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Science Diplomacy and Realism

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Abstract

Science diplomacy has attained significance as a non-traditional method of diplomacy. It encapsulates "diplomacy for science", "science for diplomacy", and "science in diplomacy" and has emerged as an important way to address global challenges and foster international cooperation. However, this has been done within the ambit of achieving national interest informed by the theoretical underpinnings of realism. In that regard, this qualitative research aimed to use the methodology of a structured literature review through which data has been collected by utilising authentic secondary sources in the form of books, peer-reviewed journal articles, and news sources. It has been understood that neoclassical realists consider economic security an important concern in addition to military power. This ties in with science diplomacy as realist thinking predicates on power and national interests in determining international relations, including the formation of alliances and rivalries in the pursuit of scientific knowledge. Furthermore, states can instrumentalise science diplomacy to advance their influence and national interests in the global arena. This, along with states acting to maximise their power, align with realism. The power maximisation can occur when national interest is secured and strengthened. The national interest can be augmented by utilising science as an effective foreign policy tool. This is because the current centurys global challenges in climate change and food security require scientific innovation and research, which have opened up science diplomacy as a novel avenue for states to ensure their security and national interests.

***Keywords*:** climate change, economic security, national interest, realism, science diplomacy

Introduction

Scientific age is often considered to have begun in the seventeenth century, marked by Francis Bacon's recognition of a disciplined method for

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developing, testing, and verifying theory (Skolnikoff, 1994). Since then, scientific and technological advancements have become closely intertwined with economic growth, shaping social structures, political systems, and military capabilities (Kennedy, 1987). By the end of the nineteenth century, science had transitioned from philosophical inquiry to practical application in industrial laboratories. The twentieth century further institutionalized research, especially in the West, driven by governmental support in critical sectors, particularly for military and security objectives. During the interwar and World War II, science and technology (S&T) emerged as tools for achieving state interests, with the United States rising as a dominant force in global S&T innovation (Skolnikoff, 1994).

In the post-Cold War era, a broader range of global challenges emerged—including climate change, pandemics, food insecurity, humanitarian crises, and environmental threats—that required international cooperation and interdisciplinary solutions (Gärtner et al., 2001). Individual countries must work together to develop scientifically grounded solutions to these complicated problems. According to Koppelman et al. (2010), science diplomacy has thus regained its importance as a novel but crucial approach to foreign policy engagement. Science diplomacy is not even something new but rather it has evolved into a systematic and strategic ploy to solve global problems and to advance national goals and interests.

This study involves three main components of science diplomacy namely, science in diplomacy, diplomacy for science, and science for diplomacy. These types of operational modes that science can take to approach international relations and global governance are familiar and widely documented in the literature (Gluckman et al., 2017). Analysing these elements, the research aims to explain how scientific collaboration can facilitate a political dialogue, how diplomacy can lead to scientific advancement and how science can serve as means of negotiations and using influence. These are significant aspects in that they indicate a method through which science could operate in the international politics, an aspect that is more pertinent in the geopolitically fractured yet interconnected world of today.

This current essay provides a critical evaluation of the use of scientific cooperation by various states as a tool of protecting national interests in the process of concurring transnational issues. In this regard, the scholarly literature on science diplomacy, taken through the prism of realism, is being

used in the discussion. In particular, the study explores how scientific partnerships and soft-power mechanisms promote national policy agendas and lead to international collaboration at the same time. Finally, the aim of the discussion is to add to the existing controversies concerning the manner in which collaboration and competition could exist in the context of science diplomacy.

An overview of the available literature is provided in the process of this section, which outlines the theoretical frameworks as well as the operational reality of science diplomacy. A brief description of the methodological procedure now ensues. Three major forms of science diplomacy are delimited later by distinct case scenarios and current scenarios. This article ends with the conclusion that provides the comprehensive summary of its major findings and makes policy recommendations available to decision-makers eager to make use of science diplomacy as a strategic tool in the course of international relations.

Literature Review

There has been a recent surge in the literature concerning 'science diplomacy' since its appearance and emergence as a new concept and lexicon within the domain of international relations in the early twenty-first century (Krasnyak & Pierre-Bruno, 2020). Through the analysis of literature, the utility of science diplomacy in connection with international cooperation and bulwarking instruments of soft power via scientific pursuits such as innovation and research can be understood. Science diplomacy has the potential to improve bilateral and multilateral relations significantly, fostering global harmony. As the European Commission Communication explains, a self-fulfilling virtuous cycle can be established because of science diplomacy, wherein research and innovation can act as soft power instruments to improve bilateral and multilateral relations, whilst cordial relations between states can lead to efficacious facilitation within research and innovation (European Union, 2012).

