The Political Philosophy of Technological Independence

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ABSTRACT

This paper conceptualizes the political philosophy of technological independence as a necessary paradigm for Africa and the wider "poor world." It advances the argument that Western technological powerhouse countries cannot, in themselves, permanently obstruct technological takeoff in peripheral states; rather, the real impediment derives from the *ignorance*, *miseducation*, and *misplaced developmental priorities* of the citizens and leaders of these states. The study contends that technological independence must be understood as a political right, inseparable from sovereignty and democracy, and that any assertion of political independence or economic autonomy that lacks technological self-sufficiency is ultimately cosmetic, deceptive, and unsustainable. The theoretical framework integrates Science and Technology Studies (STS), especially the Social Construction of Technology (SCOT) paradigm, Political STS, and the author's own *Technological Independence Theory*. This synthesis makes visible the ways in which technology is socially constructed, politically contested, and democratically claimed as a sovereign right. It also engages with the Dependency Theory of Development, not as a terminal diagnosis of Africa's dependency, but as a framework to be transcended through deliberate domestication of technological capabilities. The analysis herein redefines democracy itself as incomplete without technological sovereignty and reframes political sovereignty as contingent upon the mobilization of a country's intellectual and scientific resources. Methodologically, the paper adopts a qualitative, interpretive approach embedded in political philosophy analysis, critical discourse analysis, and comparative-historical inquiry. Philosophical analysis is deployed to reinterpret concepts such as sovereignty, independence, and democracy through the prism of technology. Critical discourse analysis interrogates dominant modernization and globalization narratives that normalize technological servitude, while comparative-historical analysis draws lessons from historical cases of technological takeoff, including Japan, China, and Russia, to situate Africa's possibilities and challenges. The methodology further adopts a constructivist epistemology, privileging indigenous theorization and cultural resources as legitimate sites of knowledge production. In combining these theoretical and methodological resources, the paper constructs an ontology of technological independence as both a normative political philosophy and a practical policy imperative. It argues that the democratization of technological takeoff is the surest safeguard against authoritarian developmentalism and perpetual dependency. In this way then, *the political philosophy of technological independence becomes a radical intervention in political theory*, Science and Technology Studies, and the development discourse, while simultaneously offering a roadmap for Africa's second independence – that of technological sovereignty.

Keywords: Technological Independence, Technological Takeoff, Technological Sovereignty, Science and Technology Studies (STS), Social Construction of Technology (SCOT), Dependency Theory, Technological Nationalism, Domestic Technological Capability, Scientific State, Technological Imperialism.

INTRODUCTION

Western technological powerhouse countries do not have the power to impede technological takeoff in Africa and the Third World, or in C. P. Snow's (1961) nomenclature, "the poor world." Such powers are rather derived from the ignorance of the vast majority of citizens of the poor world. Every political state must do technology and must become self-sufficient in it. It is the political right of sovereign states, and therefore of the citizens therein, to maintain their technological markets without interference, overtly or covertly, by the forces of globalization and imperialism. The laizefaire market system explicitly contradicts this hallmark of the political rights of sovereign states and portrays a system intended to maintain the status quo, a system intended to perpetuate the dominant position of the technologically advanced countries with the view that none of such advance is possible in "the rest of poor world." But technology is merely a habit, and habits are rather easy to form, especially where such habits become a huge source of pride to the people.

Technological Takeoff is the phase in a society's developmental trajectory where the production, adoption, and governance of scientific and technological systems become central to its economic vitality**,** political agency**,** cultural identity**,** and social imagination**.** *Technological Takeoff is the mass awakening and structured education of citizens of a political state to see technology as a civic instrument for sovereignty, justice, imagination, and development.* Technological Takeoff then can be framed as a political philosophy for driving political states of the Third World towards achieving the agendas of eradication of hunger and unemployment, these being the most deadly *diseases* ravaging their populations.

The magnitude of scientific and technological knowledge available on Earth makes it laughable that many countries of the world shamelessly record vast majorities of their populations who continue to be ravaged by hunger and malnutrition. The problem of malnutrition is probably more damaging to a poor country since it drastically reduces the ability of that country to turn out intelligent people. The devastating effect of malnutrition on the mental development of children is no longer in contention (Grantham-McGregor et al., 2007; Walker et al., 2007). As malnutrition in the growing generation robs the country of its ability to produce highly intelligent citizens of tomorrow, the damage gets worse when mass malnutrition is accompanied by massive outright hunger. This combination can turn a country into a population of mentally retarded and mentally unbalanced people. The problem at this stage becomes endemic and intractable.

Technological takeoff should be framed as a political philosophy for technologically backward countries in view of its importance within anecdotes of democracy. In such countries the political theory of technological independence should be fundamental and indispensable to the political system as inseparable components of democracy and human rights. For it amounts to deception of the people when governments continue to assert their authority to govern their geographical territories when such countries remain completely dependent on the developed countries for everything, even for sociocultural ideas and support which in themselves are non-technological.

C.P. Snow (1961) invariably identified an acceptable time-frame within which a country is expected to achieve technological independence. Snow considers twenty years as ideal for any state to become technologically independent at any rate, or at least to achieve technological takeoff in the least. In the context of formerly colonized countries we can interpret Snow's time-frame to mean twenty years after political independence, or specifically within twenty years of becoming a republic.

Framing technological independence as a working political theory for Africa can re-write the iterating underdevelopment paradigms the continent continues to grapple with *because they are misunderstood as development paradigms.* "Development consciousness" (Nwosu 2019, 111) paradigms do not translate to technological takeoff paradigms. African governments interpret development to mean modernization. But this is wrong. Modernization in Science and Technology Studies never translates to indigenous and autogenic technological takeoff. And technological takeoff itself can never be achieved for a country by foreign companies. It must be achieved by indigenous firms, indigenous technological entrepreneurs who therein raise the domestic technological capability of their country. Modernization as a development paradigm only produces cosmetic development which never translates to real development. *Any development paradigm that*

lacks a technological focus is unreal and cosmetic in nature. Any 'development' that is not defined by or produced by the functioning of domestic technological capability is unreal and cosmetic. This is the best that modernization has produced. Modernization in Africa has produced quick transformations into physically 'modern' states through massive provision of physical infrastructure, while the countries remain dependent on the technology powerhouses of the world for even rudimentary artefacts like office pins, rulers, and for engineering services, as well as research and development.

Such 'modernized' political states have no right to assert their political sovereignty in the absence of technological independence. The assertion of political independence is a charade and a mirage which has produced stooges as political leaders to deceive the people in backward countries.

Technological independence can be built into the democratic theory as a modern theory of democracy. The premise for such a theory is that the backward countries of today face a far more insidious array of problems of technological takeoff that did not exist when the technological powerhouses of today were struggling to find their feet. In sub-Saharan Africa such problems include the absence of preexisting political states before encounter with modern science and technology, the acceptance of 'modernization' definitions as 'development' which usually does not include the critical function of domestic technological capability, and the enlistment of these countries in global free trade without a requisite preexisting technological background. This last item is probably the most dangerous for the technological takeoff philosophy. Free trade never builds a country's technological capability but rather continuously postpones the country's opportunities to reach the technological takeoff stage. Once millionaires and billionaires are produced through the free trade economy, it becomes difficult to channel their activities to become supportive forces for building indigenous technological capability. It becomes difficult to re-educate the traders to support local manufacturing efforts in order to move away from exporting of primary commodities and to stop importing the products of domestic technological entrepreneurs. It becomes intractable once they become billionaires to convert the country's international traders to domestic technological entrepreneurs in spite of government incentives. It is even more difficult to transform them into exporters of the products of indigenous technological entrepreneurs.

A political philosophy of technological independence then necessarily interprets importers as agents of underdevelopment of the domestic science and technology sector of their countries. While exporters may be pardoned for exporting primary products albeit as raw materials to other countries (instead of processing them to add value), importers are the most notorious group because they cripple the efforts of their country at technological takeoff through their penchant for the continued importation of the products of domestic technological entrepreneurs. In countries yet to achieve technological takeoff, importers are the most notorious group for carrying on activities of immense economic sabotage. This is because there are no technological takeoff targets. According to Nwosu (2020a), "shooting can be sporadic when targets are missing." Constructing technological independence as the political philosophy of backward states helps the said states to focus on critical technology domestication targets.

Theoretical Framework

This study is anchored on **Science and Technology Studies (STS)** and particularly on the intersection of **Political STS** and the **Social Construction of Technology (SCOT)**. STS provides a lens through which technological phenomena can be understood as embedded within broader social, cultural, and political structures rather than as purely technical enterprises (Bijker, Hughes, & Pinch, 1987; Jasanoff, 2004). Political STS emphasizes how power, sovereignty, and governance influence the trajectory of technological development, especially in peripheral states.

The SCOT framework advances the argument that technologies evolve through the negotiations and contestations of "relevant social groups" who assign meaning and direction to them (Pinch & Bijker, 1984). Within the African context, these social groups extend beyond engineers and policymakers to include ethnic communities, political elites, and local entrepreneurs whose collective agency shapes or hinders pathways to technological independence. Thus, technological takeoff is not an inevitable diffusion from the global North

but is conceptualized as a *socially constructed, politically mediated process* that is deeply tied to sovereignty and democracy (Nwosu, 2019b).

