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## **Sino us Space Rivalry and its Impact on South China Sea Dispute**

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### **Abstract**

This article explores the space programs of China and the United States that have emerged as an important factor in the struggle by the two states to attain hegemony in the Asian region, particularly in the South China Sea (SCS). This paper aims to find the answer to the puzzle of why the United States and China have not cooperated in the domain of space security despite cooperation in other different areas of security, and how this rivalry has impacted the SCS dispute. This paper further seeks to find out how the US and China became involved in the space race. These questions are answered within the broader framework of realism. Offensive realism assumes that the international system is in anarchy. In this scenario, the rational course of action would be to maximize their power to ensure their survival and protect their interests. The US and China are enhancing their power because the power of one threatens the security of the other. The theoretical lens of Hegemonic Stability theory is applied; it explains how the US is the hegemon in the current system, and this system is stable unless a rising power threatens to overtake this position. China is that rising power. China's goal is to become the regional hegemon and it has employed, like the US, its space program for surveillance of the region. In light of the evidence and findings, if China and the US continue to use space technology to counter each other, it might lead to a direct military confrontation in the SCS.

**Key Words:** Space Rivalry, China, United States, South China Sea Dispute, Hegemony

### **Introduction**

The space rivalry between China and the USA is based on the realist assumption that the international system is anarchic. With no central authority, the states build up their offensive capabilities at the expense of other states. Since there is no method to verify present or future intentions, there has been mistrust between the two states. Therefore, China and the US have engaged in this space rivalry to increase their capabilities and undermine each other.

In 2019, the US formed the United States Space Force (USSF). The Space Force assists the Armed Forces with accurate navigation, targets, and access to real-time surveillance. (The US Air Force Public Affairs, 2019). The People's Liberation Army (PLA) expanded China's space program with various developments such as anti-satellite missiles, satellite jammers, and satellite systems to navigate oceans and seas. China emerged as a potential rival to the United States' own program. (Fedorova, 2022) This space race will have an impact on the SCS dispute. China has made claims to several islands with oil and gas reserves in the South China Sea. The US has installed its military bases in the region to challenge China's claims. The space capabilities can enable the two states to keep surveillance on the other and create a possible confrontation and conflict in the South China Sea to establish themselves as the hegemon.

The 'space race' started during the Cold War period, when the United States of America and the Soviet Union built their respective space programs as another domain to establish dominance. This space race soon overlapped with the military domain as the great powers, including China, sought to build up their power in the international system. (Johnson-Freese & Burbach, 2019). The South China Sea is important for the Indo-Pacific region. It is bordered by Malaysia, Vietnam, the Philippines, Cambodia, Vietnam, Indonesia, and Brunei. Through the Strait of Malacca, over 80% of crude oil is transported to East Asia, which passes through the South China Sea. In addition to this, the undiscovered resources of natural gas and oil, along with vast fishing grounds, make it a hotly contested area. Vietnam and China compete over the Paracel Islands; Indonesia, Brunei, the Philippines, China, Malaysia, and Vietnam claim various areas of the Spratley Islands. (Mitchell, 2016).

The space rivalry between China and the US is based on the realist assumption that the international system is anarchic. With no central authority, the states build up their offensive capabilities at the expense of the other states. China and the US have become engaged in a space rivalry to increase their capabilities and undermine each other.

### **US-China relations in the context of SCS**

The US policy for the South China Sea is based on the navigation of seas and the United Nations Convention on the Laws of the Sea (UNCLOS). The US claims that China has no right to navigate its naval forces or movements beyond the Exclusive Economic Zone (EEZ). The claim to a large part of the South China Sea and, consequently, its resources is unlawful. As a result, the US uses the Freedom of Navigation Operations (FONOPs) to conduct military exercises for a free and open Indo-Pacific. (Wirth & Schatz, 2020). President Biden also backed former President Donald Trump's policy regarding the South China Sea. Pres. Biden rejected China's claim in the China Sea. The US also seeks to counter China's power as a regional power and keep it from challenging America's position as a maritime hegemon and a global hegemon. The US Space Force, through its Fleet Satellite Communication (FLTSATCOM) system, assists submarines, aircrafts, and the military to navigate precisely in the seas and oceans. The Space Force also helps with surveillance to track China's movement in the sea.

