unless their governmental authors have vested ethno-political interests in such domestication their scripts are mere formalistic expressions that amount to lip service and no more. To this end in politics of technological take-off social constructionism must be fully engaged as an indispensable part thereof, to hone the utilitarian value of constructionism in Third World politics.

When questioned seriously Nigerians do not identify with the Nigerian identity. When pushed a little beyond the surface Nigerians rather connect with their primordial ethnic identities as the definition of their identities. They mostly do this through reference to their states; thus everyone knows the ethnic group that constitutes each state. The Nigerian always wants you to know the state he comes from so you can interpret for yourself his ethnic origin in which he is proud. Therefore the three major ethnic groups should be shaped to emerge as three technological powerhouses of Nigeria. This pattern should become the model for ethnically plural states of the Third and Fourth World. The Nigerian identity implicitly is extremely weak. Weak identities find it extremely onerous to achieve technological takeoff, not to speak of operating catch-up regimes. Identity requirement for takeoff and catch-up regimes are necessarily strong identities such as could be described as ethnocentric. For instance Nigerian technological rhetorics if any are mere verbal expressions because it is fashionable in the comity of nations these days to be saying something about technology. They are empty words with no power behind them because ethnic identities do not identify with and own them. Nigeria's technological rhetorics if any are ineffective because they are implicated with the weak Nigerian identity. In the eyes of the world the Nigerian identity-image is that of a resounding technological ineptitude buttressed by an incurably corrupt governmental system and an undeforming jurisprudence. Unfortunately the Igbo technological-innovator image is imbricated with this repugnant Nigerian identity.

Another lesson we can draw from ethnic constructionism in the Japanese technological revolution is the salience of the metaphysical. The Japanese successfully married the Scientific Revolution into their religion. They successfully collapsed their religion into technology and technology into their religion. They rationalized their technological quest in their religion. This is not like the destruction of religion in Marxist scientism. The Japanese scientism collapsed itself into the deep religious belief of the people. Can Christian Igbos achieve this? Is this facility peculiar to Zen Buddhism? Can African tribes collapse scientistic nationalism into Christianity? "Japanese spirit, Western techniques" in the Japanese philosophy in addition to "enlightenment and civilization" are catching slogans that formed part of the public consciousness in the years immediately preceding the Meiji revolution (Lamarre, 502). The *Japanese spirit* can be interpreted as the spirit of invention. This spirit of invention is driven by the Japanese spirit of extreme determination and extreme attention. What then is the source of this extremity? Is it metaphysical? Is it spiritual? Or is it explainable by biology or psychology? Is it power beyond the flesh? Is it spiritual attunement?

The Japanese spirit seems to be the spirit of Zen. This is the spirit of inner power, the extreme-possibility spirit, the spirit-philosophy or metaphysics of the all-powerful, all-knowing element of man that can be discovered and engaged through extreme attention. Is this not the equivalent of the spirit-man in Christian mysticism or Jewish metaphysics? Can the Igbo Christian doctrine explore the full potentials of the spirit-man is science?

## The Igbo entry into the History of Science and Technology in the World

The Igbos taught the world Emagnetodynamics, just as the Igbos gave the world the Internet. Western powers deploy the tactic of silence to kill the attention and world acclaim accruable to Black African inventors. Racism is only a larger view of ethnocentrism. Similarly the Hausa/Fulani Islam-dominated Nigerian politics employs this same tactic to discredit and stifle Igbo inventors for the achievement of their ultimate disinheritance. Western powers have patented the Izuogu Machine (Emagnetodynamics technology) yet they remain silent over this earth-shaking invention. It is not difficult to imagine why Western powers find it impossible to acknowledge, support, and celebrate this invention. This invention is not just a piece of invention; it is an entire technological system that reshapes the world as we know it. It is the discovery of the cleanest, most available, and most efficient energy in the world, competing only with solar energy but far more efficient than solar energy in terms of its space occupation.

Technology politics is implicated in the ethnic construction of technology theory. This theory fully explains the actions and inactions of Western powers in their interaction with the invention of an entirely new technological system. In terms of character, Emagnetodynamics is a radical invention which destroys very many existing systems. The radicalism of a new technological system makes it a hotspot for investment by early adopters. Yet Western powers have patented Emagnetodynamics for about ten years now but choose to remain reticent about it, with a determined effort not to deploy it. Why are Western powers not calling up the Nobel for this invention?

