

RESEARCH ARTICLE

Examining the South China Sea Dispute with General Morphological Analysis

Zachary Lavengood

Institute of International Studies, Department of North American Studies, Charles University, Prague, Czech Republic

Abstract

The South China Sea dispute is among the most volatile flashpoints in contemporary international relations. This study examines this dispute using the general morphological analysis (GMA) methodology employing eight factors of analysis. These produced 65,536 distinct outcomes in a cross-consistency matrix (CCM) which exist on a spectrum of plausibility. Three scenarios were chosen for foresight analysis which project contemporary trends into the near-to-mid-term future. After the analysis of hundreds of different combinations from the CCM which remained after auditing for analytical noise and plausibility this research found that much of the foresight produced scenarios which were similar to a 'dispute stagnation' scenario. This highlights the present realities of the dispute wherein all parties have entrenched into their political and physical positions with little alternative outside of direct confrontation, an outcome which though possible, is unappealing to claimants due to the secondary effects which it would bring.

Keywords

South China Sea, China, Southeast Asia, ASEAN, Foresight, Scenario Building, General Morphological Analysis

Corresponding author: Zachary Lavengood (46827707@fsv.cuni.cz)

Author roles: Lavengood Z: Conceptualization, Formal Analysis, Funding Acquisition, Investigation, Methodology, Project Administration, Supervision, Writing – Original Draft Preparation, Writing – Review & Editing

Competing interests: No competing interests were disclosed.

Grant information: This publication was created within the implementation of the project START/SOC/034 Western Preparedness for the 21st Century Realities of a Great Power China: A Scenario Based Evaluation that was supported by the project Grant schemes at CU No. CZ.02.2.69/0.0/0.0/19_073/0016935.

The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Copyright: © 2023 Lavengood Z. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

How to cite this article:

For printed version: Lavengood Zachary. "Examining the South China Sea Dispute with General Morphological Analysis". *Stosunki Międzynarodowe – International Relations* 59, (2023): 82–105. Printed 2023. <https://doi.org/10.12688/stomiedintrelat.17688.2>.

For online version: Lavengood Z. **Examining the South China Sea Dispute with General Morphological Analysis.** *Stosunki Międzynarodowe – International Relations* 2023, 3:8 <https://doi.org/10.12688/stomiedintrelat.17688.2>

Introduction

The ongoing dispute in the South China Sea (SCS) has escalated in recent decades from contentious rhetoric to a tangible flashpoint involving both littoral states (Brunei, the People's Republic of China (China/PRC), Taiwan (ROC), Malaysia, the Philippines, and Vietnam) and extra-regional actors such as European states, Australia, Japan, and the United States. At the center of this dispute are competing claims over maritime boundaries and ownership of various rocks, shoals, atolls, and lagoons which are spread across more than three million square kilometers and are crisscrossed by some of the world's most important shipping routes. The dispute has been exacerbated by artificial islands created atop reefs by the PRC to reinforce its claims to the now infamous '10-dash line.'¹ These islands host military assets which house fighter and bomber aircraft, anti-access/area denial installations (A2/AD), long-range radar systems, and thousands of soldiers from the People's Liberation Army. Despite the PRC's claims to the region having been rejected in international court proceedings they remain resolute in their assertion of sovereignty over most of the SCS and continue to fortify their position and increase their ability to project military power across the region.

The SCS dispute is one of the most volatile geopolitical issues in the Asia-Pacific region and holds the potential for global impact should the situation ignite into open hostilities between claimants. Using the general morphological analysis (GMA) methodology this paper examines consequential factors relating to the flashpoint and present three scenarios which illustrate potential outcomes for the dispute in the near future. GMA's key strength is the capacity to identify and structure all possible solutions for non-reducible and inherently complex problem spaces by using principles of plausibility to ensure consistency and relevance when producing scenarios. In simplified terms, GMA is able to provide scenarios which take into account multiple factors (dozens, hundreds, or more) and eliminate analytical noise from inconsequential values and those which are incompatible with reality to yield a collection of productions which encompass all plausible and realistic scenarios within the scope of analysis.²

This paper is divided into five sections. The first is an introduction to the background of the SCS dispute and a detailing of recent developments relevant to this analysis which contribute to the flashpoint. Next is a brief explanation of GMA as a methodology and its application in this work. Following this is a section

¹ In September 2023 the PRC released a revised 'standard map' which, among other assertions in territorial disputes with neighbors, added an additional 'dash' to the decades old nine-dash line which demarcated its claims to the SCS. The new 10-dash line extends its claims to nearly encompass Taiwan's eastern territorial waters though does not alter its claims to the SCS.

² I. Johansen, "Scenario modelling with morphological analysis," *Technological Forecasting & Social Change* 126, no. 5 (2017): 116–125, <https://doi.org/10.1016/j.techfore.2017.05.016>.

which describes the individual factors used in this work's GMA to create three hypothetical scenarios which are presented in the next section, after which is an analysis which will reflect on the scenarios and detail the causal factors leading to their outcomes. Finally, a concluding section will summate the paper's findings.

This paper has two primary goals. The first is to demonstrate the applicability of GMA scenario building as a tool for analyzing hypothetical futures to current affairs. The second is to depict realistic outcomes to the SCS dispute for analysis to highlight both the complexity surrounding the flashpoint as well as the plurality of possible outcomes, including those which do not result in open conflict.