In addition, the *Dependency Theory of Development* (Cardoso & Faletto, 1979; Frank, 1969) provides a counterpoint, highlighting the structural constraints imposed on peripheral economies through global capitalist linkages. While dependency theory diagnoses Africa's technological stagnation as a function of external domination, this paper extends the argument by advancing *Technological Independence Theory* (Nwosu, 2020a), which reframes sovereignty as fundamentally technological rather than merely political or economic.

The framework herein therefore synthesizes SCOT, Political STS, and Technological Independence Theory to construct a *political philosophy of technological independence*. This integrative framework emphasizes three assumptions:

i. Technological sovereignty is a political right inseparable from democracy.

ii. Technological takeoff is socially and culturally constructed, requiring the mobilization of domestic intellectual and cultural resources (or simply the mobilization of the relevant socio-cultural and intellectual forces).

iii. External technological dependence perpetuates political subservience, which must be countered by deliberate technology domestication policies.

By adopting this framework, the paper situates technological independence as both a normative political goal and an empirical necessity for Africa's survival in the 21st century.

METHODOLOGY

This paper employs a *qualitative, interpretive methodology* embedded in *philosophical analysis* and *critical discourse analysis (CDA)*. The methodology is appropriate because the research does not seek to quantify technological phenomena but to interrogate their conceptual, political, and philosophical underpinnings. Here are four elements of our research methodology:

i. **Philosophical Analysis**

Building on methods in political theory (Skinner, 2002), the paper critically examines the concepts of sovereignty and democracy, reinterpreting them through the lens of technology. This involves tracing how these concepts have been historically constructed in Western thought and re-articulating them in the African experience of technological dependence.

ii. **Critical Discourse Analysis (CDA)**

CDA enables the deconstruction of the dominant narratives of modernization and globalization that reinforce Africa's technological subordination. By analyzing political speeches, development policies, and global trade discourses, the study reveals how language sustains technological imperialism (Fairclough, 2013).

iii. **Comparative-Historical Method**

The paper situates Africa's struggles within a comparative frame, drawing on historical examples such as Japan's Meiji-era industrialization and China's late-20th-century technological nationalism. This provides a heuristic framework for evaluating Africa's possible trajectories while recognizing the unique sociocultural forces at play.

iv. **Constructivist Approach**

Finally, the methodology adopts a constructivist epistemology, emphasizing that knowledge about technology and independence is socially produced. The analysis privileges indigenous perspectives and the author's own theorization of "Technological Independence Theory" (Nwosu, 2020a, 2020c), positioning them as legitimate academic interventions.

Through this multi-pronged methodology, the research achieves both depth and breadth, offering theoretical innovation while remaining grounded in Africa's lived realities.

Defining Technological Takeoff and Technological Independence

Defining Technological Takeoff

Technological takeoff refers to the historically decisive phase in the development of a society in which scientific knowledge, technical skills, institutional capacity, and productive systems reach a critical threshold that enables sustained, self-reinforcing technological advancement. It is the point at which technology becomes an endogenous force within a society – generated, reproduced, and expanded from within – rather than an exogenous input acquired primarily through imitation, importation, or dependence on external civilizations.

Unlike incremental technological growth, technological takeoff is qualitative rather than merely quantitative. It signifies a structural transformation of a society's relationship to knowledge, production, and power. At this stage, technology ceases to be episodic, reactive, or consumptive and instead becomes systematic, cumulative, and strategic. The society develops the capacity to continuously convert scientific understanding into practical applications across multiple sectors – industry, agriculture, communication, energy, defense, governance, and culture – without requiring external technological leadership.

Crucially, technological takeoff is not reducible to the presence of machines, infrastructure, or technical artifacts. These may exist without takeoff. Rather, technological takeoff is characterized by the internal alignment of five core elements:

- an indigenous scientific and technical intelligentsia;
- institutions capable of sustaining research, innovation, and training;
- a productive economy able to absorb and scale new technologies;
- a political order that protects and prioritizes technological capability; and
- a cultural orientation that legitimizes experimentation, invention, and technological self-confidence.

From a political-philosophical perspective, technological takeoff also marks a shift in sovereignty. A society that has achieved technological takeoff no longer negotiates its developmental future primarily through external technological systems or standards. Instead, it acquires the power to define its own technological priorities, risks, ethical boundaries, and developmental trajectory. In this sense, technological takeoff is inseparable from technological independence: the former is the process, the latter the condition.

For post-colonial and technologically dependent societies, technological takeoff cannot be understood as a neutral or purely technical event. It is deeply entangled with historical domination, epistemic marginalization, and inherited structures of dependence. Consequently, technological takeoff in such contexts necessarily involves a conscious political struggle to reclaim technological imagination, rebuild indigenous knowledge systems, and re-embed technology within local social meanings and civilizational goals.

Within this framework, technological takeoff reaches its most complete form only when technology is no longer perceived as foreign, imposed, or culturally dissonant, but as socially owned and culturally intelligible. This condition prepares the ground for the domestication of technology and ultimately for its ethnic construction, where technological systems are fully aligned with the identity, survival logic, and future aspirations of the people who produce and use them.

Defining Technological Independence

Political sovereignty is meaningless without technological independence. Both political independence and economic independence are nuances to confuse the ordinary mind when the notion of technological independence is not the centre of these conceptual trajectories. For both political independence and economic independence are impossible to realize without an intense concentration on national technological power. Rapid technological change in the world pushes a backward country's minute technological capability a hundred years behind.

Progressive countries must move their economic analysis away from material resources to brain resources. The technological field requires a very high voltage of brainpower to function. Being so, it is not propelled or determined by the known or available material resources. For example, Japan with very limited natural resources transformed itself to become the greatest or second greatest technological powerhouse of the world in the 20th Century. Technological power of a country is an expression of the national brainpower. *A country then is as independent as its national brainpower*.

Technological independence is the ability of a country to create and run a technological economy all by itself. *It is the ultimate expression of the IQ identity of the country*. Since the IQ identities of countries are not equal, technological independence does not translate to technological competition and equality among states. Inasmuch as rapid technological advance of other countries can push a given country's technological capability a hundred years behind, such a country still remains technologically independent insofar as it does not permit importation of technological artefacts into its territory but uses its own models albeit outdated when compared to its equivalents made by the more advanced countries.

Technological independence is not about technological competition. A country can be technologically independent without engaging in any form of competition with a contemporary powerhouse country. Technological independence is rather more about *technological autarky* and *technological contentment*. For example a country in 2020 (the year this paper was written) may have a car the sophistication and stance of 1980 Russian (Soviet) Lada as its homemade car. Insofar as such a country has no room for vehicle importation and depends on this vehicle to get around, this country is said to have achieved technological independence in automobile technology. Technological independence then is not about *catching-up* in the sense of achieving parity with the leading technological powerhouse countries in any specific field of technology. Catching-up or catch-up means a country can choose any level of technological sophistication it can cope with and achieve mastery at it and *build national economic dependence on that level of mastery and sophistication.* This entails that both the political leaders and the people must be disciplined enough to recognize their own ability and love and tend it. The state then must be able to build national pride around its practical technological capability artefacts and protect them from competing products from abroad which may be superior. It is a matter of training the patriotic palate. Technological independence therefore does not require high-flying alpha-plus score but a mere pass score for public attention. Technological independence is the ability of the state to achieve a hundred percent dependence on its domestic technology production system. From health to agriculture, to mechanical engineering, to the chemical industry, such a state is able to run these sectors without any major input from abroad, and whatever minor importation should be eliminated through domestic equivalent products within a maximum period of ten years.

Since technological independence is not about technological sophistication, it is then fundamentally about technological takeoff. It would seem that the two notions are implicit synonyms of each other. Technological takeoff, say of a specific sector, is the rudimentary stage of domestic technological competence in that sector and the accompanying national economic dependence on this domestic competence.

The theory of the scientific state (Nwosu, 2019b) necessarily implicates the paradigm of technological independence as its grounding theory. This conceptuation returns the theory of technological independence of states as the basic ideology of the scientific state. Technological independence then is the destination of the scientific state, while its "technological markets" constitute its domestic market over which the state has inalienable "right of way to exploit" (ibid., 205).

Whereas the government is an important actor in the implementation of the doctrine of technological independence, it is indeed merely one of the many actors and forces that can bring this about. The full democratization of its implementation brings to the fore the salience of sociocultural forces and actors that are fundamental thereto. For example, in a country like Nigeria where good decisions are difficult to arrive at, the Igbos as the foremost ethno-political identity in terms of technological inventiveness and technological entrepreneurship, can on their own and of themselves write the notion of technological independence into their complex array of positive cultural forces from where it can be translated into the political philosophy of their regional governments within the sovereign state of Nigeria. The cultural forces and elements here include *the Igbo cultural identity and their pride in technological entrepreneurship* which is able to ignite a technological race, a technological competence competition among the major ethnic nationalities of the Nigerian state.