However the Igbos must unite across the world and assert the technological leadership of their bloodline among the Black race of the world. The Igbos must get up and dust themselves and celebrate themselves as world champions. Emagnetodynamics should be named in Igbo language as *teknoloji nyiri Bekee* which translates to "technology that has beaten the Whiteman" or "technology that has eluded the Whiteman." This new "energy for the whole world" (Izuogu, 2016) was practically ready in 1982 when the inventor successfully produced a prototype. He woke up his wife around 10pm on June 5 to witness the miracle of the perpetual motion power generator. So in June 1982 the Izuogu Machine became a scientific fact. One would have expected that within ten years this technology would have become the energy base of the world. More importantly its principles contradict some laws of physics as a branch of science. Thus an Igboman since 1982 has reshaped the domain of physics, yet the world does not want to acknowledge him and proceed to re-write physics. He is not from the European race. He is not a Whiteman. He is not Japanese or even Chinese. Possibly the world would have accorded him recognition if he were a Chinese or better if he were a Japanese. The ethnic White nations of the world, known as the makers of the world's technology, the creators of the modern world, do not reckon with black-skinned people in terms of technoscientific advancement of the world. This is more so as the inventor has been unwilling to be absorbed, swallowed up as it were, into the identity of the White world, so that the Izuogu Machine could be called the creation of the White world, just like the Igboman Dr. Philip Emeagwali got swallowed up into the White world with his Internet. The Nigerian government which is traditionally teleguided by northern Nigerian Islamic political power brokers has no identity-origination protection plans for Igbo inventors and their inventions. Igbo inventors, who unfortunately for their national government are too gifted for where they come from, are politically on their own, with no political state to defend them from the vagaries of world science and technology racial politics. The world today does not celebrate the great mathematician Dr Philip Emeagwali as the inventor of the Internet. And the world is not aware and does not reckon with the Igbos as the bloodline of this great Blackman.

Historically, Emagnetodynamics is older than the Internet. The spiral-effect of the association of the Internet with the Igbo people was completely lost to the Igbo race through some calculated political maneuvers which robbed the Internet of the Emeagwali-Igbo identity. But the truth must continue to be told that the Internet is an Igbo invention and belongs to the Igbos. Like Emeagwali and the Internet there has been no Nobel Prize for Ezekiel Izuogu and the Izuogu Machine. Since its recognition and patent registration by WIPO in December 2008 one would have thought that ten years later this Earth-shaking invention could have earned the Nobel Prize for Science for this great Igbo inventor.

In view of this politics then against the Black race in the field of science and technology, Black African countries and nation-states are called upon to join forces with the Igbos in celebrating Emagnetodynamics – the Izuogu Machine – as Africa's triumphal entry into the history of science and technology in the world. The *Emagnetodynamics Movement* should be known as 'Africa's mark upon the world.' We invite Black African states to join the Igbos in redefining the energy base of the world, to take it away from fossil fuels, away from chemical energy, away from nuclear power to *perpetual motion energy*. Africa's political argument is that nuclear energy is dangerous energy that portends world destruction. The effective replacement of nuclear energy is the perpetual motion energy, the Izuogu Machine, the science of Emagnetodynamics.

The implication is that the Igbos are not just imitators and improvers, but paradigm definers and pathfinders in

science and technology. The Igbos therefore are the uplifters of the Black race.

Unbiased research on the possible relationship between crude oil drilling and the fertility of the Earth is required. There is a local observation that the fertility of the land is low and keeps getting worse with continued crude oil drilling. This effect stretches scores of kilometres beyond the very spot of drilling activity. This is not about the effect if oil spillage but a continued decline in soil fertility felt some 100 or so kilometres radius from the site of oil drilling. This alleged local knowledge claims that as crude oil is drilled the fertility of the Earth up to some few hundred kilometres is pumped out, leaving the Earth unproductive for agricultural purposes. If this claim is established the implication is that mankind has literally been pumping out the natural fertility of the Earth for the past 100 years.

Emagnetodynamics technology makes redundant nuclear technology. This is because "[u]nlike nuclear reactors, the Izuogu [M]achine draws atomic energy without the dangers and complications of nuclear reactors" (Orakpo, 2012). Orakpo (ibid.) further notes about the infamous Chernobyl nuclear disaster:

> reporters say that more than 20,000 people developed thyroid cancer and had their thyroids removed as a result of the April 26, 1986 Chernobyl disaster. Till date, there is about 1,660 square-mile Exclusion Zone around the site of the Chernobyl disaster, 26 years after the accident.

Emagnetodynamics has no potential military applications. The implication of a worldwide adoption of Emagnetodynamics is that countries operating nuclear technology for military purposes under the guise of energy generation may now be forced to shut down and disengage their nuclear facilities entirely. This is so because *Emagnetodynamics can power the whole world peacefully*. It is strictly a civilian energy technology with no radioactive risks. Emagnetodynamics effectively shut down oil and nuclear technologies. It has by its design driven both nuclear and oil technologies into obsolescence. And Western powers know this.

In documenting the Igbo entry into the history of science and technology, the following frameworks become visible in Igbo technological ethnocentrism:

▪ Emagnetodynamics is high technology made in Igboland.
▪ Emagnetodynamics is the first high technology made by the Igbos and owned by the Igbos.
▪ Emagnetodynamics is the first high technology patent from Igboland.
▪ Emagnetodynamics reshapes the Igbo image in world eugenic politics.

