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# Technology and Power Play in the International System: A Study of the 20th and 21st Centuries

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## Abstract

Globalization has led to a profound diffusion of technological innovations among State and Non-state actors. This has a resultant impact on the arrangement of the distribution of power in the International System. History captures continuous transition in the distribution of power between states in the International System; from a multi-polar system during the first and Second World War, to the bipolar system of the cold war and the uni-polar system that emerged in the aftermath of the cold war. The emergence of new actors in the international system and the change in technological nature and application is ushering in a new era of 'Non-polarity' in the International System. The aim of this paper is to consider the evolving dynamics of the distribution of power in the International System while considering the roles technology has to play. The paper relays the conceptualization of basic terms, and then applies the 'Balance of Power theory' as its theoretical thrust. Finally, it expands on the role of technology in the distribution of power in the International System and what it entails for the future.

**Keywords:** International System, Polarity, Power, Stability, Technology, War.

## Introduction

A 'Great Power' is often seen as a State which thrives in the size of its Population, Territory, Military Strength, Economic Capabilities, Resource Endowment and Competence. According to Waltz (1979), these are the characteristics of the States '*Power Capabilities*' that enables her to apply her political, economic, military and social influence in a global scale (p. 5). As important as the stand of Waltz is, it is key to note to that the size of a country's population, territory, and others to a large extent are not the strongest determinants of the level of power a nation possesses globally.

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The strength of a nation's military for example, must be enhanced by its technological possession and effective use (Chong-yang, & Hong, 2008; Liu, Wan, & Zhang, 2002). With the possession of great technological prowess, a tiny country would bring down a country with a large population with poor technological advancement. In buttressing this point, most African states are way bigger than European countries, but the European countries conquered territories in Africa that were far bigger than their own territories back home, due to technological prowess (Nelson, Bolia, Vidulich, & Langhorne, 2004; Rodman, 2015). This led to emphasize the fact that the polarity and number of great powers in the international system are highly dependent on how these Power Capabilities are distributed within the system. The great powers could be two (Bipolar), more than two (Multi-Polar) or Just the one (Unipolar) (Varisco, 2013). In a similar vein, the ability of a country to dominate among the conglomerates of nations is dependent on the level of its technology.

Nonetheless, technology is not static, it is fluidic in nature; technology is a dynamic branch of knowledge (Dahlman, 2007). It has taken different forms over the years from the industrial age through to the information age; it has increasingly gained momentum and is considered a vital component of globalization and competitiveness in the International System. The constant acceleration in technological change has come to serve as an impetus for determining which State wages power around the globe. In other words, the level of technology possessed by a particular generation is different and peculiar to that generation.

The impact of Technology in the distribution of power cannot be overemphasized. One of the primary determinants of the rise of each power in histories past has been consistent acquisition and improvement of technological capacity, which gives the State Economic, Military, and Industrial edge over its competitors for World Power and as well determine the things that happen in the international scene. The main thrust of this paper is to discuss the impact of technology on how power is been distributed in the international system (Dahlman, 2007; Geels, 2002; Stirling, 2007).

## Conceptual Clarifications

### *Stability*

Karl Deutsch and J. David Singer define 'stability' in the context of International System as "*the probability that the system retains all of its essential characteristics; that no single nation becomes dominant; that most of its members continue to survive; and that large-scale war does not occur*". They further posit that when there is Stability, there would be consistent political independence and elevated territorial integrity with no foresight of engaging in war with the intent of survival (Deutsch, & Singer, 1964, p. 390).

### *Technology*

Technology encompasses the collection of skills, processes, methods and techniques used for the production of goods and services in a bid to accomplish certain objectives like scientific investigation (Dahlman, 2007). The aim of engaging in these processes is to attempt to bridge the gap between time and space.

### *Power play*

Power is an essential part of human existence that is evident in every manifestation of social relations. Professor Joseph Nye; a renowned contemporary scholar in power politics defined Power as "*the ability to influence the behaviour of others to get a desired outcome*" (Nye, 2011). By this term, it is meant to focus on how technology have given birth to the kind of power possessed and used by different nations in the global system.