Background of the SCS dispute

The SCS has been a focal point of Southeast and East Asian commerce for millennia and has grown in importance over time towards its status today as one of the world-system's main economic areas. On the sea's surface between 20% and 33% of annual global trade sails along trade routes between manufacturers and markets valued at more than \$3.4 trillion USD, additionally more than 80% of the crude oil destined for China, South Korea, Japan, and Taiwan passes through the SCS on tankers.³ Below the surface are incredibly productive fishing grounds which provide roughly 12% of global catch totals and employ more than half of all maritime fishing vessels globally.⁴ Even further down, below the seabed, are extensive deposits of oil and gas, 11 billion barrels and 190 trillion cubic feet in proved and probable reserves respectively, which hold the potential to power East and Southeast Asian economies for decades and provide billions of dollars' worth of revenues.⁵ These factors have contributed to a growing dispute in the SCS over the right to share in, curate, or hold dominion over this bounty. At the heart of the dispute are overlapping territorial and maritime claims, some dating to the colonial period or earlier, which have become more contentious since the beginning of the 21st century (Figure 1). Of the five primary archipelagos in the SCS, the largest two, Paracel and Spratly, are the most disputed due to their strategic locations in the north and middle sections of the sea respectively.⁶ Using the definition provided

³ D. Uren, "Southeast Asia will take a major economic hit if shipping is blocked in the South China Sea," ASPI Strategist, 2020, <https://www.aspistrategist.org.au/southeast-asia-will-take-a-major-economic-hit-if-shipping-is-blocked-in-the-south-china-sea/>; R. O'Rourke, "U.S.-China Strategic Competition in South and East China Seas: Background and Issues for Congress," Congressional Research Service, 2022, <https://sgp.fas.org/crs/row/R42784.pdf>; CSIS China Power, "How Much Trade Transits the South China Sea? | ChinaPower Project," ChinaPower Project, n.d., accessed June 7, 2022, <https://chinapower.csis.org/much-trade-transits-south-china-sea/>.

⁴ "Fish, not oil, at the heart of the South China Sea conflict - FNI," The Fridtjof Nansen Institute, 2017, <https://www.fni.no/news/fish-not-oil-at-the-heart-of-the-south-china-sea-conflict-article1556-330.html>.

⁵ U.S. Energy Information Administration, "South China Sea," 2013, https://www.eia.gov/international/analysis/regions-of-interest/South_China_Sea.

⁶ T. Cherhat, "South China Sea: Asymmetric Conflicts. The role of Chinese Paramilitary Forces," *Conflict Studies Quarterly* 39, no. 4 (2022): 21–36, <https://doi.org/10.24193/csqr.39.2>.



Figure 1. Figure Maritime claims in the SCS. (Stearns, Scott. 2012. Challenging Beijing in the South China Sea. "State of Affairs", Voice of America Blogs. <https://blogs.voanews.com/state-department-news/2012/07/31/challenging-beijing-in-the-south-china-sea/>).

in the United Nations Convention on the Law of the Sea (UNCLOS) there are few true islands in these archipelagos and most features (rocks, reefs, atolls, and lagoons), prior to island building projects, are not visible above the water line at high tide and some even at low tide.⁷

In 2009 China began promoting the nine-dash line as a basis for a claim to sovereign rights over the lion's share of the SCS and as a refutation of other littoral states' claims. Four years later in 2013 China launched land reclamation projects on the reefs that it occupied in the SCS, significantly escalating the dispute and sparking concerns that Beijing was constructing a "great wall of sand" in an effort to solidify a dominating position in the region.⁸ Later that year the Philippines invoked arbitration proceedings under Annex VII to UNCLOS, asking the Permanent Court of Arbitration (PCA) in the Hague to rule on the legality of the nine-dash

⁷ UNCLOS, "United Nations Convention on the Law of the Sea," United Nations, (1982): article 121.

⁸ J. Garnaut, "US Admiral sounds the alarm at China's intentions in South China Sea," *Sydney Morning Herald*, 2015, <https://www.smh.com.au/politics/federal/us-admiral-sounds-the-alarm-at-chinas-intentions-in-south-china-sea-20150331-1mcase.html>.

claims and to clarify the status of certain features in the SCS under maritime law.⁹ China did not appoint an agent to represent its interests during the proceedings, rejecting the jurisdiction of the arbitration court over the matter, and in a *Note Verbale* to the PCA stated that China's position was to "not accept the arbitration initiated by the Philippines".¹⁰ On July 12, 2016 the PCA ruled in favor of the Philippines on almost all of its arguments, most importantly rejecting the nine-dash line claim outright and ruling that China's actions in the SCS were illegal under international law.¹¹ On the day of the ruling the Chinese Ministry of Foreign Affairs released a statement declaring that "the award is null and void and has no binding force. China neither accepts nor recognizes it."¹² Since the end of the arbitration case China's land reclamation efforts have only increased.

These projects have created 3200 acres of new land which now host significant military infrastructure, the largest of which, Fiery Cross Reef, Mischief Reef, Woody Island, Subi Reef, include A2/AD installations, runways large enough for combat and strategic aircraft, docking capabilities for large ships, and long-term housing for thousands of PLA/PLAN soldiers. These new islands have not only irreparably destroyed fragile ecosystems which promoted regional biodiversity but have also ignited a fury of outpost building and land reclamation amongst other claimants, namely Taiwan, the Philippines, Malaysia, and Vietnam, albeit on much smaller scales due to the significant cost of such projects which only China can implement as true 'island building'.¹³

Since 2020 tensions have continued to increase in the SCS with the number of incidents in disputed waters rising. These take the form of freedom of navigation operations (FONOPs) by Western powers, the Chinese Maritime Militia harassing the fishing vessels and coast guards of other claimants, and non-kinetic provocations such as using military-grade lasers to blind boat pilots or encircling a disputed feature to prevent resupply. The SCS dispute has also become a facet of the larger

⁹ For example, whether Scarborough Shoal is a rock, high-tide feature, or island under UNCLOS and therefore what territorial/EEZ claims can be made from that particular feature.