▪ Emagnetodynamics literacy in the world is an expansion of world Igbo awareness.

In ethnic innovation politics as embedded in the foregoing ethnic construction of technology, the beggar on the street can be 'developed' as it were to be willing to contribute his widow's mite to the technological agenda of his ethnic enclave. The people can be psyched-up such that even the beggar on the street will be willing to 'do something.' African governments must invest in people-driven technological revolutions. State-led technological revolutions as in the USSR and Japan before the Second World War can become unsustainable and collapse. Such revolutions are usually accompanied by governmental limitations on the rights of man. Technological revolutions must be sold to or originate from, directed by, and driven by the people. Technological revolutions are apt to be more successful when they are taken to the culture, when they are driven by the social and cultural forces rather than by exclusively the political.

Going beyond Igbo ethnocentrism Emagnetodynamics in racial politics implicates the image of the Blackman in the world and the following frames become visible:

▪ A Blackman reshapes the world.
• The disappearance or redundancy of national power grids.
• A Blackman makes electricity for all as your car becomes your free power generator.
• Your electric car has no batteries in it and is not charged from your house; rather the mains extend from your car and connect to your house to power your house.
• A Blackman provides free electricity for all; where the government may not allow for self-production of free electricity by citizens through portable versions of the Emagnetodynamics-driven power generator, it can change its energy production technological system from the present type to the zero-cost input Emagnetodynamics system such that in the United States for instance energy bills can crash to 10% of their present rates.
• A Blackman enriches the citizens of the world by putting more money into the pockets of the vast majority, the 99%.
• A Blackman's electricity system generates zero cost of household and industrial electricity which drastically lowers manufacturing cost and expands the disposable income of households.
• A Blackman enriches the citizens of the world – consider for instance a 50% crash in the cost of public transportation, shipping cost, and the complete elimination of energy cost in private transportation.

- Consider and imagine a world where combustion engine vehicles do not exist, a world whose energy consumption does not harm the ozone layer of the Earth.
- Consider a world where all vehicles have no engine sound and produce no heat.

Ethnocentric rhetoric shapes the symbolic and physical construction of technology (Amir, 2007, p.284) as well as defines technological momentum. Ethnocentric technological elites then must form powerful networks to harmonize the task of constructing technology-identity artefacts. The more ethnocentric the technological elites becomes, the more they can be described as technological nationalists. The social group of technological elites therefore produces the subset of technological nationalists known as the social group of technological ethno-nationalists within the framework of ethnic or racial politics. Science and technology experts and technology entrepreneurs form the core of the social group of technological elites. Their concern is the expansion of domestic capability for technoscientific transformation of their ethno-political enclaves. Some members of the group of technological elite can be categorized with the group of technology domestication promoters to form the social group of technological nationalists. This group employs ethnocentric and nationalistic rhetoric to inspire the people towards a technological-capability feeling to the end of constructing the regime of technological self-confidence. Thus this group exists at both the ethno-regional and national dimensions, depending on the predominating character of state politics.

The foregoing explains how nationalism or ethnocentrism enters the technological realm to create a reality known as technological nationalism or ethnic technological nationalism (also expressed as techno-ethnic nationalism). Accounts of technological nationalism in Japan (Slucher) and Indonesia (Amir, 2007) suggest that technological nationalism of any shade and temper (whether truly 'national' or ethnocentric) seem to create not just an appetite for national technological arrival or take-off but also an incurable obsession for high technology through the construction of identity-artefacts of that order.

As Emagnetodynamics emerges to become the Igbo identity-artefact and by extension the African identity-artefact the regime of ethnic and racial technological pride and technological independence will be constructed by the relevant social forces. *Emagnetodynamics must be indigenized in every Africa language*. So one of these social forces for constructing Africa's technological pride and technological independence is the cultural force of language. Translation of the name of technological artefacts whose production have been domesticated and indigenized (through improvement and variation for

instance) or an indigenous invention (such as Emagnetodynamics) into the local languages is the first step of their true domestication and ownership and therefore

anguages must be championed by Africa's technological nationalists. This is known as technological enculturation and is an important aspect of the technology domestication process.

The work of technological nationalists is key in the drive for technological independence without which this regime cannot get by. The Nigerian state for instance is notoriously characterized by the total absence of technological nationalists. Here they exist and operate in the sub-terrain as techno-ethnic nationalists, and they are most active among the Igbo ethno-political enclave. While Nigeria's political leaders demonstrate a total lack of confidence in their own technoscience experts, Western countries are busy harvesting them through soft immigration policies. Once they get to the developed West and their potentials are demonstrated their new countries never release them to return to Nigeria. Nigeria's ethnocentric governmental administrations can learn from the rate of emigration the value of their science and technology experts. To this end Nigerian political leaders have generally been insulting their technological elites. Technological nationalists (whether the ethnic or 'national' type) in Nigeria must be radically expanded and enriched. This construction of the social group of technological nationalists in Nigeria neither requires political power nor legislation but sociocultural attention by the various ethno-nationalists.