### *Polarity*

The term Polarity is used to understand the nature of the International System and the consequences that spring from it. Put simply, it is the distribution of power in the International Community. It could be Unipolar, which is a world order where One State is considered the great power; Bipolar, where two States balance power between themselves and wage influence on their allies and it could be a multipolar system where the International System consists of several great powers (Tomja, 2014).

### *Non-polarity*

This is a World Order where the International System is characterised by massive diffusion of Power. Sovereign Nation-States are not the only actors or Powers here rather there are other Non-

State Actors like Multinational Corporations, Nongovernmental Organizations, regional and global commercial organizations, terrorist groups, diaspora political parties etc. In this case, power is not concentrated but distributed among these emergent bodies (Huesken, 2012). Table 1 shows a history of polarity in the International Systems since 1816.

**Table 1.** History of polarity in the International Systems since 1816

| COUNTRY | MULTI-POLARITY (PERIODS) | BIPOLARITY (PERIODS) | UNIPOLARITY (PERIODS) |
|---|---|---|---|
| Austro-Hungarian Empire | 1816-1918 | | |
| France | 1816-1940 | | |
| Prussia/Germany | 1816-1918/1925-1945 | | |
| Italy | 1860-1943 | | |
| Japan | 1895-1945 | | |
| Great Britain | 1816-1945 | | |
| | 1816-1917/1922-1945 | 1946-1989 | |
| USSR | 1898-1945 | 1946-1989 | 1990-2013 |

*Source: Sarkees and Wayman (2010)*

## Theoretical Framework

The alternating transition of various polar arrangements in the international system has influenced the decision to adopt the Balance of Power theory as the main theoretical thrust of this paper. The idea is to gain basic understanding and solve the puzzle of the present distribution of power in the international system. It is when clarity is drawn on why the global system has presented a unipolar arrangement for decades now that we can draw out the roles being played by technology in power distribution around the globe.

The key proponents of Balance of Power theory include; Hans Morgenthau, Claude Monet, Walter Gulick, and Georg Dehio. The theory is an extract of structural realism. This theory argues that the structure of the international system is anarchic; power distribution among states is unequal and there is no central authority (world government) to defend the interest of states in times of danger. The proponents of the theory assert that the primary goal of the State is to own up to its survival and this is in terms of territorial integrity and autonomy (Paul, Wirtz, & Fortmann, 2004)

This decentralised International System that is generally considered a threat to the survival of states is the primary motivation behind the unending pursuit of power by states for survival and territorial integrity. The lack of trust and certainty of the intention of other states have constructed an environment of “self-help” where states depend solely on their ability to develop both defensive and offensive capabilities as a means to balance relative power and protect their territorial integrity; a task they consider most pressing for survival in this highly competitive international environment (Huesken, 2012).

The international system is gradually shrinking in geographical space as the politically defined borders are gradually being lifted. There is greater connectivity of people; socially through the media and telecommunications; culturally through easy movements of people; economically through regional/international trade; environmentally through sharing one planet; and politically through international relations and systems of regulation. This wake of globalization has consequently led to the massive diffusion and proliferation of Science and Technology (Tomja, 2014). Since the Industrial Revolution and now the Information technological diffusion, the importance of technology as a determinant of power in States has been cemented. Throughout the historic transitions of polarity, the attainment of power in the international system has been dependent on the ability of a state to thrive, militarily, economically, or socially; the integral component here being technological build-up (Tomja, 2014).

## Method

### *Data Sources*

The study synthesised data from available secondary sources. These resources included some books and online works.

### *Data Analysis*

Content Analysis was used to analyse the data collected through secondary sources, as well as descriptive technique, which involves the description of the roles of technology in global power play, in the 20th and 21st centuries.

## Results

**Theme 1:** Technology and the Emergence of Power Play in the Global System

This part of the paper will look at the major turning points in World Order and the technological advancements that took place during the periods to facilitate the type of power distribution at the time.