China has asserted its historical claims on the South China Sea, declaring its islands to be part of its territory. The nine-dash line is used to highlight the area that falls

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under China's sea territory. China is building its military and advancing its space warfare as well, and it has created artificial islands to increase its military power and compel its neighbors to give up their claims on the SCS islands. The People's Liberation Army has integrated the national space program into itself. This integration gives advantage in tracking the military movement of the regional states or of the US in the sea (Ahmad, 2022).

The SCS has become a volatile region as a result of the competition between the two powers. China has built up its military to deter other states from challenging its claims. In 2014, China started making artificial islands to give more space for the air and naval capabilities. The Pentagon increased the number of military exercises and the navigation of warships in the sea. America formed a security network surrounding the SCS through its allies in the region. (Hu, 2021). The space programs and the use of space satellites for surveillance, reconnaissance, and navigation can lead to the escalation of the South China Sea issue. The two major powers can use space to counter each other and establish their dominance (Goswami, 2020; Czajkowski, 2021).

This article will be divided into two parts. The first part will deal with the conceptual and theoretical underpinnings. The theoretical lens will be the Hegemonic Stability theory which is within the broader framework of neo-realism. The second part will deal with empirical evidence and the analysis of said evidence by means of the above mentioned theory. The evidence will be analyzed in light of the neo-realist and offensive realist assumptions that states aggressively maximize power in order to ensure its survival in the world. The hegemonic stability theory will be applied which explains the behavior of China and the United States i.e. their ambitions to attain regional hegemony in the Indo-Pacific.

### **China-US competition**

In 2007, China conducted an anti-satellite test. Concerns were raised by the US and Russia regarding the security in space. China also developed co-orbital anti-satellite vehicles, which were equipped with a multitude of faculties to intercept and destroy satellites. Since the 2000s, China has also developed jammers that disable satellites from the Earth. Also, the space program developed space technology for navigation, surveillance, and exploration (Dawson, 2018).

China's space program is based on nationalism and aims establish regional dominance. China seeks to strengthen its economic and political power in the Asian region. The PLA Strategic Support Force (PLASSF) Space Systems Department has developed technology like powered lasers to blind space satellites and ASAT weapons. The aim is to get an eminent position in the space race. Space capabilities such as these make the US suspicious of China's intent (Khan, 2019).

The US has advanced its space program in response to the Russian space program during the Cold War. It also developed ASAT satellites as a result of the Chinese space weaponization. Then, in 2019, the Trump administration established the Space Development Agency,

“To create and sustain lethal, resilient, threat-driven, and affordable military space capabilities that provide persistent, resilient, global, low-latency surveillance to deter or defeat adversaries.”

The United States Space Force (USSF) was established in the same year after the National Defense Authorization Act (NDAA) was signed as a law (Venable, 2021).

The South China Sea has economic and geopolitical importance for China. It is estimated that China is the world's second largest oil consumer. Southeast Asian states largely depend on oil as their primary source of energy. South China Sea has large undiscovered reserves of oil and gas. The China Geological Survey of the Ministry of Land and Resources gave the estimate that within China's nine dash line of territory in the sea, there are deposits between 23 and 30 billion tons of oil reserves. SCS is strategically important because it links South East Asia to the Indian Ocean and to the Pacific Ocean. It is also important for the 21<sup>st</sup> century Maritime Silk Road. China has plans to establish maritime hegemony in the region by gaining control of the SCS. (Qi, 2019). China has consistently pushed for its nine-dash line to be recognized. It has been estimated that the South China Sea will produce 1,367,000 barrels of oil in a day. China has laid claim to the islands in SCS because an estimated amount of \$11.3 million in trade passes through it. It also carries almost half of global fleet traffic (Macaraig C, 2021).