To recapitulate, autarky, contentment, and societal self-confidence are fundamental elements of a concise definition of technological independence. In Africa, these features are lacking in both the social and political spheres. The people and the leaders of Third World countries seem to be in a big hurry to 'develop' or 'modernize' and therefore their political leaders bargain for quick fixes such as the construction of plug-and-play economies. Underdevelopment thereafter continues to linger as the people soon understand that the *glittering development* only increases their technological dependence (which economists prefer to call economic dependence) on the technological powerhouse countries. Development becomes a mirage to Third World peoples who are unable to capture the essence of 'development' or even 'economic development' as in the final analysis meaning the measure of domestic technological capability. In Nigeria, it is not about getting roads done by Julius Berger or Arab Contractors but about expanding the technological capability of Nigerian engineers to become master road makers. The Federal Government of Nigeria is busy pushing the civil engineering capabilities of the country-origins of these companies with hundreds of millions of dollars in contracts which enable them to upgrade and update their engineers to enable them continue to lead the Nigerian engineers in road construction technology.

Actual political sovereignty of states then is determined by how much technological independence the state has achieved. Paradigms for activating the functionality of science and technology in political states are indispensable in producing the political philosophy of technological independence. Domestic capabilities in science and technology must be mobilized to serve the needs of the people. The state's science and technology capabilities must meet with the demands of the citizens of the state. Domestic technoscientific capability must meet the demands of the state in the key areas of

- population control
- adequate food and nutrition
- employment generation
- provision of accountable and transparent governance
- management of the environment in terms of human waste and natural and man-made degradation
- achieving a balance in land demand between agriculture and human living space.

The truth becomes obvious then that the capability of a country's science and technology system to rule its political territory is the very essence or true measure of the country's political sovereignty. To the extent that a country's science and technology sector is truly in charge of science and technology business in the land, so is

the country in charge of its political sovereignty in practical terms. Science and technology then become the real determinants of political sovereignty. We could invent the term *technological sovereignty* as a more appropriate notion for political sovereignty.

The Epistemology of Technological Independence as Political Theory

We have already explored in the foregoing definition some relevant nuances in constructing an epistemology of technological independence as a political theory. The focal point of such an epistemology however should be about putting technological independence into the modern theory of democracy. This is relevant and critical because democracy is the only system for organizing society that guarantees the least tyranny (Popper, 1995). We submit here that for technological independence to be a useful and safe political philosophy it must be built into the modern theory of democracy, with national and global perspectives. From the national front, we can consider the political right of the citizens to freedom from hunger and malnutrition based on their right to indigenous scientific development of agriculture. Freedom from hunger and malnutrition should actually be considered the first right, a fundamental human right within the regime of technological independence philosophy. The science and technology manpower of the state then must receive every support of the state required to deliver this basic human need. Children are first among equals in the consideration of this basic human right. This is true because they are the most vulnerable and receive the greatest of the devastating effects of this twin evil. The failure of the political state then to engage the domestic science and technology manpower to deliver appropriate human feeding for the citizens is the beginning of the state's relinquishing of political sovereignty to other unknown forces.

The quantity of science and technology on Earth today makes it laughable that many humans in sovereign states, including children, go to bed without food or at best are only able to eat one shabby meal in a day. The political philosophy of technological independence implies that every state which activates this paradigm is able to wipe off starvation of its citizens immediately and subsequently malnutrition. The political philosophy of technological independence upon activation in a political state is able to quickly *restore the dignity of man* in that state through an immediate resolution of the problem of hunger. It makes no sense therefore that sovereign states should have university professors in the sciences and engineering and even in agriculture and economics and the vast majority of its citizens are either starving or underfed and malnourished. The procurement of food is the first business of man. The production of adequate food is the first business of a sovereign political state. By any arrangement a sovereign state must be able to use its intellectual resources to meet with this first demand and mark of sovereignty. The requisite army of scientists and other relevant experts must be developed within the state and deployed to meet this first demand on political sovereignty. Irrespective of hostile natural climatic conditions, the first determining factor of political sovereignty is the ability of the state to conquer its natural conditions and wrest food resources from nature for the wellbeing of her citizens. The collapse of statehood begins here.

The ability of the state to identify and deploy its intellectual resources to conquer the problem of inadequate food, to push nature to yield her best for man, is the first mark of political sovereignty embedded in the very notion of the social contract theory of the state. The ability of the state to identify, organize, and deploy its intellectual resources to conquer the problem of inadequate food – to compel nature to yield her best for human sustenance – constitutes the first and most visible mark of political sovereignty. This notion is deeply embedded in the social contract tradition, which views the legitimacy of government as resting upon its capacity to secure the welfare and survival of its citizens. For Hobbes (1651), the sovereign exists primarily to preserve life and ensure safety; for Locke (1689), political authority is justified by its protection of property and the material means of livelihood; and for Rousseau (1762), sovereignty is authentic only when directed by the general will toward the common good. Modern interpretations, such as those of Rawls (1971) and Sen (1981), extend this logic by emphasizing distributive justice and entitlement to basic goods, framing food security as a moral and political obligation of the state. Thus, the capacity of a nation to mobilize its intellectual and scientific potential in service of food sufficiency becomes a decisive expression of its sovereignty and a fulfillment of the social contract itself.[1]

A state's intellectual resources of course is the most important resource and a sovereign state must manifest a maximum understanding of this anecdote. Within the epistemology of technological independence, a state which is unable to achieve a full engagement with its science and technology experts but rather continues to patronize this same intellectual resource from other countries is announcing to the world that it does not exist. Such a political state has no dignity of a state and should not be treated as a sovereign state among the comity of political states of the world. For the political sovereignty of a state is inextricably tied to her intellectual resources, the core of which is the army of science and technology experts of the state.

The ability then of a state to prioritize her intellectual resources is another fundamental mark of political sovereignty according to the political philosophy of technological independence we are constructing here. A political state is as powerful and as independent as her intellectual resources. A country's intellectual resources – and not material resources – is in the final analysis the principal determinant of how rich that country will be. How rich a country is, of course, is how rich the poorest or the vast majority is. A poor country is not the country that lies in the desert with no natural resources but the country which is unable to produce a powerful army of intellectual resources, with a strong core of science and technology experts. An unintelligent political administration usually produces a poor country even if such a country has rain all the year round with abundant sunshine. The unintelligent political administration usually works hard – for reasons best known to it – to underdevelop the country's intellectual resources through heavy patronage of the intellectual resources of other countries. A country which depends on intellectual resources from abroad can never achieve technological independence and can never have rich citizens. Foreign expatriates do not develop a country. They are simply not permitted to transfer their knowledge to the country's experts.[2]

The beauty of the political theory of technological independence is that a country which activates its epistemology is able to wrest the key to technological development out of the hands of the acclaimed masters who are usually rather very unwilling to release it. Foreign scientific expatriates become very dispensable within a decade.

Interpreting technological independence as a political theory invariably transfers political power to the technoscience practitioners and not to traditional politicians. Political power players who are also technoscience experts at the same time will be the valid politicians of the technological independence political regime. However, politicians who are not technoscience experts by their credentials but who are able to connect with the vast resources of the country's army of science and technology experts to enrich the common citizen will have a great edge over traditional politicians. Such political leaders must be able to create the sociocultural and sociopolitical structures for valuing the country's inventors and other experts in the forefront of technoscientific discovery in order to enrich all citizens of the state.

Similarly, a political state cannot lay claim to its sovereignty if it is unable to harness her ethnic and religious forces, within paradigms of identity competition, to achieve her technological independence status through the mobilization of the sociocultural forces of technological takeoff[3].

A political state which willingly continues to serve other states and continues to accept third-class world citizenship for her citizens is ripe to have its sovereignty revoked and the state balkanized and recolonized. For example an ethnic identity of five million people should be able to put together a car and name it after their identity. In raw terms of statistics however, every population of ten million people should be able to make a car of their own. This means that the Nigerian population of about 214 million people in 2020 (Worldometer) should be able to turn out 22 indigenous vehicle brands.

In constructing technological independence as a political theory we must place emphasis on its framing as a political right of states. No state has the time to wait until this political right is given to it. An intelligent governmental administration of any political state can assert this right and take it. It gets more interesting when such an intelligent governmental administration works with its legislative arm to have this right anchored in the state's constitution as the basis of its foreign policy negotiations. Again, a much more intelligent governmental regime would put this constitutional demand through the public sphere (the social forces) and mobilize popular sovereignty through appropriate education and socialization structures.

The foregoing anecdotes implicate the laizefaire attitude of certain Third World governments with respect to the intellectual resources of their states in science and technology (and some will add, all intellectual resources of the state and not just in technoscience). The high traffic of brain power from the poor world to the technological powerhouse countries is a huge stumbling block in their quest for technological independence. The best human beings Nigeria has produced for instance do not live in Nigeria but are found outside Nigeria where they live and work hard for the technological advance of their adopted countries. Granted that it is the fundamental right of man to live and work wherever in the world he desires and has access to, and that it may not be feasible or even desirable for laws to be made to empower backward countries to forcefully hold back their best brains, the fact remains that something should be done about the massive loss of high IQ individuals to the already leading technological states. The poor and the backward countries must cherish, value, and deploy their great intellectual resources for the technological takeoff regime of the states.

Since foreign technological capability never bequeaths technological takeoff capability to a country unless such capability is absorbed by indigenous capability, the technological laggards of the world must be imaginative and construct strong ties with their best brains in science and technology, which emphasize their indispensability in the projected technological takeoff of their countries. A country which continues to produce "technological sparks" (Nwosu, 2020b), that is technological geniuses, for the rest of the world, while such a country never reaps from the fertile minds of such geniuses will continue to be a servant-country with no real sovereignty of her own. It is no longer excusable for countries that are high importers of technological artefacts and exporters of primary commodities to continue to lose their best brains to their technological masters. Whenever will such countries graduate from servanthood to mastery? Such a country can be described as 'bleeding to death' because its powerful intellectual resources are actually its blood which continues to bleed away.