¹⁰ Permanent Court of Arbitration, "The South China Sea Arbitration (The Republic of Philippines v. The People's Republic of China)," Cases | PCA-CPA, 2016, <https://pca-cpa.org/en/cases/7/>.

¹¹ M. Nozawa, "Issues Surrounding the South China Sea Dispute," *Japanese Society and Culture* 3, no. 3 (2021): 91–101.

¹² Ministry of Foreign Affairs of the People's Republic of China, "Statement of the Ministry of Foreign Affairs of the People's Republic of China on the Award of 12 July 2016 of the Arbitral Tribunal in the South China Sea Arbitration Established at the Request of the Republic of the Philippines," 2016, https://www.fmprc.gov.cn/mfa_eng/wjdt_665385/2649_665393/201607/t20160712_679470.html.

¹³ For an in-depth review of land reclamation and claims in the SCS, in addition to excellent analysis, the author recommends the Asia Maritime Transparency Initiative by CSIS, <https://amti.csis.org/>.

‘Indo-Pacific’ dynamic which has evolved in recent years and now interlinks the SCS with other issues such as the US/West-China and Indo-Chinese rivalries, cross-strait relations, and territorial disputes in the East China Sea.

The following section will introduce general morphological analysis as a methodology as well as describe its utility for examining issues such as the SCS dispute.

General morphological analysis (GMA)

GMA is a methodology for modeling structural relationships between objects and phenomena and is in use in a number of scientific fields, including linguistics, mathematics, and geology, in addition to its uses in the social sciences.¹⁴ GMA identifies and structures all possible solutions for non-reducible and inherently complex problem spaces through principles of plausibility to ensure consistency and relevance when employing the methodology for foresight and scenario building. It is able to produce scenarios which take into account multiple factors and eliminate analytical noise from inconsequential values and those which are incompatible with reality, yielding outputs which encompass all plausible and realistic scenarios within the scope of analysis.¹⁵ Such flexibility is essential when analyzing and crafting scenarios for phenomena as complex as the SCS dispute where one must take into account not only the dispute itself, but also the factors which influence the dispute, as well as those which influence the actors involved.

This analysis approaches the SCS dispute as a ‘wicked problem’ as defined by Tom Ritchey (2013) a leading author in GMA studies, who himself was the first to explore GMA’s utility with wicked problems. To Ritchey, wicked problems are:

*Ill-defined, ambiguous, and associated with strong moral, political, and professional issues. Since they are strongly stakeholder dependent there is often little consensus about what the problem is, let alone how to deal with it. Above all, wicked problems won’t keep still: they are sets of complex, interacting issues evolving in a dynamic social context. Often, new forms of wicked problems emerge as a result of trying to understand and treat one of them.*¹⁶

The SCS dispute clearly meets this definition as a multi-faceted problem of intricate complexity. The number of stakeholders in the dispute, interested parties, and fervent partisanship attached to legal and historic minutiae make neutral analysis

¹⁴ A. Álvarez and T. Ritchey, “Applications of General Morphological Analysis From Engineering Design to Policy Analysis,” *Acta Morphologica Generalis* 4, no. 1 (2015): 1–40.

¹⁵ Johansen, “Scenario modelling with morphological analysis,” 116–125, 118, <https://doi.org/10.1016/j.techfore.2017.05.016>.

¹⁶ Emphasis added to match original text T. Ritchey, “Wicked Problems, Modelling Social Messes with Morphological Analysis,” *Acta Morphologica Generalis* 2, no. 1 (2013): 1–7, 2.

difficult, but not impossible. GMA strives to holistically approach wicked problems to provide unbiased analysis and reflection in order to produce high-quality outputs with a range of utility both in academia and in policy spheres.

GMA takes its shape in a cross-consistency matrix (CCM) (Figure 2) which contains the multiple factors of analysis used in a study, eight in the case of this paper: *Chinese political stability*, *cross-strait relations*, *Chinese economic stability*, *Association of Southeast Asian Nations (ASEAN) cohesion*, *extra-regional actor involvement (diplomacy & power projection capabilities)*, *ASEAN sentiment towards China*, and *island building programs*. Each factor is represented by a column and contained in each column are a number of modifiers which represent the hypothetical state of the factor during a single instance of foresight/scenario building. For example, the factor *Chinese economic stability* can be viewed as ‘boom,’ ‘stable growth,’ ‘recession’ or ‘depression’ to depict the state of China’s economy during the instance of analysis.

When analyzing a phenomenon through GMA and applying the methodology for foresight analysis and scenario building, one must soon come to grips with the daunting task of selecting the individual factors used in the analysis. A number of different considerations must be taken into account for each selection such as: *does this have an actual impact on the subject matter, or do I just want it to? Is it relevant to other factors? is the concept compatible with a CCM? is it worded too broadly or too narrowly to be effective?* and many others. This leads to a process of creative destruction wherein the factors which eventually make it into the final CCM have been effectively audited to ensure an efficient and productive analysis that is well grounded in reality. These, which are the ‘last ones standing’, offer insights into the most consequential aspects of the subject matter.