First World War (1914-1918)

Table 1 shows that during the First World War, the International System had a multi-polar structure where several great powers emerged: Austro-Hungarian Empire, Germany, France, Italy, Japan, Britain, USSR and USA. During this period, Tanks were introduced, they were powered by internal combustion engines and could advance irrespective of overwhelming fire arms. They were first acquired by the Germans, closely followed by the French (Wang, 1995). The flamethrower and poison gas were also introduced by the Germans and then the interrupter gear was introduced by USA in 1913 which the Germans adopted in 1915. Several other ammunitions were introduced to bridge time and space during this period, like the Hydrophones (adopted by France, Russia and USA); Air craft carriers (Britain); Unmanned Drones (USA); Mobile X-tray Machines (USA) and Sanitary Napkins (USA) (Stone, 1992). The fact that these technological capacities were mostly diffused made it practically impossible to have a single great power as to a reasonable extent, there was considerable balance of power between several States; hence, the existence of a multipolar system.

**Theme 2: Technology and the Era of the Multi-Polar System** (World War 2: 1939-1945)

The Second World War ushered in a new technological age that completely shaped the world we live in today. With the war consuming vast chunks of the globe, the stakes for National stability and security were incredibly high. It's against this backdrop that governments put vast sums of money into the research and development of technology to help them win the war (Varisco, 2013).

Obviously, the multi-polar international system in the 20th century was not working since it brought about great instability and the deadliest wars registered in history. The constant empowerment of military technological capabilities has further influenced the decisions of these States. Germany for instance, having consistently built its capacities since the early 20th century invaded Poland in 1939 marking the genesis of the Second World War (Varisco, 2012). When the war broke out, trench warfare, Calvary and the battleships deployed during the first word war were still in use. However, by the end of the war in 1945, the weapons introduced included, Ballistic Missiles, Jet aircrafts, radar guided anti-aircraft guns, atomic bombs (made out of uranium and plutonium) etc. there were also major technological strides in medicine, communications, electronics and industry; all of which played key roles in modifying the shape of the international system by mid-20th century (Stone, 1992).

Gradually, the great powers kept building on their weaponry and those with superior capabilities defeated the less weaponized until the end of the war in 1945 when two great powers emerged; The United States of America and Soviet Union (Haas, 2008).

**Theme 3: The Rise of Bipolar Global System** (Cold War: 1945-1990)

The emergence of a Bipolar International System after the Second World War resulted in a Cold War between the two Great Powers; this was a period of significant expansion of state-funded science and technology research. The Government and military of the super power at the time, focused on techno-scientific practices; imposing methods that were project oriented, team based, and subject to national-security restrictions. These changes affected not just the arms race and the

space race but also research in agriculture, biomedicine, computer science, ecology and other fields (Oreskes, & Krige, 2014).

The Cold War presented a Doctrine called the 'Mutually Assured Destruction' (MAD) in a bid to balance power; even though Churchill referred to it as 'Balance of Terror'. The provisions of the doctrine elucidate an arrangement of brinkmanship where neither side will attack the other with their nuclear weapons because both sides are guaranteed to be totally destroyed in the conflict (for example, Cuban Missile Crisis). Nuclear engagement, because of its devastating consequences, was profoundly avoided since the repercussions would be dramatic for both parties. This maintained a considerable level of stability in the global system (Sarkees, & Wayman, 2010). To maintain this doctrine, the two power blocs kept investing in new technologies that could better stress their capabilities and shield them from possible attack by their counterparts while maintaining their position in the International System (Sarkees, & Wayman, 2010).

When Ronald Reagan emerged the president of the United States of America, the Status quo began to change. He implored researchers to attempt to build a missile defence system (like the Anti-Scud Missile) which would prevent the United States from being wiped out in a possible 'MAD' war. Whether or not this 'Star Wars' system would ever work was questioned, even allies of the United States thought it was dangerous and would destabilise the peace maintained by the 'MAD' doctrine, but the United States was able to invest in the technology while the Soviet Union, with an ailing infrastructure and technological base, could not keep up, and this is cited as one reason why Gorbachev decided to end the Cold War (Godwin, 2015). The end of the Cold War presented a Unipolar System with the United States of America being the Hegemon.