Within democratic frameworks of governance, a country which cannot manage to retain its blood or at least its best blood has no reason to call itself a sovereign state and must needs be balkanized and recolonized through a referendum. Such a country has no need to have universities at all. If such a political state is up to fifty years old and is still heavily technologically inept, with massive human hunger, malnutrition, and unemployment, with a marked low lifespan of her citizens, the political sovereignty of that state is due for revalidation and revision through a referendum of the people. *The United Nations must frame this right of the people to choose their destiny*. Political sovereignty as structured in the Political Science of modern states is the very root of the contemporary phenomenon of failed states. If world peace is truly important to the United Nations and the various continental governance structures such as the EU, the AU, etc, provision must be made to stop states from failing through an option for balkanization or re-colonization according to the wishes of the people. Instead of endless technological exploitation and suppression and the product being a failed state where life becomes meaningless, the best the technological powerhouse countries benefitting from the exploitation and suppression of poor countries can do is to work for the opinion of the people for a re-colonization and possible balkanization before the powers of the state completely fail in protecting life and property. The resulting anarchist state may or may not deteriorate into outright war but may apparently be running normally while a cabalist or terrorist political administration carries out serial elimination of thousands of the citizens of the state. The subsequent dehumanization of man in his political society, which ordinarily would have been unimaginable in civilized societies, implicates the technologically powerful countries of the world which champion the suppression of technological advance in those countries for economic motives. As the blood of millions of people pour on the ground, one wonders how the architects of the anarchy are able to lie down in their beds and shut their eyes.

The political theory of technological independence therein suggests that it is not necessary for the powerhouse countries to continue to suppress the technological takeoff of the rest of the poor world. Such endless suppression through the mirage of political sovereignty is not necessary because it is not animal blood that will be spilled in the resulting failed states but human blood. Instead of fake political sovereignty for the Third World through the production of political stooges as political leaders in an unreal political sovereignty, the will of the people can be ascertained to discover if they may be re-colonized and absorbed as territories of the countries chosen by the people within the rubrics of democracy. The notion of political sovereignty therefore

must be disconnected from the traditional notions of democracy, which itself should simply be construed as 'what the people want.'

An epistemology of technological independence as a political theory therein informs us that the technological independence of a state is the basic criterion for statehood and political sovereignty and without which such an entity cannot be called a state. The state's science system must exist and function through activated paradigms of public communication of science and through a direct engagement with industry and agriculture. Otherwise there is no need at all to have universities with science and technology departments in poor countries. One wonders why Western powers and their allies continue to pretend that *Prometheus* (Shelley, 1820) cannot be unbounded in the rest of the poor world. While indeed some countries may lead the rest in terms of average national IQ which is a strong determinant of how unbounded *Prometheus* can be, the difficult fact to accept remains that super-intelligent or supernaturally inspired people by some unknown hand of genetics continue to appear in every corner of the Earth and in every small country, and that a handful of these special intellects is all a country requires to start an irrevocable journey on the technology highway.

Every country can and must be the master of its technological destiny insofar as such a country can boast of 100 Professors of Mathematics of world-class standing at any time (Nwosu, 2019b). The truth is that there is nothing any power in the world can do about an expanded mind. You may call them textbook Professors but the mind is already expanded and there is nothing anybody can do about it. Once this number is achieved, the rest of the scientific manpower is already in place. "Once a mind is stretched by an idea [by scientific imagination and knowledge], it never returns to its original dimensions" (Emerson, 1871, p. 82). Herein lies the danger of endless suppression and repression of efforts in the poor world at technological takeoff.

As public enlightenment of the problems of technological takeoff in the rest of the poor world deepens, children will begin to find out why they cannot drink milk every night before they go to bed but rather settle for palm kernel as supper with endless hours of yawning to find sleep. Young people will begin to understand why their political leaders do not protect indigenous technological entrepreneurs (their kinsmen who set out to construct a befitting technological destiny for them) but are allowed to suffer and perish through frustrations created by unpatriotic presidents and governors of the land.

Tremendous dangers lie in the coming enlightenment of the public through the domestication of Science and Technology Studies in the rest of the poor world. Millions of young people would rise up to challenge their political leaders who of course would want to muscle them down and waste them. Millions of young people would rise up and challenge their political leaders on why they continue to wallow in poverty and unemployment, with national currencies the value of toilet paper.

As patriotic inventors in these countries die unfulfilled[4] and their countries fail to utilize their technological acumen to make the lives of the young people better, the crisis will continue to build up until it explodes and groups and individuals will take matters in their own hands in order to rescue future generations from perpetual poverty and technological servitude. Make good

The Third World War may not be a religious war as theorized in many quarters and by many authorities. The Third World War may be a technological war for equalization. Some forces in the poor world may shoot the first bomb which throws the world into an intense competition for mutual annihilation, out of the ashes of which the superpower countries would have learnt a most important lesson that those who live in glass houses do not throw stones. For in such a war, the built countries will have more to lose than the struggling countries with rudimentary infrastructure.

Technological repression should cease forthwith in the world. Struggling countries should be given the right of way to invent and discover their pathways to their technological destinies. In the second decade of the 21st Century, the finders-keepers ideological regime and economics is outdated. Countries must begin to retract their steps and must begin to respect one another's right to technological sovereignty if they desire peace and security. Human poverty and unemployment must end in the Third World by all means necessary. This is the political theory of technological independence.

In exploring the divers nuances of technological independence as a political theory for the Third World, the clamant need to frame an STS of technological takeoff becomes explicit. STS (Science and Technology Studies, also known as Science, Technology, and Society) must of urgent necessity be included among the course and discipline offerings of the social sciences in Third and Fourth World countries. In the meantime, STS is framed for engagement in the First and probably Second World countries. For example, a reputable academic journal like *Technology and Culture* is strictly a history of technology journal and does not publish papers on "contemporary change" or "material on applying STS in order to effect change in the future" (Hermione 2020, email exchange). Except Pinch and Bijker (1984) who enthused that STS can be used to study "the art of invention" possibly towards constructing replicable models for constructing the invention culture, the preponderant majority of STS scholars rather apply STS as a tool for analyzing historical episodes of science and technology. This is understandable as these scholars come from the powerhouse countries of modern science and technology, with the invention of STS itself trailing three hundred years behind modern science and technology.

Naturally then, historical accounts of technology innovations appealed to the founding scholars of STS (which influenced the attention of succeeding scholars) more than in discovering universal causes and implications of such a phenomenon as *technological takeoff*, which is heavily political as much as it is social. Although STS was once accused of avoiding explicit political engagement, the field has evolved to foreground the political structures, interests, and power relations that shape scientific and technological life. Rather than, say, *confront technological takeoff as an intensely STS paradigm*, the field rather preferred to focus on, say, the social and cultural implications of technological innovation or technological change without a consideration of the import of the indigenity of technology or an understanding of the domestication process of such technological change, such that algorithms for technological takeoff could be discovered.

Political STS of the poor world herein remains undeveloped. This is more so about STS of the Third World. While Sociological STS is rich and replete with knowledge, Political STS in the glo remains scanty and well-nigh barren. The problem is that Third World scholars are probably waiting for First World scholars to engage with STS to develop for them the appropriate STS of the Third World. But the general rule is that *a scholar's environment preponderantly defines his academic quest*. During the formative stage of STS in the early 1970s, the countries of its founder-scholars had already recorded at least one hundred years of technological takeoff. They could not therefore consider worthy of study the relevance of STS in overcoming the political bottlenecks of technological takeoff, their political sphere having already solved this problem, and *consequently their technological takeoff was not perceived as an academic problem for STS*.

Sociological STS contains all the relevant nuances for constructing Political Science STS (or Political STS). In engaging with constructing Political STS, one is immediately confronted with the problem of framing a political philosophy of technological independence for the rest of the developing world or "the poor world" in Snow's nomenclature (Snow, 1961). In resolving STS into a political philosophy of technological independence, an STS driven by the commitment philosophy is produced which inspires action and modifies important political concepts such as democracy and sovereignty. For example the problem of technological takeoff can be articulated within ANT – actor-network theory, (Latour, 1987), or SCOT – social construction of technology, (Pinch & Bijker, 1984) regimes, each of which alters our fundamental understandings of democracy and sovereignty. In the ANT regime, actors and actants can be influenced to increase or decrease their salience. Political encumbrances to technological takeoff are therein reducible to an array of actors and actants which are manipulable to achieve a set of desired outcomes. The ANT methodology of STS resembles a game, with specific algorithms for 'winning' or 'losing.' The SCOT regime on its own facilitates the reduction of political forces of technological takeoff to mere social forces. Thus, the political impediments to technological takeoff in the "poor world" are reducible to social forces. Deconstructing, decomposing or unpacking the political into the social is an important feat achieved by the SCOT paradigm which eliminates the fear of political power, including its subtle whims and caprices, and rather assigns any form of power at all to the social forces. *Actual power then is assigned to or belongs to the social forces of technological takeoff*.[5]

Since SCOT is about the social forces, it is about the popular sovereign and therefore a democratic regime. SCOT then implicitly promotes anecdotes for democratizing technological takeoff. Authoritarian technological

takeoff is unpopular and antithetical to world peace. Examples of authoritarian technological takeoff regimes include Germany from 1914 to 1945, Japan from 1900 to 1945, China from 1950 to 1980, and Russia (as former USSR) from 1917 to 1961. A more contemporary example of authoritarian technological takeoff regime includes Iran from 1990 to 2020.