Keohane and Nye (2000) have argued about the worlds incre asing interdependence, interconnectedness, and complexity due to the percolation of globalisation and digitalisation in every aspect of society; a shift in diplomacy can be seen from bilateral to multilateral diplomacy (Nanyonga, 2019). Nevertheless, contemporarily, Copeland (2009) and Nye (2008) have focused on diplomacy through the lens of soft and hard power as a states

culture, values, cinematography, and science and technology have gained precedence in the states branding. Elsewhere, Copeland has also accused diplomacy of being ineffective and elitist (Copeland, 2016).

With the fusion of science and diplomacy within the globalisation paradigm, science diplomacy has emerged as a mechanism defined by Turekian (2009) that can build bridges with society through science.

Lloyd and Patman (2014) believe states can use science diplomacy to represent themselves and declare their interests, specifically regarding various areas of knowledge in a world order seen by Copeland (2016) as heteropolar.

Regarding the theoretical framework, scholars have attempted to explain the notion of Science Diplomacy in the context of soft power. Although Science diplomacy can be analysed from the perspective of three mainstream International Relations theories, i.e., Realism, Liberalism, and even the English School of thought; realism, realistically speaking, is more appropriate to explain Science diplomacy as it is directly linked with the strand of national interest. Realists like Hans J. Morgenthau believe that states act to maximise their power, and that power is maximised only when national interest is secured and strengthened.

The term realism in international politics defines national interest as the process of accumulating and retaining power only. This means that once the country has power, it can achieve its primary goals. Apart from military and political power, economic power is also one of the significant concerns of realist scholars. According to Gilpin (1984):

> States should pursue their national interests, not those of a particular dynasty or political party. Statesmen are admonished to carry out a foreign policy in the interest of the whole nation and not just in the selfish interests of the ruling elite. (p. 383)

Contrarily, technological change has impacted governmental autonomy. However, the realist school argues that those alternate sources of power depend on the fundamental power of the nation-state, not separate from it. The use of international scientific collaborations to establish constructive international partnerships has been witnessed mainly in the USA and Europe (Koppelman et al., 2010). Science is rarely pursued out of scientific reasons alone; science is often utilized as a fundamental tool of foreign policies. Governments engage in so-called science diplomacy when the

well-being of the country is at risk, and use scientific cooperation as a means to pursue practical goals. States regularly use greater interests of second or third-order states versus theoretical requirements to establish scientific cooperation in the anarchic field of international relations. The concerns of arms control and non-proliferation led to the first form of science diplomacy which was based on national security concerns of realism.

Scientific research and innovation, a determinant of military power, are now increasingly being used as a soft power tool for national interests. Global challenges of the twenty-first century are transactional. Strong, actionable responses are needed for challenges such as climate change, environmental degradation, food security, health and pandemics, etc. These emerging determinants open a new paradigm for the states power, security, and national interest.

Considering the realist approach of national security concerns, the research at hand focuses on emerging determinants such as agriculture and health as part of a larger national security construct. The study would analyse collaboration and cooperation in the above areas to consolidate, strengthen, and expand the states standin g among nations by using science diplomacy as a contemporary tool to pursue national interests.

Methods

This research adopts a Structured Literature Review (SLR) methodology to systematically evaluate existing literature on science diplomacy and its intersection with the realist tradition in international relations. As outlined by Tranfield et al. (2003), the SLR approach enables a rigorous and transparent synthesis of a wide range of sources by applying a structured process of identifying, selecting, and analysing relevant academic and policy-based materials. The field of science diplomacy is a natural interdisciplinary field encompassing international relations, studies of public policy, science and technology studies and professional diplomacy. The systematic literature review (SLR) approach has an unwarranted advantage of synthesizing these perspectives and building a unified analytical framework. Review process included a thorough search of academic articles, policy papers, official governmental reports, and trusted publications in such academic databases as JSTOR and Taylor & Francis. The preference was, first of all, to journal articles and scholarly texts on the theory, history, and practice of science diplomacy. As part of the theoretical

orientation of the study, which consists of realist opinions on foreign policy, strategic state behaviour given particular emphasis, the literature was intentionally listed that has indicated such aspect of opinion.