As Emagnetodynamics constructs and enriches the Igbo technology-identity image, the rest of Black Africa shares in this identity enrichment. *The Igbos then have changed Africa's image in the world forever*. Like the Igbos, Black Africans can now be reckoned with as able to invent high technology and own it. Similarly the new image of the Igbos and Black Africans rubs off on the Black American population of the United States and the Black race in the rest of the world such as the Caribbean and South America. Their African 'ancestors' have become creators of high technology and inventors of Physics and therefore world changers. Black people everywhere may now take themselves very seriously in science and technology regimes. *No one but yourself can tell you who you are*.

A comparative analysis of the Igbos, the Hausa/Fulani, the Yoruba, and the Japanese by 1860 (the Meiji era) reveals that unlike these other ethnicities the Igbos existed as mere segmentary groups without a political state of any form whatsoever and therefore the Igbos had no political identity. It is indeed the British colonialism that created the political identity of the Igbos. The Yoruba and the Hausa/Fulani ethnic groups who had a political-state organization could not absorb the knowledge of the Whiteman into their language and writing like the

Japanese did. Yet the Igbos became the first among Nigeria's ethnicities to demonstrate marked technological prowess between 1966 and 1970 when they fought with the Nigerian state. Like the Japanese the Igbos were conquered in a war through which they glimpsed into their technological prowess. That campaign was the first debut of the Igbos into the technoscientific world, albeit as a military engagement for political sovereignty. What it means is that if the Igbos had the advanced political-state arrangement as achieved by the Yorubas and the Hausa/Fulani in 1860 they could have ended up as an independent state around 1900 in their dealings with Great Britain. An Igbo state organized to the level of say the Oyo Empire, the Yoruba political state, could not have come under British political domination at all but could have learnt the Whiteman's 'magic,' the Whiteman's 'voodoo' (being his science) with ease, even in the absence of the Igbo written language. And it is impossible to imagine an Igbo political state which had contact with Europe in say 1860 and which would not develop formal education and form the Igbo writing system within 20 years of such contact judging by the people's natural facility for quick adaptation and change. The Whiteman's scientific knowledge which fascinated the Igboman and made him declare that "Bekee bu agbara" (the Whiteman is a spirit) would have driven him, with the support of a political state framework, to form a writing system of the Igbo language to enable him trap down the immense knowledge of this great white spirit, including the spirit's printing and publishing system for the transmission of this immense knowledge in his language.

**Reconstructing the world with Emagnetodynamics**

Magnets are the Uranium of Emagnetodynamics energy. So how exhaustible or inexhaustible are the world's magnet sources? Just as Uranium is the raw material in nuclear energy the magnet is the raw material in Emagnetodynamics energy. To turn Emagnetodynamics into the world's energy it must be guaranteed that there is enough production of permanent magnets to enable the world switch over to this clean energy seamlessly. Magnets are manufactured from materials that can be magnetized. As metal alloys that can be magnetized are enhanced through research and the power of permanent magnets is extended several times more than the natural magnetite of the lodestone the prospects for an Emagnetodynamics-energy world become more certain. Aluminum, nickel, and cobalt also abound in nature. These are elements from which powerful permanent magnets are made. The inexhaustibility of these elements also needs to be determined as the world enters the era wherein electricity production competes with the known manufacturing uses of magnets. In Emagnetodynamics technology permanent magnets can

drive power systems for up to 100 years. Because permanent magnets have such a long lifespan and their power can be enhanced through research in their alloys, Emagnetodynamics-driven electricity systems provide the cheapest source of electricity in the 21st Century.

Dam-technology in hydroelectricity production leaves huge deficits on the environment in terms of its alteration of the ecosystem. Solar energy requires high space occupation per kilowatt of electricity produced when compared with Emagnetodynamics electricity but has the added load and cost of the battery bank. In Emagnetodynamics the battery is eliminated from the function. The battery may be retained say in the motorcar as an alternative model in automobile design to make self-charging electric cars. That is, it can be attached to the conventional electric car to serve as its internal charging system which ultimately enhances the *fuelessness* of the car. By its character therefore Emagnetodynamics energy does not drive the electric car into obsolescence but rather makes the conventional electric car more economical and efficient. Emagnetodynamics system can drive a car directly without batteries or it can simply be installed as the internal soundless and completely *fueless* charging system of the electric car. Technological choice belongs to the people.