An ontology of the social construction of technological takeoff becomes expedient to inspire the already industrialized states and the rest of the developing world towards constructing democratic regimes of technological independence urgently required for building a peaceful world. The democratic technological takeoff regime implicates the SCOT sociopolitical theory and must be applied to deal with the problem of technological takeoff in backward countries, beginning with its framing as an academic problem within Political Science STS. Such an ontology of SCOT, aside from pragmatically forming the springboard for technological takeoff, say, in the Third World, is able to expand the purview of existing *technological sovereignty* of states which morally and sensibly informs them to dismantle their structures of technological imperialism because *the forces of technological takeoff exist in every state*, irrespective of its level of development. Such an ontology encourages *the respect of the technological market of political states* as implicit in the notion of technological sovereignty. *The forces of technological takeoff are social and cultural and sometimes religious*, and every political state on Earth has enough of these forces or a combination of these forces to form the critical mass of power for technological takeoff.

The social construction of technology recognizes the energy and intelligence of the people as sufficient for forming, shaping, and directing the pathways to the state's technological independence. Social power therefore is a more preferable partner and primemover of technological takeoff than political power. Political power is replete with apprehensions and misgivings, and more often than not amenable to the selfish enterprises of a handful of persons who exercise it allegedly on behalf of the state. Thiswise, there is a great mistrust of political power as the energy source of technological takeoff. In modern democratic states, it is not really the will of the people that directs and controls political power but the personal whims and caprices of a handful of people, a cabal so to speak. *Cabal democracy* therein becomes a reality of modern democracy and is more pronounced in presidential systems than in parliamentary systems. Today's democracy remains a deception and at its best only partially reflects the will of the people.

But there is enough technology in the world today to implement *mass government systems* in most countries. Cabal democracy will always resist the implementation of mass government systems. However, a million ants will always eats up a lion if the ants can have the demolition of the lion as their goal. Cabal democracy as a system of government has stood in the way of Africa's and most of the Third World's path to technological takeoff. In recent times, cabal democracy has expanded in boldness as the people tarry in challenging its existence. It has produced "advanced cases of 'stayism'" (Posner & Verde, 2013) where presidents overstay constitutional limits, where a president stays in office for twenty years and more while running the country as a personal estate. Cabal democracy incorporates the judiciary and the legislature as necessary servants of the executive, such that the notions of separation of powers and checks and balances only exist in the mind of the onlooker.

Social power – in other nomenclatures known as social capital or cultural capital – is an expression of the will of the people. It is the will of the people in its kinetic form. The propensity of man to abuse power implies that this will of the people cannot be entrusted to human beings to manage and protect, as demonstrated by the unrepresentativeness of representative democracy, characterized by rubberstamp legislatures and toothless judiciaries, and therefore necessitates the implementation of "the machine state" (Nwosu, 2019b). *The machine state is the only known incorruptible structure that can protect and implement the will of the people and it is all about technology. Technology must replace man in the governance of the state.* The will of the people is their justice and its implementation is the only rationalization for the continued existence of the state. The survival of the state that does not protect and implement the will of the people hangs in the balance on a thin thread. Everything must be done to implement the people's justice, that is *the will of the people*. Everything must be done to stop personal human will and interest from interfering in the implementation of the will of the people, "the general will,"[6] the justice of the people.

What do the people want for instance in Black Africa? After slavery, colonial occupation, and decolonization, what is the justice of the people of Black Africa today? Do Black Africans want continued and endless technological imperialism and technological servitude, the mechanism of which is oiled and maintained by their own political leaders? Do Black Africans subscribe to the eternal brain drain of their technological and scientific manpower to the technological powerhouse countries? Do Black Africans believe and subscribe to the stereotypic identity-image of themselves as mentally incapable of constructing and running technological states and technological societies?

The social construction of technology ontology focuses on the shaping of invented or adopted technology by the relevant social groups. In the 21st Century, this ontological purview is no longer adequate for this all-important framework and must be expanded to include the setting and implementation of technological agenda for the state by the social forces which constitute the people.

Technology must therefore be commissioned to protect and implement the will of the people above any other will. *The general will* is the collective will and is the very justice of the people. The social construction of technology deals with the general will on technology and must be developed to entertain such sociopolitical questions as the preceding ones about Black Africans which bother on technological takeoff and technological independence.

Valuing STS of Technological Takeoff

STS is probably the most important discipline in the Third World today. Unfortunately, many countries in this category are yet to make it available as a university programme. De Albuquerque *et al* **(**2013**)** for example discusses the relevance of actor-network theory for developing countries wherein unseen elements in the construction of technological artefacts are hidden "beneath *the tip of the iceberg*" (ibid. p.3). Technoscientific "entities" or artefacts that arrive the developing world through trade are like "icebergs of which developing countries see only the tips and which they regard as self-contained wholes" (ibid. p.2). This means that the complex array of decision-forces embedded in "the sociotechnical constructive process" (ibid. p.3) are not visible to Third World consumers. Nwosu (2019a) captures this element as the history of technological inventions that should be put in products imported into the Third World to enable the developing-world consumers to be exposed to the tortuous pathway the specific technological artefact passed through before it became acceptable in the "use world" (Pinch and Bijker, eds. 1987), such that people of the Third World can "be inspired by the fact that the path of science and scientists has historically been rather tortuous than a bed of roses" (Nwosu, 2019a, p.130).

The subject matter of technological takeoff is erroneously perceived to be more political than it is economic or social. This very notion, and its extension being technological independence, is exactly what demarcates certain political states as the centres and others as the peripheries. And this is all Political Science has been able to do. The poverty of Political Science in providing rich and valuable solutions to the problem of technological takeoff in "the rest of the poor world" (Snow, 1961) only reflects the near absence of Political Science solutions to the problem fundamentally because of the complex nature of political power and how it reshapes the behaviour of those who handle it. Dependency theories of development provided by Political Science (Frank, 1967; Amin, 1976; Cardoso & Faletto, 1979) offer no solutions to the dependency trap. C.P. Snow (1961) is probably the first person who framed Political Science STS and specifically STS of technological takeoff without knowing it. His treatise on the problem of communication between "the two cultures" and how to realign them for better understanding of each other is a treatment on how to position the two dominant social forces for technological takeoff (the science scholars and the non-science scholars) as a non-Political solution to the problem of deepening or speeding up technological development in the Western world, and part of the solution to the problem of technological takeoff in "the rest of the poor world."

Snow believes that if the non-scientists can understand some measure of "what the scientists are talking about," the development of science and technology in the world will be greatly enhanced to enable the world wipe out its triple problems of poverty, overpopulation, and the threat of a nuclear world war (ibid). Part of "the Snow Thesis" (ibid.) speaks of the relevance of building the general awareness of the rest of the

population of a country to the level where the population can be said to reasonably "understand what the scientists are talking about." Snow in this treatise implies the relevance of constructing regimes of public understanding of science (Gregory & Miller, 1998) or public engagement with science and technology (Miller, 2001) – respectively popularized as PUS or PEST regimes – as the foundation upon which the Scientific Revolution can occur in a given country (Nwosu, 2019a).

On the Scientific Revolution itself, the Snow Thesis says that it is a phenomenon that must occur in every country and so it is getting around the world and Western powers had better accept the fact that it would not be an experience exclusive to them. Interpreted in our parlance, the Scientific Revolution is the singular sociocultural experience that is capable of producing technological independence in any country that experiences it.

While the Scientific Revolution as a periodization in European history belongs to Historical STS, public engagement with science and technology and ancillary regimes as expressions of the scientistic movement belong to Sociological STS. However, the Scientific Revolution in the Snow Thesis is a sociocultural phenomenon that will be replicated in all countries in a matter of time, and therefore in this formulation it also belongs to Sociological STS. The goal of these narratives is not an *envisaged* technological independence but rather an *inevitable* technological independence achieved with algorithmic precision. An engagement with the sociocultural forces of technology development produces inevitable technological takeoff. For example, a replication of the sociocultural elements in the history of the railway system in Britain (Deane, 1992) will produce similar results in any country. The problem is that such array of sociocultural forces that produced the railway system in Britain may not accurately be reproduced in another country.

STS of Technological Takeoff reveals the engagement of sociocultural forces of any society in the making of technology in that society as the most important set of elements in its ontology. This ontology therein reveals the critical importance of the nation or a society's 'nationess,' (that is, a society's homogeneity in terms of tribe, language, and religion) in setting and achieving technological takeoff agendas. The nation then is not a political construction but a sociocultural entity and the 'nationess' of any society determines its relative ability to attain technological takeoff.