The United States of America has criticized China's claim to maritime territory in the SCS. Under the Freedom of Navigation Act, the US "will exercise and assert its rights, freedoms, and uses of the sea on a worldwide basis in a manner that is consistent with the balance of interests". As a result, the US has increased the number and frequency of the Freedom of Navigation Operations (FONOPs) in the SCS. The US has also carried out aircraft exercises and also increased military and navy deployments in the sea. In addition to this, it has increased its support for its Southeast Asian allies to monitor the Chinese military movement (Storey, 2020).

### **Gap in literature**

The advancements made in space technology and the US-China competition have been explored, but literature on the impact of their space rivalry on the SCS dispute is lacking. Therefore, this paper will analyze the use of the space programs of the two powers and their impact on the SCS dispute. Also, the use and possible use of such technology in the SCS will be the focus of this paper.

### **Research questions**

- Why the US and China have not cooperated in the domain of space security and technology when they have cooperated in other areas of security?
- How has this space rivalry between the two states intensified the SCS dispute?
- How did China and the United States become part of the space war?

### **The realist explanation**

The Sino US space rivalry and its subsequent impact on the South China Sea is within the broader framework of realism and will be discussed within the domain of neo-realism. Within neo-realism, it will be explained through offensive realism, with more focus on Hegemonic stability theory (HST). Realism contends that states are rational actors and act only according to what is in their interest. States maximize power at the expense of others because there is anarchy in the international system. Neo-realism fits in the context of US-China relations. According to Kenneth Waltz, each state is a separate entity that seeks to maximize its power. Power is the means

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as well as the end to achieve universal dominance, which is the maximum goal. A state's attempt to increase its own security can threaten other states (Donnelly, 2000).

In January 2007, China carried out the first anti-satellite missile test, which destroyed an old satellite. The ASAT test put the American satellites at risk, and the US State Department vehemently opposed it. In 2014, China fired an anti-satellite weapon and by that year, it had launched 16 spacecraft to expand its surveillance capabilities. It also built infrastructure on ground for this purpose. China's power maximization puts the US's security at risk. In order to secure itself, the US Space Force was signed into existence by former President Donald Trump in 2019. After the signing of the National Defense Authorization Act, the chairman of the Joint Chiefs of Staff Gen. Mark A. Milley said,

“In military operations, space is not just a place from which we support combat operations in other domains, but a warfighting domain in and of itself. Our adversaries are building and deploying capabilities to threaten us, so we can no longer take space for granted.” (U.S. Department of Defense, 2019)

John Mearsheimer's (2001) concept of offensive realism argues that states have capabilities that threaten the security of other states. There is no way to differentiate if the capabilities are offensive or defensive in nature, so it creates mistrust among the nations. Also, the primary goal of the states is to survive and maintain territorial integrity (Mearsheimer J. , 2001).

He made the following assumptions:

1. The world is anarchic, which means there is no arbitrator or central authority in the international system.
2. States have offensive capabilities that threaten the security of other states. Since the capabilities can be offensive or defensive, and the other states cannot rely on their knowledge as to what the capabilities are for.
3. The future intentions of the states are not clear, and intentions cannot be verified. The intentions cannot be hidden and lied to about, so states must assume the other ones have aggressive plans.
4. The primary goal of states is to ensure their survival, and they do whatever it takes to make it possible.
5. States are assumed to be rational actors, which means that they calculate the means through which they can achieve their foreign policy goals.

China has interests in the South China Sea and claims it to be part of its territory. It has deployed its military on the artificial islands it built in the SCS. There are over 300 vessels from China's navy that are reported to be patrolling the sea. In order to curb China's military expansion and have access to the route and resources of the South China Sea, military exercises and drills and battlefield preparation have taken place.

In order to become a hegemon, the following aspects should be present:

- The hegemon should have a strong military to exert its power. The military should not only protect the interests of the state but deter other states as well.

- Having a strong economy is also necessary.
- The power of diplomatic & political sway
- And the will to become a hegemon and lead other states.