Once the final CCM has been created the analytical process can begin. Computer aided analysis for GMA is commonplace due to the number of possibilities

PRC Economic Stability	PRC Political Stability	Island Building Program	ASEAN Cohesion	ASEAN Sentiment towards China	Cross-strait Relations	Extra-regional Actor Involvement: PPC	Extra-regional Involvement: Diplomacy
Exceptional growth	Stable: unity	Rigorous, active expansion	Unified	Pro-China sentiment	Open conflict	Significant PPC investment	Pro-ASEAN: active involvement
Predictable growth	Stable: fragmented authoritarianism	Small-scale expansion	ASEAN Way, manageable dissent	Plurality pro-China sentiment	Ongoing crisis/boiling point	Moderate PPC investment	Pro-ASEAN: limited involvement
Recession	Instability: infighting	Status-quo, halted	Divided, bloc formation	Mixed, open to extra-regional involvement	Sabre-rattling, status-quo	Some PPC investment	Push for equitable settlement
Depression	Instability: military cliques	Withdrawal	Fractured, non-functioning forum	Anti-China, seeking extra-regional involvement	Open dialogue, bridge building	Limited PPC investment	Disinterested

Figure 2. Cross-consistency matrix with no modifiers selected. PRC- The People’s Republic of China, ASEAN- Association of Southeast Asian Nations, PPC- power projection capability.

present in a CCM. This work's CCM for instance has 65,536 distinct outcomes, called simple configurations, from its eight factors with four modifiers each.¹⁷ However of course not all 65,536 outcomes produced are viable scenarios as they are not all logically consistent (ex. there would not be 'exceptional growth' economically in China with if political stability were 'fractured') nor empirically consistent, meaning the outcome rests on impossible or improbable assumptions (ex. it is unlikely ASEAN would have pro-China sentiments if Beijing holds a policy of aggressively expanding its artificial island building program).¹⁸ The GMA program (in the case of this analysis *morphr*)¹⁹ then reduces the 'noise' of these inconsistent outcomes in the CCM leaving only those which can be used for scenario building and foresight analysis. It should be noted that even after noise reduction not all configurations from the CCM are likely to be useful for analysis as they stretch across the full spectrum of plausibility from likely, to possible, to just outside the definition of being noise. An initial modifier on a variable must be selected in order to further hone in on a useful configuration, this initial selection sets the tone for the remainder of configuration by acting as a starting point for the program to further reduce noise from the analysis. Each additional variable selected creates a more specific reality for analysis; while having a modifier selected for each variable will create a very specific instance, it is also valuable for scenario building and foresight analysis to appreciate open-ended configurations which occur when only selecting a limited number of modifiers. Figure 3 is an example of the CCM used for this

PRC Economic Stability	PRC Political Stability	Island Building Program	ASEAN Cohesion	ASEAN Sentiment towards China	Cross-strait Relations	Extra-regional Actor Involvement: PPC	Extra-regional Involvement: Diplomacy
Exceptional growth	Stable: unity	Rigorous, active expansion	Unified	Pro-China sentiment	Open conflict	Significant PPC investment	Pro-ASEAN: active involvement
Predictable growth	Stable: fragmented authoritarianism	Small-scale expansion	ASEAN Way, manageable dissent	Plurality pro-China sentiment	Ongoing crisis/boiling point	Moderate PPC investment	Pro-ASEAN: limited involvement
Recession	Instability: infighting	Status-quo, halted	Divided, bloc formation	Mixed, open to extra-regional involvement	Sabre-rattling, status-quo	Some PPC investment	Push for equitable settlement
Depression	Instability: military cliques	Withdrawal	Fractured, non-functioning forum	Anti-China, seeking extra-regional involvement	Open dialogue, bridge building	Limited PPC investment	Disinterested

Figure 3. Example cross-consistency matrix with two modifiers selected in light grey. PRC- The People's Republic of China, ASEAN- Association of Southeast Asian Nations, PPC- power projection capability.

¹⁷ T. Ritchey, "General morphological analysis as a basic scientific modelling method," *Technological Forecasting & Societal Change* 126, no. 6 (2017), 81–91, 86–88.

¹⁸ Johansen, "Scenario modeling," 116–125, <https://doi.org/10.1016/j.techfore.2017.05.016>.

¹⁹ Morphr is an R package for Morphological Analysis using the jQuery Plug-in DataTables and can be downloaded for free at <https://github.com/sgrubsmyon/morphr>. The MA/Carma program developed by the Swedish Morphological Institute (SMI) is an alternative to Morphr and can be found at <https://www.swemorph.com/macarma.html> though the license fee and usage requirements set forth by the SMI can be limiting for some researchers.

research with two modifiers selected, shown in red, with the remaining plausible modifiers in blue, modifiers without color are inconsistent with reality.

One of the most beneficial uses of computer-aided GMA is its visual representation of the problem space used for analysis.²⁰ When crafting scenarios or conducting foresight analysis the researcher will exhaust the possibilities of the CCM, giving insights into which variables exert more influence on the situation being examined allowing for more nuanced outputs. Likewise, GMA is also well suited to explore the limits of phenomena by helping demarcate its systemic significance. Another key benefit is GMA's ability for auditing analysis, not only through the extensive and time-consuming process of creative destruction in formulating the CCM, but also in the capacity to retrace the steps which led to a specific configuration by deconstructing the process which led to its creation.²¹

Primary analytical factors in the SCS dispute

Below are the eight factors chosen for the CCM employed in this analysis as well as their rationale. The modifiers for each factor of analysis are included with the description. The selection of these factors is based on several criteria, namely, relevancy to the dispute by way of consequentiality and the capacity to be expressed in a CCM through modifiers.

Omitted factors include the sentiments of non-littoral Indo-Pacific actors such as Japan, South Korea, and India, which though impactful in the overall discourse of the SCS dispute were not found to have immediate consequence in regard to the scope of this analysis nor in the production of foresight. Factors of analysis centering on the development of ASEAN claimant military capacities were also considered for this research, however these were found to be particularly cumbersome in their number and were ultimately omitted from the CCM. Additionally, after considerable research regarding the development trajectories of ASEAN claimant militaries it was determined that the asymmetry between their capacities and that of the PRC were insurmountable both tactically and in a theater-wide conflict. While ASEAN claimants could win single engagements under specific circumstances, the possibility of strategic advantage lay firmly with the PRC outside of scenarios on the far end of the plausibility spectrum. While the omission of these factors in this particular research is an exercise in avoiding 'garbage in, garbage out' (GIGO) analysis, examining the dynamics of ASEAN claimant military capabilities compared to the PRCs in the near to mid-term future through the lens of GMA warrants further study.