In heterogenous political states, many nations exist and *can* attain rudimentary technological takeoff individually and much quicker than as 'national' projects. The sociocultural forces here become the ethnic identity groups defined by their distinct language, religious, and tribal identities. Ethnic competition as an indispensible component of ethnicity becomes the driving force propelling the construction, reconstruction, and enrichment of the ethnic group identity-image vis-à-vis competing ethnic groups. While the respective ethnic identity groups will obviously be at each other's neck in the political sphere in political competition, national technological takeoff agendas become impossible to conceive. The energies and attention of ethnic identities are consumed completely by political competition. Ethnic leaders as political gladiators struggle to acquire as much political power as possible, allegedly on behalf of their ethnic groups, to enhance their personal and group interests in the political state. However, an ontology of *STS of Technological Takeoff* perceives this scenario as an excellent sociocultural formation for achieving technological takeoff, not from a national front but from several, staggered ethnic identity fronts. Technological takeoff agenda can be introduced to the already agitated ethnic identity groups as *self-determined pathways for attaining alternative power*. The ethnic identity groups locked up in political competition in this agitated state are excellently activated sociocultural forces of technological takeoff of their ethnic enclaves in regimes of ethnic honour and ethnic pride.[7]

The most critical value of STS of Technological Takeoff then is that it is the most salient nexus, so to speak, between STS and Political Science both in the poor world and the technological powerhouse countries. *A well-developed ontology of STS of Technological Takeoff enriches Political Science with frameworks for constructing technological independence as a political theory*.

Technological takeoff as an STS problem must be developed especially by emerging STS scholars in the Third World and thereon taken up by Third World political scientists to engage their publics in narratives for the

attainment of the second independence, being technological independence. This then should be the preoccupation of Political Science in the rest of the poor world for the next 20 years (starting from the Corona lockdown months of 2020 when this paper was written). We agree with C. P. Snow that the rest of the poor world can attain the requisite technological momentum which qualifies as technological takeoff in a matter of 20 years. With each of these countries having experienced at least 30 years of the demystification of science and technology, the problem in one perspective becomes far less insidious today than it was when Snow produced the first STS of Technological Takeoff at the Reed Lectures of 1959.

Politics of Technological Takeoff in the Third World

Why is technological takeoff perceived to be political? The answer lies in the fact that the countries of the world which are already developed, especially the technological powerhouse countries, do not want to help or see the developing countries acquire technological capabilities, so that such countries will forever remain mere extensions of their markets for the sale of their technological artefacts. Such technological powerhouse countries also want to continue harvesting the best brains of the poor and backward countries, in addition to their home supply of brains to keep them forever leading in science and technology production and to keep the poor countries forever dependent on them. Masters do not want their servants to ever in life measure up with them. To further perpetuate the master-servant relationship between the centre states and the periphery states, the centre states usually interfere in the politics of the periphery states *to ensure that characters like technological nationalists and movements like technological nationalism do not emerge in the sociopolitical sphere. They meddle in the politics of periphery states to ensure that the personality-type of the technological nationalist do not emerge to become presidents in the periphery states*. Governmental corruption in the periphery states usually stems from or is encouraged by this comprador politics of deception and manipulation. This is also why technological takeoff in the periphery states, perceived as a political problem, has no practical political solution. For example, Nigeria under the democratic administration of General Olusegun Obasanjo (1999-2007) missed the golden opportunity to become a net manufacturer of mobile phones when it liberalized the telecommunications sector and licensed three multinational telecommunication providers who within ten years expanded telephone lines from a mere 400,000 to over 100 million circa 2011. Yet the country remains incapable of manufacturing a single telephone till date but happily imports 34 billion naira worth of telephones every month as at 2015 (Fakorede, 2015).

Brain drain from the periphery to the centre states ensures that the best scientific and technological manpower emerging in the periphery states are not deployed to power their technological takeoff. But the advanced countries may not be blamed by anyone. The life of the scientist is what is most fundamental and he has the right to go where his life is very much valued. The advanced countries are simply smart enough to understand the critical importance of absorbing extra brains from around the world by ultimately making them citizens of their states. Poverty of common sense seems to be a phenomenon endemic in technologically backward countries. The poor countries are not endowed with enough common sense to understand that their array of scientists, engineers, and technologists are their greatest assets which can end their poverty. The poor obviously do not know why they are poor and rather have the penchant for blaming others for their poverty. This research does not blame the advanced countries for practically saving dying and frustrated scientists from technologically backward countries by absorbing them into their countries for maximum development of their potentials. We rather blame the United Nations for not demonstrating enough moral sense on this matter. Possibly other imaginations are possible at the realm of the UN if wiping out global poverty and achieving zero population growth in the world are clamant agendas for the world government as fundamental to world peace and security. It is not possible to achieve, say, global food security when scientists and engineers are ignored in most of the poor world. The UN does not promote epistemes for elevating the sociopolitical importance of domestic science and technology in developing countries. The UN does not teach the poor countries to value their indigenous technoscientific manpower as the most important resource they have, several hundred times more valuable than crude oil or gas deposits or other natural resources such a country apparently survives on. The United Nations through its relevant departments and structures such as the UNESCO does not promote country-wide agendas that promote sociocultural understandings of science which aim at "bringing science '… out of the laboratory and into the culture.'" (Brake and Griffiths, 2004, p.576).

The fact is that the United Nations cannot achieve world peace and security when it is perceived as part and parcel of the mystification of science and technology in the poor and backward countries, when it does not help such countries decode the secrets of technological takeoff hidden "beneath *the tip of the iceberg*" **(**de Albuquerque *et al*, 2013, p.3).

However, this world government structure, the United Nations, is controlled by the technological powerhouse countries who unfortunately "are not ready for another Japan" (Ezeani, 2014). Those who have arrived do not want others to arrive. This narrow-mindedness appears to be peculiar with industrialized capitalist countries. Technological states with socialist background seem to be less inclined to pursue this pattern of foreign policy. Except China. The body language of the Chinese government in its relationship with Africa for example shows that it intends to continue to be the manufacturing house for Africa for at least the next 100 years. The Chinese government cannot envisage that every country on Earth with universities which have faculties of science and engineering and which have professors in these fields can be like China or probably a better China. The Chinese have this penchant for conquering the technological marketplace of other countries, including the United States. Whoever started implementing the business plan of making China manufacture for the United States indeed laid the foundation for the enslavement of Americans by China. The American government over the years played along with the Chinese to give China too much power in the world, and should not today complain if the Chinese want to dictate to the United States in the control of the world government body. *The weak example set by the United States influenced the technologically backward countries to accept China as the world's factory and to have their daily needs manufactured in China*. With the example of weakness demonstrated by the United States, once the largest and the most progressive technological state on Earth, the rest of the poor world apparently lost focus and were influenced by the US body language to look up to China instead of looking inwards to activate their own systems of technological innovation, instead of putting the chips down on their own technological takeoff. The politics of influence cannot be discountenanced in discussing the politics of technological takeoff in the Third World. It would seem that the Chinese calculation of the United States as the most critical technological market to conquer is very accurate. Once the United States accepts Chinese products, every other country, and compulsorily all developing countries, will easily be flooded with technological artefacts manufactured by China. Stagnated or stillborn technological takeoff projects abound in Africa, thanks to the arrival of China (and subsequently the displacement of Japan) in the African market. Both Japan and China export technological artefacts to the United States while these countries take little or nothing of such artefacts from the United States. One wonders what could be the pride of Americans who drive Toyota, Nissan, Mitsubishi, and recently a number of Chinese vehicles when both the Japanese and the Chinese do not drive any American vehicles.

What this narrative means is that the Americans and any other technological state that operates this trade pattern have lost their sense of pride in their technology. *Technology is not just about commerce, but also about the pride of the people. Technology is not just an economic phenomenon, but also a sociocultural reality which essentially connects with the people's sense of pride and identity.* To correct this misdemeanor, this research urges the United States to take the lead in propagating the doctrine of the Scientific State, the most essential element of which is that every political state enjoys its "right of way" to its technological market (Nwosu, 2019b). The political theory of the Scientific State perceives every political state on Earth, irrespective of its present status, as technically a Scientific State, unless such a country cannot produce world-class professors of Mathematics, Science, and Engineering. The rest of the problems are simply political bottlenecks such as the invasion of the technological marketplace of fellow sovereign states which contemporary American governments have been encouraging across the world by allowing this great country to easily become the dumping ground of technological artefacts made overseas. The United States therefore should take the lead in fixing this bottleneck by closing its borders to the importation of technological artefacts made outside the country by whatever business arrangements. The government and citizens of the United States should learn to make do with and be proud of technological artefacts made by Americans on American soil. Americans should return to the basics and connect their technology to their sense of identity and pride. Americans should return in essence to technological nationalism as the sociocultural and sociopolitical force driving their technological quest. This will increase the people's participation in the country's science and technology agendas in anecdotes of pride and identity towards the construction of the people's science regimes. Technological nationalism inherent in the people's science regimes is an inseparable component of

the political philosophy of the scientific state (ibid.) and a citadel of democracy such as the United States is expected to be an exemplar model of same. In the meantime, countries leading in technological nationalism include Germany as the best European example, Japan, China, and recently India and Indonesia.

Technological takeoff, if left in the hands of governmental administrations of Third World states may take yet another 100 years to be achieved. Third World governments have this penchant for sabotaging their own states' technological takeoff regimes, most of which are not planned by them but arise by the accidental occurrence of a combination of certain clement factors.