Emagnetodynamics drives huge turbine power generators with neither fuel nor water. The risk of nuclear energy has been well documented and the cost of nuclear power reactors is at least one hundred times more than the power output equivalent of an Emagnetodynamics plant. To this end the world's green revolution movements are called upon to enlist this technology for socio-political action. Emagnetodynamics is a form nuclear energy with no possibility of the chain reaction. It is not made with radioactive materials of any sort. Magnetism is not the same as radioactivity.

Reshaping the world with Emagnetodynamics? Enter Emagnetodynamics car. No fuel. No water. No oil. The full version Emagnetodynamics car is a typical electric car that has no batteries of any sort. This is a car pushed or pulled by a self-powered electric motor system. There is no noise because there is no combustion engine. This is an electric car that never runs out of power. Such a car is much cheaper and much lighter in weight than the conventional electric car because there are no batteries in it.

In retrospect the world actually changed on June 5, 1982 around 10pm when this Igbo inventor got his machine to start working. This man was so intimidated by his own invention that he refused to step out to reconstruct the world with his invention. The motorcar technically changed in 1982 but the world was not ready for such a change. Emagnetodynamics could have been used to power the battery system of the conventional electric car since 1982. Or the all-Emagnetodynamics car

could have made sometime in 1983 which has no batteries of any sort. I would say that the Igbos were semi-unconscious at that time since they were not expecting anything close to this degree of pleasant shock. *The implication of this type of sleep is that the Igbo people have lost at least 30 years of technological ascendancy and leadership in the world. The Igbos should now be counting their losses in trillions of dollars.* No one knows if the Igbo awakening to Emagnetodynamics right from 1982 would not have changed the course of history in Nigeria and altered Nigeria's political equation such that it would have been impossible for the military to truncate the country's then nascent democracy on December 31, 1983 (which was only recovered in 1999) for it is possible that the Nigerian state would have dissuaded the military from such political contemplation and contained the army boys within the barracks.

The world of automobiles technically changed in 1982 but even the great Japanese were apparently blind to this. The Japanese have never been oil players and had no particular vested interest in it and so could have been the first to put the machine in their cars and crash the value of oil in the world.

Apparently the remote-sensing powers of Japanese technology could not sniff out Izuogu of Africa. But when in 1997 Izuogu demonstrated the Z-600, the first car made in Arica, and announced that he was adapting the engine of the car to enable the vehicle serve as a power generator and a lawnmower, couldn't the Japanese and Western powers discover that the man was talking about putting the perpetual motion engine into Africa's first locally-made car? If Izuogu did not communicate to the world immediately upon the Emagnetodynamics

invention, he at least started communicating tacitly in 1997 when he openly announced that the Z-600 will make electricity for household use. This announcement ought to have reached Toyota of Japan and the country's other excellent carmakers and compelled them to tap the technology from Izuogu of Igboland. I am particular about Japan because Emagnetodynamics perfectly fits into the country's political economy and this ethnic-nation state could have become great friends of the Igbos in forging partnerships to exploit the technology. What Emagnetodynamics required was a technological superpower which had no oil and must depend on other countries to import this energy. The Germans had tremendous fossil fuels in the form of huge coal deposits and could be distracted in trying to fathom the utmost value that could be derived from their abundant natural resource. While the United States at this time made automobiles that ensured a high demand for crude oil products, the Japanese with no interest in the commodity built cars that lowered the demand for the product. Japan – a huge energy-guzzling technological economy with no energy of its own – would have found excellent business by partnering with the Emagnetodynamics inventor to enable them be the first to put the machine in their cars, therein devaluing every other car in the world. It is my imagination then that the armed robbery at Izuogu Motors Ltd on 11 March 2006 is not just "to stop the effort we are making to mass-produce the first ever locally made car in Africa," (Izuogu) but to steal the energy-making machine before the inventor could succeed in patenting it, ultimately to stop Africa from taking the glory of inventing the world's energy-machine, to stop Africa from making the world's most unconventional car. The inventor finally filed for WIPO protection on June 5, 2007; the mercenaries struck on March 11, 2006. WIPO granted the inventor patent ownership on December 11, 2008. Luckily for the inventor the robbers found nothing at the site relating to the Izuogu Machine.

10/14/2019        WO2008149182 THE IZUOGU MACHINE (THE SELF-SUSTAINING EMAGNETODYNAMIC MACHINE)

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| | **(FR)** MACHINE IZUOGU (LA MACHINE ÉLECTRO-MAGNÉTO-DYNAMIQUE AUTONOME) |

**Abstract:**

**(EN)** The self sustaining emagnetodynamics machine utilizes a theory that is different from the age old theory on which electric motors have been built for over five hundred years since the days of the great inventor and scientist, Michael Faraday.