America's current position can be analyzed as follows:

- From October 2020 to September 2021, the US spent \$801 billion of its budget on military, which is the largest percentage of all nations that spend on their military. The US military has 516 installations in 41 states and has bases in more than 80 states. The US also has its military stationed in 160 states and has operational ground troops in 15 states. The Navy owns 31 combat supply ships with a capacity of 1.29 million tons. (Sawant, 2021)
- The US is the largest economy in the world, with a GDP of \$20.89 trillion in 2021. It maintains a large national external debt, as it is the producer of the world's primary reserve currency. (Silver, 2022)
- The US has alliances with the states in the European Union, and the South and East Asian states. It has emerged as a major player in the region. The US uses its military and economic benefits to influence and achieve political inclinations of these states. The US is an important factor in the international and regional organizations, including the United Nations and NATO. The US has periodically showed its willingness to lead and become a hegemon.

China is aiming to become a regional hegemon first and change the current world system. It is using its growing economy to influence the states in the Asian region.

Mearsheimer's view on hegemonic stability theory is more fitting in the neo-realist debate because it presents the conflict that is being brewed due to China's rise as a potential regional hegemon. Other scholars of the hegemonic stability theory represent the liberal school of thought and focus more on the economic aspect of the stability theory. So, it does not aptly describe the current conflict between the US and China.

### **Methodology**

This study is being conducted under the qualitative research methodology within the post-positivist paradigm. Three qualitative research approaches i.e., descriptive, historical and exploratory have been used to find out the answer to the research questions. The theoretical lens of the study is based on the Hegemonic Stability theory. The data is mostly collected from primary and secondary sources. Primary data is taken from the official statements of the competing states, official reports such as white papers, etc. and foreign office statements, whereas secondary data is derived from research articles, books, and reports published on the issue under consideration.

### **Satellites and surveillance**

The US and China are in a power struggle to gain dominance in the Indo-Pacific region, more particularly in the South China Sea. Space has emerged as a decisive battleground in this conflict. In light of the established theoretical framework, important events and evidence have been analyzed.

Chinese satellites have been used in terms of geostrategy in the SCS. China has a constellation of Naval Ocean Surveillance System satellites that provide navigation of the water around the region. (Yeo, 2020). China has also created what is dubbed by the USA as the anti-access/area denial (**A2/AD**) strategy. This strategy seeks to control and inhibit military movement and freedom of action in a region, which in China's case is the SCS. The PLA seeks to inhibit the movement of the American military in the SCS. The pillars of the A2AD strategy are: cyber operations, information operations, long-range precision strikes, surface and undersea operations, ballistic missile defense (BMD), space and counter-space operations, air defense, and air operations. PRC's space technology facilitates sea and land based Anti-Ship Ballistic Missiles (ASBM) (Bath, 2021).

China's military capabilities on the islands in the SCS are based on information, surveillance, and reconnaissance. Artificial islands have been built on seven reefs in the Spratly Islands by China. Vietnam, Malaysia, Taiwan, and the Philippines have claims to the areas occupied by China in the Spratly Islands. The PLA has capabilities such as satellite communications geo-location, satellites communications (SATCOM) earth station, and individual SATCOM dishes. Space technology is essential for surveillance in the region and to deter the claimant states and the US. Missile facilities are also present, which require space technology for precision (Dahm, 2020).

### **Using soft power**

China's space program has the aim to project soft power. The Chinese Tiangong space station can allow democracies and autocracies to carry out experiments in the Low Earth Orbit. The space program is presented as an alternative to the US's space station. Its reach in Asia will allow it to tilt the SCS dispute in its favour. (Kuo, 2021). China's space program also demonstrates its willingness to become a leader in Asia, and its capabilities can bring the ASEAN states under its influence in order to keep its claims in the SCS. The BeiDou navigation satellite is a project being worked on which is presented as an alternative to the American Global Positioning System (GPS) (Jennings, 2021).