Technological nationalism is the only regime that combines the elements of technological takeoff such that the role of the government becomes less emphasized. Technological nationalism is both political and social in composition, yet in democratic societies its political component is indeed outside the exact control of the governmental forces of the state. Technological nationalism can be easily engaged in both homogenous and heterogenous states of the Third World as the best countermeasures to the politics of *arrested technological takeoff*. In heterogenous countries with great ethno-cultural and ethno-religious divide, technological nationalism nevertheless succeeds because of its ability to be simplified into more or less its rustic elements, namely the ethno-technological nationalism of the various significant ethnic identities that make up the political state. This is the ethnic construction of technology (Nwosu, 2020c) paradigm, which itself can be described as the complete domestication of the technological takeoff regime. [8] Ethnic construction of technology is the necessary outcome of the fundamental evolution of ethnic technological nationalism.[9]

These nuances are the best guarantees against the tremendous power politics suppressing technological takeoff in the Third World. The poor countries of the world today seem to be forever trapped in the ever-expanding technology gap between them and the developed world. Mature and intelligent ethnic identities will look to the technological realm to find their own identity-space and occupy it. And the political state must not stop them.

Addendum: Toward a Theory of Technological Civilizations

The arguments developed in this paper form part of a broader theoretical effort to reconceptualize technology as a civilizational phenomenon rather than a neutral instrument of development. The interlinked concepts of technological takeoff, technological independence, technological nationalism, and ethnic construction of technology should therefore be understood not as isolated propositions, but as foundational elements of an emerging philosophy of technological civilizations.

Within this framework, technological nationalism drives technological takeoff, which marks the initial rupture with technological dependence by enabling endogenous innovation and institutional capacity. Yet, as this paper has demonstrated, technological takeoff alone is insufficient to secure autonomy. Without deliberate cultural ownership, technological takeoff risks entrenching new forms of subordination through deeper integration into externally defined technological systems.

Technological independence extends the logic of technological takeoff by asserting technological self-determination as a normative goal. It reframes development as a question of authorship rather than access, and sovereignty as a matter of technological direction rather than formal statehood. In this sense, technological independence functions as the political condition that makes civilizational agency possible in a technologically stratified world.

Ethnic technological nationalism as the most domesticated and the most democratic strand of technological nationalism emerges as the historical and cultural motor of this transition. It represents the collective realization that technological dependence is inseparable from epistemic displacement and historical domination. As a mobilizing orientation, it seeks not merely to increase local participation in global technological systems, but to reconstitute the technological imagination of a people from within their own historical experiences, ecological conditions, and cultural logics.

Ethnic construction of technology then constitutes the highest level of this developmental sequence. At this stage, technology is consciously designed, evaluated, and legitimized according to the internal criteria of a specific ethnic or civilizational community. This does not imply isolation from global knowledge flows, but rather the capacity to engage them selectively and on self-defined terms. Ethnic construction of technology thus signals the transition from technological adaptation to technological self-authorship.

Taken together, these concepts point toward a more expansive research agenda. Future work may elaborate the institutional architectures required for ethnic construction of technology to thrive, examine comparative cases of technological civilizations, and explore the role of education, language, and cultural production in sustaining long-term technological sovereignty. The present paper therefore functions not as a terminus, but as a conceptual foundation for a sustained theoretical programme.

CONCLUSION: TECHNOLOGY, SOVEREIGNTY, AND THE PLURALITY OF FUTURES

This paper has argued that technology occupies a central place in the political philosophy of sovereignty. Far from being a neutral domain of tools and techniques, technology structures power, shapes historical trajectories, and defines the limits of collective self-determination. Societies that lack control over their technological systems remain constrained in their capacity to author their futures, regardless of formal political independence.

By redefining technological takeoff as an endogenous transformation rather than a linear developmental stage, the paper challenges dominant modernization narratives and their implicit universalism. It further establishes technological independence as a necessary condition for genuine sovereignty, and ethnic technological nationalism as the cultural and political force through which such independence becomes historically achievable.

The concept of ethnic construction of technology crystallizes the paper's central contribution. It names the condition in which technology is no longer experienced as foreign, imposed, or culturally dissonant, but as an organic extension of a people's worldview, survival logic, and civilizational aspirations. This condition is not a rejection of modernity, but a reconfiguration of it – one in which multiple technological civilizations coexist rather than a single model being universalized.

The broader implication of this argument is that the future of global technology will be neither uniform nor uncontested. It will be shaped by struggles over authorship, meaning, and direction. Societies that succeed in aligning technological takeoff with cultural ownership and political intentionality will emerge as authors of their own technological futures. Those that do not will remain participants in futures designed elsewhere.

This paper thus serves as an opening statement within a larger theoretical corpus concerned with technological sovereignty, civilizational plurality, and the politics of innovation in post-colonial contexts. Subsequent work will be required to elaborate its institutional, empirical, and comparative dimensions. What has been established here, however, is a foundational claim: technological independence of sovereign states is not an optional aspiration but part of the very notion of sovereignty itself.

A political philosophy of technological independence readable in the social sciences must be framed essentially by academics in "the rest of the poor world." This work in itself is a fundamental contribution in this direction. Such a political philosophy will be interpretable in Economics, Sociology, Psychology, especially Social Psychology, and of course STS. Constructing such a brave and revolutionary political philosophy then lies in the hands of Philosophers of the Third World. In framing the political philosophy of technological independence, its basic ingredients must include democracy and fundamental human rights, which must include the right of the citizens to assess their political leaders on the parameters of technological independence of their political states, etc. The anecdotes of such democracy must include *machine democracy* which eliminates the unpredictability and unreliability of political man.

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End Notes

1. Here are foundational theorists of the social contract tradition, who articulated the legitimacy of the state as deriving from its responsibility to secure the welfare of its citizens, including their material well-being.

Thomas Hobbes (1651)

Work: *Leviathan*

- Hobbes argues that individuals surrender some of their freedoms to a sovereign authority in exchange for protection and order.
- For Hobbes, the state's legitimacy depends on its ability to preserve life, and by extension, ensure the basic means of survival such as food security.

"The office of the sovereign… consisteth in the end for which he was trusted with the sovereign power, namely the procuration of the safety of the people." (*Hobbes, T. (1651). Leviathan, ch. 30.*)

John Locke (1689)

Work: *Two Treatises of Government*

- Locke extends the social contract to include the protection of property and livelihood, meaning the fruits of the earth and labor.
- The state's duty includes securing the conditions under which individuals can produce and enjoy the necessities of life.

"The great and chief end... of men's uniting into commonwealths, and putting themselves under government, is the preservation of their property." (*Locke, J. (1689). Two Treatises of Government, Book II, §124.*)

Jean-Jacques Rousseau (1762)

Work: *The Social Contract*

- Rousseau links the general will of the people to collective welfare. The social contract legitimizes the state only if it acts for the common good, which includes ensuring collective access to life-sustaining resources like food.

"The social pact… gives the body politic absolute power over all its members; and it is this same power that must always be directed by the general will, which alone can guide the forces of the State towards the common good." (*Rousseau, J.-J. (1762). The Social Contract, Book I, ch. 6.*)

Contemporary Linkages

More modern proponents of this argument include:

- **John Rawls (1971)** – *A Theory of Justice*, where he connects social contract theory to distributive justice and fair access to primary goods (which include food).
- **Amartya Sen (1981)** – *Poverty and Famines: An Essay on Entitlement and Deprivation*, which, while not a social contract text per se, reinterprets the state's obligation to prevent famine as part of its legitimacy and justice framework.

2. We may caption this notion as **Intellectual Resources and the Ontology of Statehood**. The assertion that *a state's intellectual resources constitute its most important resource* must not be construed only as a rhetorical emphasis, but as a foundational claim about the ontology of political sovereignty in the modern technological age. Within the framework of technological independence, intellectual resources (defined primarily as a nation's internally cultivated community of scientists, technologists, engineers, and knowledge producers) function as the decisive determinant of a state's capacity for self-definition, self-defense, and self-reproduction.

This notion advances a radical but coherent philosophical position: that political sovereignty is inseparable from epistemic sovereignty. A state that persistently relies on external intellectual labor to solve its fundamental scientific and technological problems effectively externalizes its thinking function. In doing so, it relinquishes not only its autonomy but also its dignity, becoming a consumer of foreign cognition rather than a producer of indigenous knowledge. Such a state may retain formal political symbols (flags, constitutions, borders) but lacks substantive existence within the comity of sovereign nations.

The emphasis on an "army of science and technology experts" deliberately reframes national defense away from militaristic symbolism toward cognitive power. In this view, intellectuals are not auxiliary contributors to development but the core strategic infrastructure of the state. The prioritization, organization, and protection of this intellectual army emerges as primary indicators of genuine sovereignty.

Furthermore, the notion provides a decisive redefinition of national wealth. Material resources are presented as secondary and inert without intellectual mastery. A nation's real prosperity is measured not by the abundance of natural resource endowments but by the depth, distribution, and productivity of its intellectual capital, particularly as it affects the material conditions of the majority. Poverty, therefore, is not a geographic or ecological fate but an epistemic failure most often produced by political administrations that undervalue domestic intellect and over-patronize foreign expertise.

The critique of foreign expatriate dependence is not xenophobic but structural. It exposes the reality that global knowledge systems are designed to inhibit genuine knowledge transfer, thereby maintaining technological hierarchies. Development imported through expatriate expertise remains superficial, incapable of producing technological independence or durable wealth.

Taken together, this notion functions as a philosophical indictment of intellectual dependence and a policy-oriented call for intellectual nationalism. It insists that states which fail to cultivate and focus on their own intellectual resources are not merely underdeveloped – they are ontologically incomplete. In the final analysis, to exist as a sovereign state in the technological age is to think independently and to institutionalize that independence through deliberate investment in indigenous intellectual capacity.