**(FR)** Cette invention se rapporte à une machine électro-magnéto-dynamique autonome utilisant une théorie différente de la théorie ancienne servant de base à la construction des moteurs électriques depuis plus de cinq cents ans, depuis l'époque du grand inventeur et scientifique Michael Faraday.
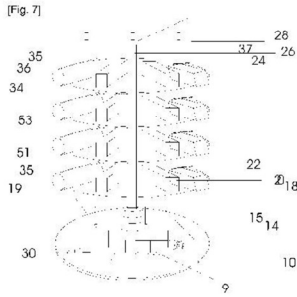
[Fig. 7]

Fig.7:DESIGN MODEL OF THE SELF SUSTAINING MACHINE

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| EP2193596 | JP2010529825 | MXMX/a/2009/013309 | US20100141073 | CN101682250 | CA2693572 |
| EA201000011 | NZ582425 | AU2007354633 | MYPI 2010005574 | IN8523/DELNP/2009 | |

https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2008149182    1/1

**Figure 2.** Patent recognition of Emagnetodynamics by WIPO. Source: as indicated in picture above.

## Action plans for constructing Emagnetodynamics as the Igbo technoscientific identity-artefact

### Ethnic ownership of Emagnetodynamics

Ethnic identities should maintain claim and ownership of their star scientists who have been absorbed by developed countries. These identities should find a hundred ways to honour their star scientists and inventors who have built up the image-identity of their groups. To the extent that their native identities seek to honour them and seek to bring them home to help in their domestic technological development should the superpower countries begin to rethink about their talent absorption paradigms. If the rich countries continue to absorb the technological stars of the undeveloped world how would the struggling world achieve technological independence? Did nature send these *emergenic* individuals into the wombs of say African women for them to become useless to their ethnic identities and countries? International footballers have the freedom to return to their native countries and play for them in important international tournaments when their countries call upon them. In *ethnic innovation theory* the star scientists are known as "technological sparks'' (Nwosu c, this volume). Why are technological sparks native to certain countries not allowed to return to those countries to serve their people when called upon to do so? The democratization of science regime that the West has accepted as a norm must include the liberalization of technological stars. Technological stars must be allowed to go where they wish to go and to help whom they wish to help. Some technological stars are not motivated by the primordial, base, selfish desires of man, and having shown one group the light may be moved in their hearts to work with another, especially their ancestral lands to uplift and strengthen their development. Democracy and civil liberties alone demand that this should be the norm. The practice of hoarding Third World technological stars is an extension of neo-imperialism, the practice of "arrested development" in the poor world which will ultimately produce a harvest of evil for these world powers.

Adjunct to this we can consider why Izuogu did not sell himself to Western powers or to the Eastern powerhouse of Japan. This is more so as the technology at that time was a great risk because the world in 1982 was at the apogee of dependence on oil for energy. It would have been very convenient for Izuogu to connect the American government and hand over the formula and prototype in some form of trade-off. Or he could have walked over to the Japanese (a country with no oil interest) and work out an agreement on how to exploit Emagnetodynamics. A country that was a technological powerhouse with no oil resource and which rather spent huge resources importing crude oil was definitely the best ally for the joint exploitation of Emagnetodynamics. There was also the Soviet bloc in the background for Izuogu's consideration if he was so socialist-minded and felt that capitalism should be overthrown across the world. In him the Soviets would have found a great Blackman who they could use to show an example in the world as they brandished socialism as the true non-racist political ideology, the true hope of the common man in the world. The Soviets could have welcomed and absorbed Ezekiel Izuogu in spite of their huge oil and gas deposits and the risk this technology posed. Any of these alternative routes for Izuogu would have produced Emagnetodynamics as a non-Africa and non-Igbo invention. This earth-shaking invention would have been taken away from Africa and emerged as a child of any of the world powers. It is uncanny how Izuogu and his Emagnetodynamics escaped the powerful espionage systems of the two power blocs – the US and her allies and the Soviet bloc – who deployed this system to steal technology from each other in their dangerous competition for technological ascendancy. Izuogu must be recognized first by the Igbos as an Igbo technological nationalist par excellence. He took the high risk of carrying Emagnetodynamics as an Igbo invention. He wanted the world to know Emagnetodynamics as an African invention. He carried the high risk of giving the Igbos a unique technological identity without any reward or encouragement from the Igbo people. Izuogu took the worst risk of being smothered and the invention taken out of his hands. He made sure it remained with him until he found the means to approach the World Intellectual Property Organization for a patent.  And in that undertaking he did not hesitate to insert an Igbo name, an indigenous African name, in the patent registration identity of the invention so that the world will forever know that this new Physics came from Africa.

Izuogu must be recognized and honored in Africa by Africans in economic, social, and political accolades as Africa's technological spark. Unfortunately, the Igbos do not know who they are. They are unaware of their technological function in African geopolitics. Grossly distracted by the vagaries of Nigerian politics, they these days do ordinary things and talk ordinary politics at a time technological independence is on stage. Nowhere in Black Africa is technological enterprise carried on to the degree and with the temper attained by the Igbos of West Africa.  Africa's true indigenous technopole lies here.