The contextual evaluation was used in three dimensions that include science in diplomacy, diplomacy to science, and science to diplomacy. It is these categories that were used to guide the extraction and interpretation of scenario insights, policy approaches and critical themes. This was also applied to the literature to determine its ability to close the conceptual gap between the propositions about soft power and the imperatives of realism and thus show how states are using scientific collaboration to serve their strategic interests.

To create a sophisticated understanding of the dynamics of science diplomacy in modern international relations, the results of this literature review are synthesized and critically examined. This approach guarantees both breadth and depth in the study of science diplomacy, enabling a solid examination of its theoretical foundations and real-world applications.

Realism and Science Diplomacy

In the context of soft power, academics have tried to explain the concept of science diplomacy. Nonetheless, three popular theories of international relations—realism, liberalism, and the English School of thought—can be used to analyze science diplomacy. This article will discuss the Realist theory in the context of Science Diplomacy. Realism is more appropriate to explain science diplomacy as it is directly linked to the strand of national interest. Realists like Hans J. Morgenthau believe that states act to maximise their power and that power is maximised only when national interest is secured and strengthened.

Realism defines national interest in terms of power (McCourt, 2020). This means that once the country has power, it can achieve its primary goals. Apart from military and political power, economic power is also one of the significant concerns of realist scholars.

That means that science is not always made for the sake of science only, but in most cases, it is used as an effective foreign policy tool. States follow the practice of science diplomacy when or where they see a national interest. In the anarchical nature of international relations, states prioritise other states in developing scientific ties. Science diplomacy was first developed

for arms control and non-proliferation issues, which also include realist national security concerns.

Scientific research and innovation, a determinant of military power, are now increasingly being used as a soft power tool for national interests. Global challenges of the twenty-first century are transactional in nature. Strong, actionable responses are needed for challenges such as climate change, environmental degradation, food security and health etc. These emerging determinants open a new paradigm for the states power, security, and national interest.

Science diplomacy has garnered a lot of attention in international relations (IR) with its novel approach to addressing global concerns and endorsing international cooperation; primarily, science diplomacy concedes the power of science and technology to shape global agendas, influence international relations (IR) and foster global collaboration. Further, the notions of soft power and hard power are intertwined in science diplomacy, illustrating how nations use their resources and influence to affect international relations (IR) (Krasner, 2006). Scholars such as Joseph S. Ney, Taizo Yakushiji, Sai Felicia Krishna-Hensel, and Ahmed Zewail have addressed the connection between science diplomacy and these power dynamics, offering insights into the capacity for persuasion and instances of nations using either soft power or brutal power tactics.

Nye analyzes soft power as the ability of any state to influence the preferences of other states by using attraction, not coercion. The major sources of soft power are institutions, values and culture. Examples of mechanisms that can help a state advance its influence, mediated through the instrumentalization of science, and through science diplomacy specifically, which would be a paradigmatic type of soft power, as described by Nye (2004), would be scientific expertise, collaborative research programs, and technological innovation.

As the first American science ambassador to the Middle East, Zewail notes the usefulness of the soft-powered potentials of science by arguing that scientific accomplishments can be used to display cultural and intellectual resources and develop friendly relations with other states. Therefore, he claims that states like the United States and Germany are able to utilize scientific co-operation in order to show off their cultural and intellectual resources and develop more dense and fruitful international

relationship. Based on these, as postulated by Zewail, America can demonstrate its intentions to employ the best of its culture and tradition in the establishment of stronger and broader relations with the Muslim world and beyond through the soft power of science to serve the purpose of diplomacy. It is under this kind of joint scientific endeavours that countries promote scientific knowledge, cultural exchange and also promote mutual confidence (Zewail, 2010).

Likewise, Yakushiji examines the possibilities of technological and scientific diplomacy and how it implicates world affairs. He emphasises the influence of science on the development of international relations (IR) and global collaboration (Yakushiji, 2009). Krishna-Hensel underscores the necessity for thoroughly analysing how advancements in science and technology affect diplomacy, deterrence, power dynamics, and other aspects of international affairs (Krishna-Hensel, 2011). Japan produced another paper on the possibilities of science diplomacy, and it is highlighted by the "Council for Science and Technology" that Japan regards science and technology as the ultimate tool to strengthen its soft power and global relationships.