### **Security alliances in the Pacific**

The US has expanded its alliances and treaties, especially in the Indo-Pacific region, in order to counter China. One of them is the Five Eyes. The Five Eyes is an alliance that includes the United States, the United Kingdom, Australia, Canada, and New Zealand. It was formed in 1955 to monitor communications from the Soviet Union, China, and other states in the Eastern Bloc. This alliance uses satellites, telephone networks, and large technology companies for surveillance not only in their respective states but in other states as well. These states use their satellites for surveillance and share the intelligence data with each other. The states are in charge of a geographical region, although the regions may overlap. (TRT World, 2021). Since 2018, their focus has been to counter and contain China. The presence of Australia and New Zealand in the alliance is strategic in terms of surveillance in the Indo-Pacific. In 2018, the Five Eyes plus 3 came into existence for what was an alliance comprising the five states and their associations with France, Germany, and Japan. The number of states present gives a wider network of surveillance and intelligence sharing. Japan, New Zealand, and Australia provide easy access for

surveillance in the Pacific Ocean and in the South China Sea. They also provide a nexus for containment for China's growing influence. The surveillance system can be advantageous for monitoring China's movement in the South China Sea. The nations, including the US, Australia, Canada, France, Germany, New Zealand, and the UK, released the Combined Space Operations Vision 2031 (US Department of Defense, 2022), which outlined a ten year vision and objectives for space related operations. According to the released statement, the states need to be prepared for defense against hostile states and prevent any conflicts that might occur. For this purpose, they will develop and operate resilient architectures, adopt responsible military behavior in space, and improve communications capabilities.

The Quadrilateral Security Dialogue or QUAD, is an informal alliance comprising Australia, India, Japan, and the United States. One of the primary focus of this is the Indo-Pacific. In May 2022, the leaders of the Quad announced support for the Indo-Pacific Partnership for Maritime Domain Awareness. Through the IPMDA, the states would use their technology to monitor the maritime boundaries and "uphold a free and open Indo-Pacific." The Quad will use the available data from satellites to monitor the movement of ships in the seas. The data would then be shared with states in the Indo-Pacific. It can provide an opportunity for the US to gain access to Chinese ships' movements in the sea and keep check on China's increasing influence in the region. Also, it could help the US to influence the East Asian states in the SCS dispute (The White House, 2022).

A trilateral strategic defense alliance consisting of Australia, the US, and the United Kingdom (AUKUS) came into existence in September 2021. Agreements were signed to cooperate on different technologies like cyber capabilities, artificial intelligence, quantum technologies, and additional undersea capabilities. (Wilkins, 2021). This alliance is another potential check to counter China's growing influence in the region and to challenge its technological advancements.

### **Surveillance infrastructure**

China and the US have surveillance architectures in and around the SCS. In addition to this, electronic warfare has been worked on by both sides for the region. Some of the technology and its possible use in the conflict will be discussed.

China has a space based electronic reconnaissance architecture. The experimentation began in the 1970s, and this satellite system can now triangulate and target any vessel that is of interest. The Yaogan-30 satellites are the most recent ones. As of October 2020, 19 Yaogan-30 satellites are in orbit. They are linked to a naval ocean surveillance system that targets primarily US aircraft carrier groups and other vessels. (Stokes, Alvarado, Weinstein, & Easton, 2020). These satellites are present in trios and can triangulate any US vessel. These are particularly advantageous in the South China Sea, where the US has bases in some East Asian states. The US also carries out military exercises, and its warships and aircraft carriers have presence in the SCS.

China built a remote sensing satellite ground station in Sanya city, Hainan province, in 2010. The Hainan satellite system has been used for surveillance, ship detection, as well as island and marine environmental monitoring. It is easy to detect ships and other moving targets with movement tracks through these satellites. There are six

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satellites in this system that gives uninterrupted access to surveillance to ships on the waters (Wang, Li, Li, & Yang, 2020).