### Eliminating Technological Illiteracy from Igboland

The Igbo ethnic group and other groups that are friendly and can work with them should collectively embark on public technological literacy programmes using Emagnetodynamics as a universal reference. Emagnetodynamics literacy among the Igbo masses of over 55 million people and their ethnic relatives in the

states of Delta, Rivers, and Akwa Ibom is the starting point of an Africa-wide Emagnetodynamics literacy campaign. Philip Emeagwali's notion that "the inventor is the first teacher of his invention to humanity" (Emeagwali) also applies to ethnic technologies. Ethnic ownership of technology (Nwosu c) reckons that the entire ethnic group should propagate their technology to the rest of the world. In the case of Emagnetodynamics the Igbo collective, that is the Igbos and their friends and ethnic relatives, should undertake the onerous task of propagating the knowledge of this technology, first to all Black Africa and subsequently to the rest of the world. It can also be taken as a racial invention and Emagnetodynamics education campaigns can be taken simultaneously to every Black African collective in the world. The Igbos then should be the first to be educated en masse about Emagnetodynamics in its technical, socio-economic and cultural dimensions, for he who must teach must first learn. Emagnetodynamics literacy then should form the cornerstone of technological literacy in Igboland, the birthplace of this technology. Teaching Emagnetodynamics to the Igbos should be part of a cultural campaign for the eradication of technological illiteracy to transform the Igbos into the most technologically literate and the most scientifically aware ethnic collective in Africa. The Igbos should work with the AU and the relevant departments of this organization, especially the New Partnership for Africa's Development (NEPAD) for the academic institutionalization of Emagnetodynamics in modern science and taught in African universities and colleges and high schools. The ethnocentric government of Nigeria will not achieve this for the Igbos because it is not interested at all in propagating the Igbo technoscientific genius even if this will be in the overall interest of the country. The Igbos through their intellectual elite should undertake this job to get Emagnetodynamics quickly written in as part of modern Physics learnable from the level of high school and onward. Igbo universities then should begin with framing the subject into the history of science and technology which is a compulsory course for all first-year university students in Science, Engineering, and Medicine. The Igbo intelligentsia must understand that Western countries and the Eastern technological powerhouses are encumbered from quickly inserting Emagnetodynamics in their Physics textbooks by ethno-racial political forces. *Ethnocentrism and racism are important political vectors at work in slowing down the global adoption and absorption of Emagnetodynamics into modern Physics*. Teaching Emagnetodynamics to the world championed by the Igbo intelligentsia must begin with housing the subject within Physics textbooks as their own contribution to modern science and technology and can be taught along with the traditional laws of Physics that it contradicts. The Igbos may not set out to revise the content of Physics textbooks but can simply add the

radical subject of Emagnetodynamics as Physics invented in Igboland and teach it to their children along with existing Physics content. It is my imagination that this step will turn this area into the core zone that produces the highest number of science students per thousand of students' population on the continent. Within my imagination too this step will turn Igboland into the highest per capita scientist-producing zone on the continent, well ahead of South Africa and comparable to world-power scientist-producing ratios, which itself solves an important economic problem.

## Promoting Emagnetodynamics in zero-oil producers

Emagnetodynamics is as yet the most-efficient and cost-effective clean energy available to man on terrestrial Earth capable of replacing all large-scale electricity-producing facilities in every country. It can also drive all terrestrial vehicles including trains, and all Aquarian vehicles great and small. The potentials of this Igbo invention are mind-blowing and earth-shaking. The diesel-turbo engines of the world's largest ocean liners can be dismantled and replaced with huge electric-motor propellers that take megawatts of power, effectively converting them to silent monster marine electric vehicles. With Emagnetodynamics, loud turbo engines become silent machines. These attractions however do not belie the fact that Emagnetodynamics is an anti-oil technology. The political economy of the Igbo Emagnetodynamics is the radical destruction of the oil economy. This potential for the total destruction of oil technologies make Emagnetodynamics a large technological system. Technical change always involves concomitant costs. The world economy still heavily relies on oil in spite of the huge damage to the environment through massive consumption of oil-technology products because so many countries rely on its exploitation to basically feed. Yet when technical change announces its presence and readiness there must be immediate adopters, then there will be early adopters. The immediate and early adopter category may be driven by economic or technological interest or both. Non-oil-producing countries with no strong political ties with the oil-producers then become the natural allies of the Igbo Emagnetodynamics technology. The Igbos must form economic and technological alliances with these countries for promoting and exploiting Emagnetodynamics in these states. In Africa alone there are several zero oil-producing states which spend a good chunk of their hard-earned foreign exchange importing crude oil or ready-to-use petroleum products in a bid to achieve unsustainable 'modernity'. The Igbos can move into these countries with their Emagnetodynamics and convert all vehicles there to Emagnetodynamics electric vehicles, saving these countries billions of dollars in foreign exchange which can translate to strengthening

the exchange value of those countries' currencies, ultimately upgrading them to hard currencies.