²⁰ T. Ritchey, "Problem structuring using computer-aided morphological analysis," *Journal of the Operational Research Society* 57 (2006): 792–801, 794–800, <https://doi.org/10.1057/palgrave.jors.2602177>.

²¹ Johansen, 116–125, 124, 125, <https://doi.org/10.1016/j.techfore.2017.05.016>; Ritchey, "General morphological analysis," 81–91, 90, 91.

Chinese political stability

The Chinese Communist Party (CCP) is the singular political authority in China and thus the crux of political stability. Since the founding of the People's Republic in 1949 the CCP has gone through different periods of political turmoil, such as during the cultural revolution, and prosperous stability, such as has been seen since the new millennium. There is no guarantee however that instability cannot return to China as many other ruling powers have experienced when they lost the 'mandate of heaven.' A conjunction of negative trends in China such as slowing economic growth, a widening wealth gap in society, declining birth rates, and others, could culminate as political instability in the coming decades.

In regard to the SCS dispute, political stability in China correlates with its ability to implement and maintain foreign and military policy effectively. The 'fragmented authoritarianism' model it has adopted for governance promotes infighting even during periods of calm as CCP members, departments, and ministries within the governance structure constantly jostle for power and influence within the system.²² For example, during a hypothetical period of instability it is unlikely that provocative policies such as harassment by the maritime militias or accelerating island building would be a priority, or even permitted, as the responses they could invoke from other states could further destabilize China internally. Conversely, high stability within the Chinese political structure could lead to more assertive foreign and military policies as a unity of purpose would streamline decision making and policy deliberation allowing for decisive action and agenda setting.

For this analysis's CCM this factor was given four modifiers: stable-unity, stable-fragmented authoritarianism, instability-infighting, instability-military cliques.

Cross-strait relations

Cross-strait relations are an important factor for this analysis not necessarily due to the similar claims the PRC and ROC make in the SCS, but rather due to its importance as a geopolitical flashpoint and the realities of its build-up and fall-out of its ignition. First, the resource-intensive build-up to any action between the PRC and the ROC would require the PLA to divert significant military assets from the SCS region to the Taiwan Strait region as well as likely muffle or mute any provocative actions, including island building, in the SCS until the crisis resolves. Even status-quo cross-strait saber rattling requires the investment of high value military assets and command capacity which could, should the Taiwan issue be resolved or non-existent, be reallocated to bolster the PRC's position in the SCS. The fallout from a flashpoint ignition between the PRC and ROC, in addition to the probability

²² A. Mertha and K.E. Brødsgaard, "Introduction," in *Chinese Politics As Fragmented Authoritarianism: Earthquakes, Energy and Environment*, 1st ed., ed. K.E. Brødsgaard (Taylor & Francis Group, 2016), 1–14, 2–5.

of escalating into a regional conflict, would further pull PRC resources from the SCS. As Dr. Lonnie Henley of George Washington University testified before the US-China Economic and Security Review Commission during a hearing on cross-strait deterrence, the PRC would existentially commit to a conflict with the ROC. He suggests that even in the event of a landing failure the PLA would continue the conflict through a blockade of the island of Taiwan to force capitulation, this would further commit PLAN/AF assets away from the SCS for an extended period of time.²³ It would also have the secondary effect of drawing the attention of extra-regional actors, especially the United States which is committed to the ROC's defense, away from the SCS for an indefinite period of time.

For this analysis's CCM this factor was given four modifiers: open conflict, ongoing crisis/boiling point, saber rattling/status-quo, open dialogue/bridge building.

Chinese economic stability

Beginning with the reforms of Deng Xiaoping in the late 1970s, China's economy has meteorically risen from a backwards command economy mimicking the Soviet Union to surpassing the United States as the world's largest economy in 2017.²⁴ This transformation has allowed China to bankroll defense projects such as research into indigenously produced A2/AD weaponry, a modern blue water navy and air force, and of course, the artificial islands themselves. Its colossal economic influence also allows it to influence, and in many cases coerce, actors into falling in line with its own grand strategy after having made itself a cornerstone of global economics. As China increases its technical knowledge and capacity to manufacture key industrial goods, such as nano semiconductors, it insulates itself from retaliatory economic measures from actors who might look to restrict the export of such goods to China as a form of economic warfare.

There are limits to the Chinese economic miracle however which have serious repercussions once reached. China's economy relies on steady, predictable growth for stability and even slight hiccups hold the potential to create feedback loops which can disproportionately reverberate and disrupt geopolitical goals. Recent events such as the debt crisis of China Evergrande Group's \$300 billion dollars in toxic liabilities,²⁵ could foreshadow future economic woes for China as the state must increasingly shoulder these financial burdens. As well, in a world where economics are being increasingly weaponized, China could face coordinated sanctions by hostile actors which force a recession or depression, beginning a series of economic fires which would be difficult to put out while maintaining a weighted presence on the international stage. Finally, a forecasted demographic crunch could hobble

²³ L. Henley, PLA Operational Concepts and Centers of Gravity in a Taiwan Conflict, Testimony before the U.S.-China Economic and Security Review Commission Hearing on Cross-Strait Deterrence, 2021.

²⁴ World Bank, "GDP, PPP (current international \$) - China, United States," 2022, <https://data.worldbank.org/indicator/NY.GDP.MKTP.PP.CD?locations=CN-US&year=2021>.