In contrast to realism, liberalism underlines the intrinsic worth of worldwide entities, regulations, and collaboration. From a liberal standpoint, science diplomacy is regarded as an instrument to advance common beliefs, stimulate scientific cooperation, and proactively confront world problems. Liberal intellectuals would examine the role that science diplomacy performs in creating global institutions, the emergence of interdisciplinary networks, and the dissemination of information. They would emphasise how science diplomacy has the power to strengthen cooperative relations among nations, promote norm-building and trust (Doyle, 1986).

Science in diplomacy, diplomacy for science, and science for diplomacy are three different areas that are commonly researched in the field of science diplomacy (Gluckman et al., 2017).

Science in Diplomacy

This aspect explores how science and technology have been included in the foreign policy goals. With the intent of answering the propose research questions, the scholars ensure to examine how states use science as a diplomatic tool, specifically, policy-making, because this is tantamount to

examining the global problems and helping a state tackle its decisions in politics at the international level. Furthermore, it is crucial in explaining the capabilities of a state in the international arena of the politico-economic magnitudes.

Diplomacy for Science

The dimension of this research focuses on the development of international scientific collaboration and cooperation. It touches upon three correlated aspects (1) bilateral and multilateral agreement, (2) technological and research cooperation and (3) facilitation of scholarly communication. In this context, the main concern is how diplomacy can create and maintain scientific energy and networks, and collaborations to solve common problems (Flink & Rufin, 2019).

Science for Diplomacy

The current dimension is focused on the implementation of scientific activity in order to consolidate and develop the cross-border connections. It involves the adoption of scientific programs to fostering cooperation, building trust, and strengthening international relationships. The examples are joint research, offering technological support, and capacity-building interventions (Flink & Rufin, 2019). The question would be how scientific activities may be utilized as an instrument of soft power and how they influence the preferences and visions of the foreign states.

Strengthening Global Cooperation: The Intersection of Science Diplomacy and Realist Approach

Morgenthau argues that it is inevitable that the relations between nations are organized into power politics. Precursors of realism, especially Hobbes (2017), also assert that the desire to get power is the distinguishing element of foreign affairs; both sides confess to the greatest realist statement that the entire world politics is a constant struggle over security and power. Despite the tremendous changes occurring in the international environment compared to the times of Morgenthau, the intertwining of geopolitics and the appearance of new forces of technologies demonstrate that the given perspective is relevant to the present day. Ideally, in such a context, science diplomacy has transformed to represent both a tool of dominance in the global technological race as well as the means of collaboration.

Despite it varied strands, classical, neorealist, offensive and defensive, realism has found its convergence in the argument that the anarchic nature of the international system forces every state to focus on her national interests especially leadership in science and technology, sovereignty, and survival. According to Jervis (1998), in such a system, decision-making is dominated by strategic calculations and trust is thin and fragile.

The double nature of science diplomacy stands out within the realist approach. On the one hand, it enables international work and stimulates transnational cooperation in solving common problems in the world like pandemics and climate change. On the other hand, it is progressively fetishised as a strategic tool to gain national edge especially in such fields as artificial intelligence, biotechnology, and quantum computing. Interestingly, the technological race worldwide, such as the one between China and the United States, indicates that scientific collaboration is actually a facade, but that it is part of a power struggle, a fight over the control of key technologies, and economic supremacy. This relationship can be understood through the central principles of realism: states diplomatically cooperate with one another due to their perception of material gain whenever such cooperation occurs, but in the end pursue their own self-interest.

Autonomy of Politics

In the contemporary literature on International Relations, realists believe that the political domain forms the backbone of the subject. The analysis made by realists is underpinned with the fact that concentration of power and material capacity is the priority, and that states are animated mostly by the relative capability and the fear of being surpassed. This paradigm states that states will seek to secure themselves as a primary action (and demand) as well as to collect power; despite the expansion of system-wide insecurity. Therefore, it is impossible to isolate science diplomacy from the power politics that surround it. Despite their apparent cooperation, scientific exchanges can also advance strategic national goals.

Agonistic Interpretation of Politics

According to the realist position, war is an inseparable part of the affairs of the international system. The need to achieve technological supremacy, technological innovation, and research leadership is often obscured, in the context of science diplomacy, by the language of cooperation.

Rejection of Idealism

Realist criticism of theories of science diplomacy argues that idealistic or moralistic portrayal of science diplomacy omits the vital aspects of strategic placement and amassment of power. Absolutely strengthening the point of difference between politics and moral idealism by Machiavelli (2003), the insights can be applied similarly to the cooperation of the states in science.