## Discussion

Having taken a look through the annals of history and how technological improvements have altered the level of power play in the global system in the 19th and 20th centuries, it has also shown how certain nations weigh great power in dominating others due to the level of technology they possess. The United States which has enjoyed the Unipolar power play in global issues has been awoken to a world of new challenges, as she is no longer at the total helm of the swinging pendulum of power as a result the Economic, Military and Technological strength, breakthroughs of other countries like Britain, Russia, India, China and others. Hence, they face the fear of a possible break in its power. The 21st century has ushered in diverse developments due to varying technological exploits by actors and non-actors in the international system. The world order has taken a turn that has not been previously envisioned; while it may seem that the International System is shaping towards another multi-polar system with the rise of powers such as China, European Union, India, Japan and Russia; due consideration has to be given to the rise and diffusion of power to non-state actors; Nongovernmental Organizations, Terrorist Groups, Intergovernmental Organizations etc. The future is gradually turning out to be that of a 'nonpolar' global system (Haas, 2008).

Computer Revolution became a force to be reckoned with in the early 1990s, especially in the United States. The chips kept reducing in size and increasing in power. With the nature of the International system that encouraged Globalization and regional integration, the expansion and diffusion of these contemporary communication networks to other regions was unavoidable (Watson, 2001). A new kind of warfare has emerged tagged the 'cyber warfare' and several Countries have made efforts to acquire these Computer and Information technology to give them an asymmetric edge in the global system. The BRICS nations such as Britain, Russia, India, and China are also a growing entity of Information Technology and prominent forces to be reckoned with in the International System.

Access to Computer Technologies and other contemporary technological advancements are not restricted to the States alone as other actors in the global system have made efforts to possess these technologies. Al-Qaeda, Hezbollah, Zapatistas, Hamas, and a couple of Hacker attackers (Hacking team) are just a few of some dangerous non-state actors that have accessed and used cyber-warfare or plan to use it in the nearest future. This is a development that was not considered in the Control Regimes initiated to minimize the excesses that could emerge from having access to these high tech applications. These regimes were mainly devised to protect States from States and hardly made reference to other actors that may arise (Godwin, 2015).

Hence, the Impact of Technology in the distribution of power in the International System cannot be emphasised enough. Since time past, it has been a major determinant of how power is dispersed and with the continuous advancement in Technology and ever-deepening of globalization, the dimensions of power distribution will keep changing in the global system. An era of Non-polarity is before us with the rise of multiple actors that are beyond the State. The next warfare to be expected might not be physical combat or ammunition bound but waged using Computers. This warfare would not be restricted to States but might spring forth other rising Non-State actors. Indeed, the future is looking like one of integrated warfare and balance of power between States and Non-State actors if technological diffusion continues at the pace it is going.

## Limitation

The scope of this paper is restricted to technology and power play in the global system: A study of 20th and 21st centuries. This is because, this period marked a watershed in the world history due to the advancement in technology, which determined how powerful nations became at the international scene, and these technological advancements orchestrated the first and the second world war, and so, how much a country can hijack in the international system is dependent on the level of technological advancement it has been able to make.

## Conclusion

The International System has continually experienced transitions in the nature of its distribution of power. It transitioned from multipolar system during the first and second world wars to a bipolar system during the cold war; at the end of the cold war, a unipolar International System emerged with United States of America as the Hegemon. Throughout these transition processes, the determining component for States to emerge as great powers was the level and rate at which they are able to build up on the trending technological capacities that could give them an edge in the global system. The more they advanced in technology, the more their status is elevated.

The 21st century has ushered another dimension of technology known as the era of information technology where Computers are trending. The wake of globalization has caused a profound diffusion of these technological advancements to not just States but also rising Non-State Actors. The distribution of power is no longer just to multiple States but the future, vague as it looks, promises to be interesting (not necessarily in a good way) since power blocs might eventually encompass both States and Non-State Actors; all as a result of the massive proliferation of technology.

## Conflicts of Interest

The authors declare the work has no conflicts of interest.

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