²⁵ This is roughly the World Bank's estimate for Finland's GDP(PPP) for 2021.

stable economic growth as an aging population retires out of the workforce without ample replacements.

For this analysis's CCM this factor was given four modifiers: exceptional growth, predictable growth, recession, depression.

ASEAN cohesion

ASEAN is a political and economic union founded in 1967 with its current membership consisting of Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. Since its inception, ASEAN has been the subject of both praise and criticism as a suprastate mechanism, though has proved itself to be an effective apparatus for promoting both stability and economic growth regionally, as well as allowing for a more impactful collective voice for member states on the world stage.²⁶ ASEAN's cohesion, the willingness of its member states to act in unison on pressing issues, is central to the bloc's ability to resist outside influences which may look to push the regional agenda towards their own goals.

Regarding the SCS dispute, ASEAN member states have multiple conflicting claims which stretch back decades to the early post-colonial period. Internally, multilateral mechanisms have been developed since the 1990s to avoid conflict and move towards an eventual settlement in line with the 'ASEAN Way' methodology of dispute settlement.²⁷ A code of conduct for claimants in the SCS has been under discussion since the 1990s with several delays due to disagreements over 'guidelines' on negotiations which only materialized in July 2023. A *Declaration on the Conduct of Parties* which was adopted in 2002 was non-binding to signatories, and in its corpus stressed the "the peaceful settlement of territorial and jurisdictional disputes", though made little progress towards a resolution of SCS issues. The SCS dispute however is not solely an ASEAN issue, and outside actors, especially China, have a vested interest in particular settlement outcomes and will use their clout with individual member states to disrupt ASEAN cohesion in order to further their goals. A candidate for this future role as China's proxy is Cambodia which has already disrupted ASEAN cohesion on Beijing's behalf, such as in 2016 when it successfully removed any mention of the China-Philippines arbitration case from a joint communique on the SCS dispute.²⁸ Cambodia is also host to China's second

²⁶ R. Stubbs, "ASEAN sceptics versus ASEAN proponents: evaluating regional institutions," *The Pacific Review* 32, no. 6 (2019): 923–950, <https://doi.org/10.1080/09512748.2019.1611627>.

²⁷ N. Peng and C.B. Ngeow, "Managing the South China Sea Dispute: Multilateral and Bilateral Approaches," *Ocean Development & International Law* 53, no. 1 (2022): 37–59, <https://doi.org/10.1080/00908320.2022.2034555>.

²⁸ M. Mogato, M. Martina and B. Blanchard, "ASEAN deadlocked on South China Sea, Cambodia blocks statement," *Reuters*, 2016, <https://www.reuters.com/article/us-southchinasea-ruling-asean/asean-deadlocked-on-south-china-sea-cambodia-blocks-statement-idUSKCN1050F6>; D. Florick, "Cambodia is China's leverage point on ASEAN," *East Asia Forum*, 2021, <https://www.eastasiaforum.org/2021/12/15/cambodia-is-chinas-leverage-point-on-asean/>.

overseas base which when completed will allow significant power projection capabilities for the PLAN, including mooring infrastructure for aircraft carriers.²⁹ Beijing also holds influence over Laos and Myanmar which with Cambodia could form a bloc within ASEAN to slow or halt future deliberations on SCS matters.

For this analysis's CCM this factor was given four modifiers: unified, ASEAN way/manageable dissent, divided -bloc formation, fractured/non-functioning

Extra-regional actor involvement

The SCS dispute has garnered increasing attention from extra-regional actors over the last decade in light of island building programs and saber rattling between claimants. These fall into two key groups: NATO, primarily the USA and members with power projection capabilities, and what Silva and de Amorim (2016) call the three "worried outsiders", Australia, India, and Japan, who are involved in the dispute both due to their proximity as well as larger geopolitical concerns regarding the rise of China.³⁰ These group's interests center on three interwoven concerns: freedom of navigation (FON), balancing China geopolitically, and supporting regional allies.

Most extra-regional actors rebuke Chinese claims to an area of exclusivity in the SCS and the notion of extraordinary identification/access protocols. In a January 2022 report, the US State Department reiterates a long-held stance that Chinese claims in the SCS are "plainly inconsistent with international law as reflected in the Convention [UNCLOS]" and rejects Chinese assertions of sovereignty over the SCS.³¹ This rejection is the basis for the frequent FONOPs by the US Navy in the SCS which sees US vessels, ranging from individual ships to carrier groups, sail within Chinese claimed waters on 'innocent passage' without procuring authorization or acknowledgement from Beijing.³² FONOPs hold the potential to ignite the SCS flashpoint, as a misunderstanding, accident, or hostile action by either party can quickly escalate into open conflict, especially during periods of high tension.³³

Regarding balancing, China's rise to great power status in the last two decades has worried many international actors, and especially its neighbors, that Beijing

²⁹ A. Salerno, "China's secret naval base in Cambodia, through satellite imagery," *Naval Technology*, 2023, <https://www.naval-technology.com/features/chinas-secret-naval-base-in-cambodia-through-satellite-imagery/>.

³⁰ L. Silva and W.D. de Amorim, "Australia, India and Japan: The Three 'Worried Outsiders' and Their Strategies Towards the South China Sea," in *Power Politics in Asia's Contested Waters: Territorial Disputes in the South China Sea* (Springer International Publishing, 2016), 441–468, https://doi.org/10.1007/978-3-319-26152-2_21.

³¹ U.S. Department of State, Office of Ocean & Polar Affairs, Limits in the Seas No. 150, 2022, 29.

³² J.G. Odom, "Maritime claims in the South China Sea and freedom of navigation operations," in *Building a Normative Order in the South China Sea: Evolving Disputes, Expanding Options* (Edward Elgar Publishing, 2019), 171–194, 179–183, <https://doi.org/10.4337/9781786437532.00017>.