Primacy of Stability over Justice

In a realist view, the stability and order in systems come first before violence toward abstract justice. In line with this, inter-state scientific cooperation can be harmonised or even encouraged largely not on the principle of moral rectitude, but as an essentially pragmatic means of hedging the competition and preventing its escalation.

Diplomacy and Force as Instruments of Power

In the absence of an effective system of global governance, states pursue their interests through two primary means: coercion and diplomacy. Science diplomacy is one such mechanism which is used to foster coalitions, reduce threats, indicate commitments or power. Under the realist view, science diplomacy is most comprehensively thought of as something truer than benevolent or an apolitical activity; instead, it is a willful expansion of statecraft. International scientific networks are often aimed at realization of national strategic goals, since state actors have already appreciated the incarnational role of the technological leadership in preservation of power. Even those efforts, which intend to create trust by diplomatic and legal means, are conditioned by the necessity to maintain a positive power balance which was noticed by Krasner (2006).

Therefore, science diplomacy can be considered very important because it fulfils two purposes at the same time, namely, it is a site of geopolitical struggle and a tool of international collaboration. It is imperative thus, to appreciate how states manage to deal with the current geopolitical tensions and technological competition due to this inherent duality.

The realist thinking upholds that the absence of central authority leaves the nation states with no option but to use as much power within their disposal to ensure security and pursuit of national interest. This viewpoint holds that power has many different aspects, including financial resources,

diplomatic influence, and military might. States strive for and maintain power in order to protect their territorial integrity, thwart potential threats, and accomplish their strategic objectives. It is crucial to comprehend that, in accordance with this paradigm, states may utilize any diplomatic or non-diplomatic means if it is necessary for their survival and if it serves their national interests. The security quandary also exists, which claims that an effort by one state to upsurge its security reduces the security of other states, and that as a result (Krasner, 2006) the only way it can be resolved is for states to find ways, through law and diplomacy, to keep an eye on each other. Realists also stress the connotation of the balance of power, which requires governing bodies to take strategic measures such as joining alliances, maintaining their militaries, and chasing territorial control to maintain their security and prevent the emergence of a hegemon.

The realism theory relies upon certain assumptions, which have been enumerated by all the major scholars and thinkers of the realist approach. From Machiavelli to Waltz, Thomas Hobbes to Hans Morgenthau, the pioneers of the realism approach particularly concentrated on all these assumptions (Gilpin,1984).

- The foremost assumption under the theoretical perspective of realism is that nation-states are the primary actors in global politics, pursuing international relations in the anarchical international system. Although numerous other powers and bodies, such as organizations and individuals, exist, their power is undermined.
- The second assumption of realism is the state is the unitary actor in world politics.
- The third assumption is based on national interests, which are the prime motives of the actors of global politics. Hence, these national interests force the state actors to implicate themselves in the political imbroglio of power politics.
- The fourth fundamental assumption of realism is that rationality (as opined by Morgenthau, 1984 in the Rational Choice Theory) is the core requirement for the decision-makers, thus chasing the national interests instead of leading the state towards vulnerability through irrational decisions.

- The fifth assumption of realism is that survival is the primary goal and one of the crucial national interests of the states (Dunne & Schmidt, 2011)
- Coexistence in the anarchical world can be achieved only by the balance of power tool.

Classical Realism- Comprehending the Role of National Interests and Powers in International Politics by Realist Thinkers

A perspective of international relations known as "classical realism" (Lebow, 2007) strongly emphasises the influence of power and national interests on world politics. It contends that states are the leading actors in the international system and that their actions are motivated by narcissism, the desire for power, and a sense of security. According to classical realists such as Machiavelli and Morgenthau, the international system is anarchic, which results in a perpetual battle for dominance among states because there is no overarching authority regulating states relations. Hans Morgenthau is a well-known representative of classical realism who lived post-World War II. His strategy places a strong emphasis on the role that power and national interest play in global affairs. Morgenthau underlines, states are largely driven by self-interest and the desire for power (Lebow, 2007). He emphasises the need for a balance of power to preserve stability and the competitive nature of the global system. The main themes of Morgenthaus classical realism are the tenacity of human behavior and the influence of power dynamics on interactions between states.