In the politics of ethnic constructionism, the Black African countries that are Christian and zero oil-producers are the immediate adopters of this new energy-technology. Such countries too must have completely broken off their dependence on their erstwhile colonial masters. In the later calculation therefore, South Africa with its zero oil-producer status is not a good candidate for the immediate-adopter category because of its large White population predominantly composed of British descendants. In the politics of race and ethnicity, the British are not particularly interested in assisting the Igbos to achieve their technological destiny in Nigeria and Africa. This is because the Igbos represent Nigeria's technological independence powerhouse. This adds up to Britain's status as a country with heavy oil interest. Britain and the rest of the oil players of the world are not ready to devalue oil yet. The racial-ethnic politics against technological independence and the oil economic interest define Western powers' true attitude to the Igbo Emagnetodynamics. However, the Igbos can find about ten neural Black African countries wherein they could quickly re-write the energy base overnight in the fashion of a military campaign. This will be a Black-for-Black, Africa-for-Africa campaign. The Igbos, as army boys, should position themselves in the economies of the discovered ten countries at the same time, not one at a time, and start the technological campaign of converting 1000 vehicles in each country to Emagnetodynamics-electric vehicles and powering 100 cities and towns in each country with Emagnetodynamics-electricity. In this calculation, the Zambians, with their Igbo-sounding names and their Christian culture and zero-producer status are the best allies of the Igbos in this ethnic-racial campaign for the perpetuation of Emagnetodynamics in the world. Nine other Zambian-like Black African countries are there, ready to be part of this Igbo technological campaign. The Igbos can help these countries break off from oil dependence and launch the regime of currency-hardening.

Technological inventions are citizens in the real world. They are interpreted along with the citizenship-bias of their makers which includes the ethno-religious bias of their inventors. Emagnetodynamics for instance is first an African invention, then it is a Nigerian invention (which identity does not own or even support the invention because it is extremely pluralistic and divisive), then it is an Igbo invention with Christianity as the powerful ethnic marker. Emagnetodynamics then is a Christian invention, a Black-African Christian invention. These epistemes and valences will define its successes and failures as it navigates world politics in its campaign for stabilization and closure. In this politics especially, it must confront the world's oil industry which is as earth-shaking a challenge as the invention itself is in the subject of Physics.

This research advocates that the Igbo ethnic group should pay more attention to the possibility of establishing Emagnetodynamics as the energy base of Black African states and other Negro-dominated states such as abound in the West and East indies. The Black island states to be considered should include those which are politically independent as well as those which may be under some form of political dominion. The politics of Emagnetodynamics should be allowed to play out in a country like Jamaica which is a country of black-skinned Africans still under some form of control by Britain. This research advocates that the Igbos should carry Emagnetodynamics to their racial relatives who produce no oil and play the attendant world politics, which is but a game, and evolve therein as a people. The Igbos have something they can use to shake the world and should henceforth march out to make their mark on the world. It is an important evolutionary process in identity politics. The Igbos have crafted their indelible technoscientific-identity artefact and must go out and push that artefact into the sociopolitical space of the world. Ethnic innovation theory (Nwosu, this volume) informs this position. Ethnic innovation theory itself is imbricated in the general notion of ethnic construction of technology which by-the-by depends from, as it were, the conventional social constructionism.

Ethnic politics has proved a formidable obstacle to technological takeoff in multiethnic political states of Africa and other places. Insofar as there is the total absence of crude oil production in the states intended for Emagnetodynamics, care should be taken to study the ethnic formations to take advantage of their common denominator factor and play the necessary cards to enable Emagnetodynamics get into their energy systems. Industrialists are key and where ethnicity colours their activities in their countries, the necessary lessons must be learned and the situation must be understood and adapted to.

While Japan, India, and China remain Emagnetodynamics biggest potential partners because they are zero-oil producers, care must be taken in dealing with these countries which have patented the invention and yet are reluctant to put it to any commercial use. These world powers at the moment are busy buying Nigeria's oil while keeping mute on the anti-oil invention from an enclave of Nigeria. We say an enclave of Nigeria because the Nigerian government, having only recognized the invention in 2009 because WIPO did so, has no plans to provide electricity for its 200 million people who are wallowing in utter darkness. Nigeria's electricity consumption remains the abysmally lowest per capita in Africa because it simply is not available. What can 3000 megawatts do for a teeming population of 200 million people? 3000 megawatts is a good promotion for the country's electricity production capacity which fluctuates between a maximum of 4000 megawatts and

stays mostly at below 2500 megawatts, taking cognizance of the country's ten-year average.

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