In 2020, Lockheed Martin presented to the US military its ground based radar system called the Space Fence that can track satellites in orbit. It can track objects as small as marbles, and can increase the search capability. The Space Force currently tracks up to 26,000 objects in space as a result of the system. According to its makers, it is used primarily for space debris and also by the military to protect the interests of the state. The space surveillance radar site is operational in the Marshall Islands in Oceania, present in the east of the Philippines. (Erwin, Space Fence surveillance radar site declared operational, 2020) It is a strategic system that can give the US access to the Chinese surveillance satellites and other space assets in the South China Sea.

The US has in use an operational electronic warfare (EW) offensive counter space system, the Counter Communications System (CCS), which has the ability to jam the communications of other states during conflict. It is a ground based system that can prevent the use of civil and military signals by the global navigation satellite services (GNSS). A new upgraded system called the Meadowlands is in the works for advanced capabilities. It is mostly a secretive program, but according to public information, has the potential to be used against China, which is an adversary for the US in space (Strout, 2020).

China views American space technology and military as a threat to its security. China's advancement of its space program is a threat to America's security, as written in the Defense Intelligence Agency's report called Challenges to Security in Space. The constant surveillance by both the states against each other, especially in disputed areas like the SCS, increases the possibility of a conflict between the states. Increased monitoring and surveillance have led to greater militarization of the region.

### **Conclusion**

This research article explores how the space rivalry between the US and China has affected the dispute in the South China Sea. The South China Sea is contested among the East Asian states as the states, including China, lay claim to the islands in the sea. For China, the movement in the sea of other states' vessels is a threat to its territorial sovereignty. The US has rejected China's claims. It sends its vessels to the sea and carries out military exercises to conduct what is called the Freedom of Navigation Operations. The advancement of space technology has enabled the states to keep surveillance on the other, especially in the South China Sea. The research methodology applied is qualitative analysis. The evidence is analyzed in light of neo-realism. Within neo-realism, offensive realism is applied. The theoretical lens used is the hegemonic stability theory. The analysis leads to the conclusion that the hegemony of the United States is being challenged by China's rising power in the Indo-Pacific region. It is leading to power maximization on both sides.

### **Findings**

- The actions of China and the US reflect realist assumptions, i.e. power maximization to protect their own interests in the Asian region.

- The presence of US military infrastructure for surveillance and reconnaissance threatens China's influence in the SCS dispute.
- China and the US are using their space programs to achieve hegemony in the SCS. Their space technology has led to the militarization of the SCS and has geo-strategic impact on the region.
- The PLA developed its space program later than the US but has made significant advancements in space weaponry. It has developed a vast surveillance system and anti-satellite weapons to counter America in the South China Sea.
- The US introduced the Space Force because China's weaponization of space threatened its own security and put its space assets at risk.

### **Suggestions**

The following suggestions for policies have been made for the solution of the conflict:

1. The matter of claims and territorial issues in the South China Sea should be solved by an international institution like the International Court of Justice (ICJ) and decisions should be made by such an institution. If the claims over the islands can be settled and territories can be marked, then it could reduce the militarization in the sea.
2. Evidence should be presented to a neutral tribunal like the ICJ. The issues of the claims made by the East Asian states could lessen the chances of a confrontation in the region. Malaysia and Indonesia had solved their dispute through the International Court of Justice over the Sipidan and Ligitan islands in the South China Sea. If the disputes over islands can be solved through these means, then the issue of sovereignty can be put to rest.
3. China and the East Asian states should resolve the issues through negotiations and dialogue. ASEAN should be the platform for these purposes. There should be clear and well-established international laws that deal with issues like the SCS dispute.
4. Treaties regarding space weaponization and militarization should be made. The older treaties should be updated to fit the current situation whereby space is being weaponized. The US and China should engage in dialogue to protect their space assets.
5. Treaties made for space norms should be widely accepted. The presence of space weapons threatens the security of other states, and tests like the anti-satellite tests releases debris in space, which in turn threatens the satellites. Thus, treaties should be ratified to be inclusive of all states and their interests.

There should be more cooperative programs between the US and China in order to reduce the threat of a space war. The US and China should identify areas where their interests converge so strategic cooperation can take place.

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