The realism approach truly aspires to the Machiavellian ideology. Machiavelli, the Florentine thinker of the 16th century and the apostle of power politics, anticipated human natures innate desire to seek and struggle for power in an anarchical nature. He opined that it is undeniable that humans are hostage to the repetitive configurations of behavior due to their nature. The realist thinker believes that, owing to humans egoistic and power-greedy nature, the citizens and the states ultimately fall prey to conflict. This conflict influences the national security and ultimately the states national interest . Through his brutal and selfish nature, Machiavelli explored the concept of ends justifying the means; that the result eventually defines the nature of the actions, whether good or bad. For him, the ultimate purpose of the state, its actors, and the monarch (governing body) should be survival and safeguarding the national interests. Furthermore, the realist

thinker, Machiavelli, conceives of national interests in terms of power. Eventually, power is the tool to achieve the major goals. In this 21st century, the goals are not only restricted to security (the traditional one) but are the embodiment of a hegemonic attitude to strengthen the economic power in this world of geo-economics. Barry Hughes solidifies that in the era of geo-economics, economic strength is equally as necessary for states as security (Kaufman, 2013). Therefore, Machiavelli, through The Prince (1532), underlines the concept that, to achieve the national interest and all the desired tasks, the leader should be cunning as a fox and brave as a lion. For Machiavelli, diplomacy is the best tool for deceiving others to gain political interests (Berridge, 2001).

Both Machiavelli and Morgenthau act as classical realists and see acquiring and holding onto power as essential to a state's existence and the defence of national interests. They believe that "the foremost signpost that aids political realism to find its way through the landscape of international politics is the concept of interest defined in terms of power" (Morgenthau, 1948, p. 5). Power is not just reserved for the armed forces. Power is not a fixed concept, relative to the context of action. What a states power truly entails depends on various elements, including information, influence over other states, willingness to employ available resources, and many more.

According to classical realists, states struggle to intensify their competencies. When attempting to understand how states behave, the realist tradition places a lot of emphasis on the concept of power. Classical realism holds that governments are logical actors motivated by power and self-interest in their search for security and survival in the international sphere.

Neorealism: Exploring the Structural Balance of Power and its Pioneers in Global Relations

Neorealism builds on classical realism by pursuing an organised and rational approach to world politics. It claims that a structural balance of power exists in the international system, which affects state behaviour. States behave consistently with the balance of power (Little, 2007), attempting to increase their strength and security. To understand state behaviour unbiasedly, neorealism strongly emphasises studying structural elements. It aims to provide ideas and models that successfully explain and forecast global politics. For neo-realists, there may be a unipolar, bipolar, or multipolar international order. Given that there are several, the multipolar

system is the least stable. Neorealism, commonly referred to as structural realism, was developed by Kenneth Waltz (2000), who was renowned for this work. Kenneth Waltz (1979) claims that states are defensive and thus balanced (Rynning & Guzzini, 2001). Neorealism is based on Kenneth Waltz's theory of international politics. Waltzs goal is to clarify why all internationally governed systems with comparable structures appear to produce identical results (Mitchell, 1981). He aims to give people a better organised and rational view of world politics. Waltz contends that a structural balance of power characterises the international system and that the distribution of power within it largely determines state behaviour. He places more emphasis on how the structure of the global system affects state behaviour, paying more attention to structural issues than the traits or goals of specific states.

The core assumptions of neo-realism are

- There is no centralised authority in the radical international system in which states and other entities operate.
- The actors behaviour is governed by the systems structure.
- States are rational, self-interested agents who want to maximize their gains and reduce their losses.
- Due to the chaotic society, survival is the most pressing issue.
- States have security challenges because they perceive other states as their foes (Keohane, 1986).

Offensive Realism- Evaluating the Pursuit of Security Dynamics and Power in International Relations from the Perspective of Key Thinkers

A viewpoint known as offensive realism emphasizes the influence of power in world politics. According to this argument, states are motivated by a desire for security and power. States are seen as being logical actors driven to increase their own power to strengthen their security. Particularly since the start of the Cold War, the meaning and definition of security have changed from the traditional paradigms. Worldwide nations face economic, social, and environmental threats in addition to threats to their security. One of the main proponents of offensive realism is Mearsheimer (2001). Mearsheimer argued that states are offensive and therefore expand. His

strategy emphasizes that nations are driven primarily by the need for power and security. According to Mearsheimer, states are logical actors aiming to increase their power and security. He asserts that states are prepared to use force if necessary to achieve their goals and maintain their standing in the international system. The competitive nature of international relations and the tendency of governments to engage in aggressive behaviour to advance their own interests are highlighted by offensive realism.