³³ The US DoD also publishes annual reports on FONOPs and their reasoning which can be found at <https://policy.defense.gov/ousdp-offices/fon/>.

will move to install itself as the regional hegemon and upset a status-quo of peace which has been largely uninterrupted since 1979. India for example has concerns that a Chinese dominated SCS will allow the PLAN unhindered power projection to the Strait of Malacca, a critical east-west chokepoint for Indian trade and maritime security, as well as move PLAN strike capabilities that much closer to India's doorstep in the event of a conflict between Beijing and New Delhi.³⁴ Japan meanwhile is concerned that Chinese primacy in the SCS will lead to a redoubling by Beijing to assert its claims to the Senkaku/Diaoyu islands in the East China Sea as well as encourage it to act more assertively in East Asian regional relations. This has prompted Tokyo to guide procurements for the Japanese Self-Defense Forces towards equipment and systems which are able to counter China's growing military capabilities.³⁵ Additionally, the United States looks to balance China as a rising power in the Pacific as was made clear by the 'pivot to Asia' policy shift during the Obama administration. In addition to the FON concerns mentioned above, the United States also has concerns that an unbalanced China in the SCS could make assertive moves regionally which could draw the US into a conflict through the 'hub and spokes' system of alliances.

Finally, the complex economic, political, and security relationships extra-regional actors have with littoral states draws them into the dispute. The United States' relationship with the Philippines for example, most recently reaffirmed with the Enhanced Defense Cooperation Agreement signed in 2014, is a significant pull factor for their involvement in the SCS. The agreement permits the re-stationing of US military assets in the Philippines which had been absent since the 1992 withdrawal, most importantly at Antonio Bautista Air Base the island of Palawan and Cesar Basa Air Base north of Manila which are strategically located relative to the SCS dispute.³⁶ In July 2022 US Secretary of State Antony Blinken spoke directly about the US-Philippine relationship in regards to the SCS while on a trip to Manila, saying "We also reaffirm that an armed attack on Philippine armed forces, public vessels, or aircraft in the SCS would invoke US mutual defense commitments."³⁷ In February 2023 five new sites were announced for US forces to be stationed in the Philippines on a rotational basis, the majority of which are littoral to the SCS.³⁸

³⁴ N. Kipgen, *The Politics of South China Sea Disputes* (Routledge, Taylor & Francis Group, 2020), 93–96.

³⁵ Silva and de Amorim, "Australia, India and Japan: The Three 'Worried Outsiders'," 52–55, 441–468, https://doi.org/10.1007/978-3-319-26152-2_21.

³⁶ J. Katigbak, "US, Philippines agree on 5 base locations under EDCA," *Philippine Star*, 2016, <https://www.philstar.com/headlines/2016/03/19/1564662/us-philippines-agree-5-base-locations-under-edca>.

³⁷ J. Gomez, "US warns it will defend ally if China breaks sea ruling," *AP News*, 2022, <https://apnews.com/article/china-beijing-antony-blinken-philippines-manila-5b56ae40db4dbcd5b98e67f1007c0fd>.

³⁸ US Department of Defense, "Philippines, U.S. Announce Four New EDCA Sites," 2023, <https://www.defense.gov/News/Releases/Release/Article/3285566/philippines-us-announce-four-new-edca-sites/>.

These three pull factors for extra-regional actors cannot be ignored, however their impact on the level of involvement which they are willing to invest is not set in stone. Considering this article is an exercise in foresight analysis and scenario building, it is important to reflect on the shifting nature of priorities which extra-regional actors will have in the future which though presently point towards a continued interest in the SCS, could change in light of unforeseen events and developments. For example, Russia's 2022 invasion of Ukraine shifted what was growing Western interests in the SCS dispute back towards transatlantic concerns, especially European powers who are understandably more concerned with a security crisis on their doorstep than with one a hemisphere away. Economically, unforeseen developments similar to the impact of COVID-19 on global economics could prompt extra-regional actors to focus on domestic issues and reallocate funds to non-security causes, thereby decreasing the funding they would instead invest in regional ally's defense infrastructure. Diplomatic shifts could alter extra-regional involvement, this could be something as unforeseen as a rapprochement between great powers and China which places ASEAN in the Chinese sphere of influence, or more realistically, a shift in a littoral state's national politics which sees a pro-China (or anti-Western) stance take hold.

For this analysis's CCM the involvement of extra-regional actors was divided into two categories: power projection capability (PPC) investment and diplomacy. Power projection includes naval deployments (including FONOPs), stationing troops and aircraft, deploying A2/AD equipment, and other similar measures. The four modifiers given to this factor are: significant PPC investment, moderate PPC investment, some PPC investment, limited PPC investment. Diplomacy refers to the level of investment extra-regional actors have placed on negotiated settlements and ending the dispute diplomatically. The four modifiers given to this factor are: pro-ASEAN (active support), pro-ASEAN (limited support), equitable settlement (neutral), disinterested.

ASEAN sentiment towards China

The future of both China and the member states of ASEAN are interwoven due to their geographic proximity and diplomatic efforts which have been ongoing since the 1980s. Despite these deep and growing ties, individual ASEAN member sentiments toward China can be less-than-amicable stemming from a number of bilateral and in some cases multilateral issues such as economic coercion and diplomatic strong arming, both of which have been present in the SCS dispute.