3. In my theorization of African Technological Nationalism, I argue that a political state cannot legitimately claim sovereignty if it fails to convert its internal identity forces – particularly ethnic and religious formations – into instruments of technological self-determination. Identity competition, when left unmanaged, fragments national purpose; but when intentionally mobilized, these same sociocultural energies become the most resilient engines for technological takeoff. Thus, sovereignty transcends its juridical definition and becomes a developmental capacity: the ability of a state to reorganize its ethnic and religious dynamics into productive coalitions that advance indigenous technological creativity, secure control over critical infrastructures, and drive a self-sustaining technological independence agenda. A state that accomplishes this internal conversion moves beyond dependence and enters the realm of genuine autonomy; a state that fails remains sovereign only in name.

Legal sovereignty is necessary but not sufficient. Real sovereignty in a technological age requires the *capacity* – industrial, institutional, and social – to produce and govern critical technologies. Because ethnic and religious identities are the most robust organizing resources in many states, converting their organizing power into a cross-cutting, inclusive mobilization for technology and industry is both a practical route to take-off and a political requirement for genuine technological independence.

4. Tribute to Dr. Ezekiel Izuogu of Imo State, Nigeria, West Africa. He is the world patent holder of the Izuogu Machine (also known as *Emagnetodynamics* Technology). Emagnetodynamics has been recognized by Professors of Physics that "should be incorporated into the body of knowledge of the physical universe" See Professor A.O.E Animalu's work "PRINCIPLE OF EMAGNETODYNAMICS FOR COMPOSITE MAGNETIC POLE" published in *PROCEEDINGS OF THE NIGERIAN ACADEMY OF SCIENCE* (Official Journal of the Nigerian Academy of Science. https://nasjournal.org.ng/site/index.php/pnas/article/view/57/41

Here is a Google review of Emagnetodynamics phenomenon:

Emagnetodynamics is a new field of physics proposed by Nigerian inventor Dr. Ezekiel Izuogu that studies the conversion of static magnetic energy into work, suggesting a way to create a self-sustaining engine. It is not a part of mainstream physics, which operates based on Faraday's laws of induction. The theory is based on the invention of the Izuogu machine, a machine intended to run on the "atomic energy" of permanent magnets, requiring no external power input.

- **Proposed principle**: Emagnetodynamics states that a force is exerted on a composite magnetic pole in the vicinity of like poles, and this force is in the direction of the composite polarity.
- **The Izuogu machine**: Based on these proposed laws, Dr. Izuogu developed the self-sustaining emagnetodynamics machine.
- **Claimed function**: The machine is said to draw energy from permanent magnets, potentially providing a clean and cheap energy source.
- **Status**: Emagnetodynamics is not recognized by the mainstream scientific community, and the Izuogu machine has not been independently verified as a perpetual motion machine.

You may also read "Ezekiel IZUOGU Self-Sustaining Emagnetodynamic Machine" at https://www.rexresearch.com/izuogu/izuogu.htm

5. **Deconstruction** is a concept from philosophy and literary theory, mainly associated with the French philosopher **Jacques Derrida**. At its core, deconstruction involves analyzing and breaking down established concepts, texts, or structures to reveal hidden meanings, assumptions, contradictions, or power dynamics within them. It doesn't mean destroying something, but rather **unpacking** it to see how it works and what it relies on.

The notion, "**deconstructing the political into the social**," then suggests **breaking down the concept of 'the political'** to reveal that it is **deeply embedded in or indistinguishable from the social realm**. In other words:

- **"The political"** is not some isolated, abstract system – it is made up of, influenced by, and sustained through **social relationships, norms, identities, and interactions.**

- So, **to deconstruct it into the social** means to **analyze and reveal** how what we think of as "political" is actually **socially constructed**, shaped by everyday life, culture, and community dynamics.

Put simply, it means asking: **"Is the political really separate from the social? Or is it just a way of organizing social relations?"** Deconstructing it helps us see that politics might not be as distant or formal as it seems. It is happening in our social lives all the time.

6. 'Everything must be done to implement the people's justice, that is *the will of the people*. Everything must be done to stop personal human will and interest from interfering in the implementation of the will of the people, "the general will," the justice of the people.'

Author: Jean-Jacques Rousseau (1712–1778)

The notion of **"the general will"** comes from **Jean-Jacques Rousseau**, one of the major political philosophers of the Enlightenment. A Genevan philosopher whose writings reshaped political thought, education, and ideas of human freedom. His work influenced the French Revolution, modern republicanism, and contemporary democratic theory.

Published in 1762, *Du Contrat Social* (*The Social Contract*) is Rousseau's most influential political treatise. He wrote it during a period when Europe was questioning monarchy, divine right, and the structure of authority. Rousseau attempted to answer one big question:

How can humans live together freely without losing their natural liberty?

His solution was the idea of a political community based on a *social contract* – not between rulers and subjects, but **among the people themselves**.

Rousseau introduces **the general will (volonté générale)** in *Book I* and develops it deeply in *Book II*. The general will represents:

- The collective will of the people
- Oriented toward the **common good**
- Superior to individual interests
- The only legitimate basis of sovereignty

Rousseau argues that when individuals unite under the social contract, they become part of a collective moral body, **the sovereign**, whose decisions must reflect the general will. True freedom, he claims, is obedience to this rational, collective interest.

Key Themes of the Work

- The difference between **general will** and **will of all**
- Popular sovereignty
- Liberty and civic duty
- Legitimacy of laws originating from the people
- The structure of a just political community

In this foundational treatise, Rousseau develops his most influential political concept: the *volonté générale*, or "general will." Written during the Enlightenment, the work challenges hereditary monarchy and proposes that legitimate political authority arises only when individuals collectively agree to form a moral and civic community. Rousseau argues that, through the social contract, each person unites with all others to create a sovereign body whose laws must express the general will, itself defined as the rational, collective orientation toward the common good, distinct from the aggregated private interests of citizens. Across its four books, *The Social Contract* outlines the principles of popular sovereignty, civic freedom, lawmaking, and the structure of a just political order, establishing a theoretical framework that shaped modern republicanism and democratic thought worldwide.

Jean-Jacques Rousseau, *Du Contrat Social; ou Principes du droit politique* (1762).

7. The notion of self-determined pathways employed here draws conceptually from Deci and Ryan's Self-Determination Theory (SDT), which explains sustained motivation as arising from the satisfaction of autonomy, competence, and relatedness (Deci & Ryan, 2000). While SDT was originally articulated at the level of individual psychological motivation, this paper advances a sociotechnical extrapolation by applying its motivational architecture to collective ethnic identity groups operating as coherent sociocultural agents. In contexts where ethnic identities are already highly mobilized through political competition, such groups exhibit elevated internal relatedness, strong identity cohesion, and heightened motivational energy. By reframing technological development and innovation as self-chosen pathways to alternative power, rather than as externally imposed national projects, technological takeoff agendas can align with the autonomy of these groups, preserve their sense of self-authorship, and redirect competitive energies toward competence-building in science and technology. This STS-informed extension does not claim a direct application of SDT at the collective level but rather demonstrates how its core motivational logic can illuminate the conditions under which ethnic identity formations – activated by regimes of honor, pride, and rivalry – can become staggered, parallel engines of technological takeoff within their respective enclaves.

8. The ethnic construction of technology paradigm (Nwosu, 2020c) refers to a political–philosophical framework in which technology is no longer treated as a neutral, universally transferable artifact but as a culturally embedded product of a specific people's history, epistemology, values, environment, and survival priorities. Within this paradigm, technology emerges from the lived experiences, indigenous problem-solving traditions, and collective aspirations of an ethnic or civilizational group, rather than being externally imported and merely adapted.

Describing this paradigm as the complete domestication of the technological takeoff regime emphasizes a decisive shift from dependency to sovereignty. Domestication here means that the entire cycle of technological development (conception, design, production, deployment, maintenance, and cultural interpretation) is internally controlled and socially owned by the ethnic community. Technology ceases to be an alien system requiring continuous external validation and instead becomes an organic extension of the society's worldview and developmental logic.

In this sense, the ethnic construction of technology represents the terminal stage of technological maturity for post-colonial societies: a condition in which technological systems are not only locally produced but also locally meaningful, politically aligned with communal interests, and resilient against external technological domination.

9. Ethnic construction of technology is the necessary outcome of the fundamental evolution of ethnic technological nationalism because sustained technological nationalism inevitably moves beyond advocacy and resistance into institutionalized creation. Ethnic technological nationalism begins as a consciousness – an awareness of technological dependence and a desire for self-determination – but matures through policy, education, cultural mobilization, and indigenous innovation ecosystems.

As this nationalism evolves, it demands more than technological access or participation in global systems; it requires ownership over the technological imagination itself. This logical progression culminates in the ethnic construction of technology, where technological forms, priorities, and infrastructures are intentionally shaped to serve the historical destiny, social cohesion, and future autonomy of the ethnic group.

Thus, ethnic construction of technology is not an optional ideological flourish but the structural consequence of a fully realized ethnic technological nationalism. It signifies the point at which a people no longer negotiate their place within foreign technological orders but instead author their own technological civilization on their own epistemic and cultural terms.