Defensive Realism- Analysing Autonomy and Security in International Relations under the Insights of Prominent Advocates of Defensive Realism

Building on offensive realism, defensive realism (Job, 1992) emphasises governments desire to avoid being dominated by others. It contends that states act rationally to protect their security and avoid being dominated. According to defensive realists (Elman & Elman, 2003), governments are prepared to use force to defend themselves against prospective threats and preserve their independence. Although this viewpoint recognises the significance of power in international politics, it emphasises defensive measures meant to protect state sovereignty more than aggressive attempts to maximise power.

Defensive realism is linked to Robert Jervis. His strategy draws on offensive realism but emphasizes the drive for states to resist being subjugated by other powers. According to Jervis (1998), states act rationally to protect their security and avoid being dominated. He focuses on defensive measures meant to protect national sovereignty (Keohane, 1989) and deter aggression from other states. Defensive realism prioritizes defensive measures to protect state existence while acknowledging the significance of power in international politics (Lobell, 2010).

There are some misunderstandings and disputes on the basis of realist thought, despite the consensus that nations are the primary actors, security is their top priority, and power is their primary tool. There are differences of opinion regarding the depth of realism thoughts analysis. Realism is a fully systemic argument, especially for neorealists. It merely explains why power balances in the global system occur repeatedly. It is not a philosophy of foreign policy but rather of world politics. It can only explain the systems propensity to reach a balance of power; it cannot explain the foreign policy of any one state.

Conclusion

The three major lenses of analysis of the strategic dimensions of science diplomacy have originated in the realist tradition of international relations: the classical realism, the structural realism and the neoclassical realism. All the variants place different explanatory discourses on the rising importance of scientific undertaking in the world of global politics today. According to classical realism, the principal cause of international behaviour is the anarchical nature of international system, which forces states to be concerned about their survival in the first place. In this context, science is instrument of statecraft; policy value involves the ability of science to increase material capability and thus the security. Structural realism acknowledges a structural condition of competitive arrangement of power but reallocates the descriptive focus to distribution of capabilities per se. In the perspective, what comes out is that the international system is still anarchic but immediate determinant of behaviour is the configuration of capabilities that each state disposes. Science in this regard is a strategic commodity and this is because it can enhance the powers of the state by virtue of advancing its technological wizardry.

In the meantime, neoclassical realism argues that structural circumstances as well as capabilities count but their importance depends on the context. Scientific collaboration is one of the policies used strategically by states, but such behaviour is framed by limitations and opportunities created by their larger social, economic and cultural conditions. In such a perception, science is a mere variable but nonetheless measurable unit to be used in explaining state behaviour.

The classical-realist model of Hans Morgenthau places the goal of power and national interest in the center of attention so that the view is proposed, that scientific cooperation is the intentional expansion of statecraft. In this paradigm science diplomacy is reframed as an instrumental instead of a solely cooperative tool with the help of which the states extend their influence and protect their survival. Robert Gilpin develops this theme by emphasizing the prominent role of technological and economical power in the realm of international politics, which raises the following vital question: Are states truly able to reject scientific investigation, due to its strategic, financial implications?

By placing the behavior of states in a system of international anarchy, Kenneth Waltz neorealism elicits the focus back to the demand of maintaining a power-balance as a structural imperative. Under these conditions, the science diplomacy can play the role of one of the elements of the general balancing brace between states. Offensive realism, however, by John Mearsheimer, challenges the viability of mere balancing actions and states that in many occasions' governments tend to follow aggressive policies in gaining relative advantage. His view therefore brings out a scenario that brings out questions on whether science diplomacy that appears to be rooted in partnership is actually competing or cooperative in states of interest.

Finally, realist approach prioritizes the inherent dualism of scientific diplomacy as opposed to a one-sided interpretation. States have strenuously concentrated on strategic calculating rationalities, even though scientific diplomacy is often conceptualized within the framework of mutual benefits and soft power discourse. The awareness of this tension requires a close understanding of the realist theory that reveals how the influences of power prevail even within apparently demilitarized spaces. An inquiry of this nature illustrates the necessity of a critical analysis on the future of scientific diplomacy in the dynamic landscape of international relations and the continued presence of realism in this academic study.

Conflict of Interest

The author of the manuscript has no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

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