In Peng and Ngeow's (2022) in-depth look at multilateral and bilateral approaches to managing the SCS dispute, they note a resurgence of domestic nationalism in ASEAN member states which make bilateral engagement more difficult as no state

wants to be seen as ‘soft’ on China.³⁹ The perception of an encroaching suzerainty on Southeast Asia by China, valid or otherwise, is widespread among member states and does not bode well with a population which retains a living memory of dominion under colonialism. Inserting the SCS dispute into the relationship matrix between China and ASEAN redoubles such perceptions. For many littoral claimants, and especially for Vietnam and the Philippines, China’s occupation of many of the major natural features in the SCS and the progress of their island building programs are an unavoidable roadblock to greater synergy between ASEAN and China. Additionally many trust-reducing incidents in the SCS, such as harassment by the Chinese maritime militia and the PLAN, and China’s inflexibility in regards to its claims in the region, limit the progress which can be made between the two parties; Peng and Ngeow (2022) call the outlook for bilateral cooperation between ASEAN and China on the issue of the SCS “less than optimistic”.⁴⁰

The relationship between China and ASEAN however has many more facets than just the SCS dispute, indeed many member states are neither littoral to the SCS nor have any particular claims in the SCS which would stifle their relationship with Beijing. Chatterji (2021) notes that Laos, Cambodia, and Brunei are ‘bandwagoning’ with China while Thailand is increasingly warming its ties with its northerly neighbor. Importantly too, Chatterji notes that while ASEAN members might not be particularly eager to strengthen ties with China, they are likewise hesitant to push for greater involvement of outside powers in Southeast Asian affairs, though this is not an evenly spread sentiment.⁴¹ This directly relates to the previously described factor, *Extra-regional Actor Involvement*, as these outside actors need the consent of at least some ASEAN members to involve themselves in the dispute and the more members who side with Beijing on regional matters decreases the likelihood of significant extra-regional actor involvement.

For this analysis’s CCM this factor was given four modifiers: pro-China sentiment, plurality pro-China, mixed sentiments/open to extra-regional involvement, anti-China, seeking extra-regional involvement.

Island building programs

In 2013 China began land reclamation projects across the various features it occupied in the SCS, transforming reefs, shoals, and atolls into artificial islands as well as adding dozens of acres to the ‘true’ islands it occupied. Beijing’s island

³⁹ Peng and Ngeow, “Managing the South China Sea Dispute: Multilateral,” 37–59, <https://doi.org/10.1080/00908320.2022.2034555>.

⁴⁰ Peng and Ngeow, 58.

⁴¹ (Chatterji 2021 “China’s Relationship with ASEAN: An Explainer.”) States with greater stakes in the SCS dispute are less likely to dispute the involvement of non-Chinese powers in ASEAN affairs.

building program has prompted other claimants to begin similar programs, however these are extremely limited in comparison both in their size and in the military assets they host due to their enormous cost which only China is able to shoulder with any measure of plurality. Due to this disparity in utility, this analysis will only focus on the Chinese island building program.

The artificial islands which make up the ‘great wall of sand’ vary greatly both in their measurable area and in regard to their capacities as military installations. The largest, Fiery Cross (677 acres), Subi (976 acres), and Mischief Reefs (1379 acres) host bomber-ready runways, climate-controlled hangars for aircraft, deep resupply ports, extensive A2/AD systems, and facilities to station hundreds, and in some cases thousands, of PLA troops. The smaller artificial islands such as Gaven (34 acres) and Hughes (19 acres) reefs function as outposts, as opposed to military bases, hosting heliports rather than runways, shallow berths for ships, and more spartan accommodations for garrisoned troops.⁴² China’s artificial islands also host large radar arrays which monitor the air and sea of the surrounding area, some of which, such as the counter-stealth radar installation on Subi Reef and the ultra-high frequency (UHF) radar on Mischief Reef, are on the cutting edge of early warning and surveillance technology. These installations work in unison to detect potential threats to the artificial islands and make first-strike operations against them more difficult, though as is later explained there are limitations to their effectiveness.⁴³

The greatest strategic benefit of these artificial islands is their potential to extend the range of Chinese power projection capabilities not only into the SCS, but also further into the Pacific and Indian Oceans. In recent decades the PLA has placed a priority on expanding power projection capabilities as they heavily invest in modern long-range aircraft and a blue water navy which now includes three aircraft carriers, one of which, the Fujian, launched on June 17, 2022 and is completely indigenously designed and believed to rival the capabilities of Western carriers.⁴⁴ Though none of the artificial islands have the necessary port facilities for a carrier to dock, their harbors do have sufficient depth for most vessels in the PLAN, including those in a carrier group, and can serve as waypoints on longer missions or as bases of operation for extended patrols in the SCS. The artificial islands also provide flexibility for mission planning against targets on other disputed features, as well as potentially targets throughout the littoral region; in

⁴² S. Pasandideh, “Do China’s New Islands Allow it to Militarily Dominate the South China Sea?,” *Asian Security* 17, no. 1 (2020): 1–24, <https://doi.org/10.1080/14799855.2020.1749598>; CSIS, “China Tracker,” Asia Maritime Transparency Initiative, n.d., accessed July 25, 2022, <https://amti.csis.org/island-tracker/china/>.

⁴³ M. Dahm, “In-depth: Subi Reef Counter-Stealth Radar,” (N.p.: Johns Hopkins Applied Physics Laboratory, 2020).

⁴⁴ D. Rising and K. Moritsugu, “China launches high-tech aircraft carrier in naval milestone,” *AP News*, 2022, <https://apnews.com/article/beijing-china-shanghai-government-and-politics-6ce51d1901b3a5658cc9ef7e-62b65000>.

fact, these outposts place the entirety of every claimant state's territories within bomber and fighter range of Mischief and Fiery Cross Reef in the Spratly Islands and the expanded Woody Island in the Paracels (Figure 4, power projection map).

Initial analysis of these artificial islands appeared to give China a domineering position in the SCS, more recent assessments of their strategic value however balance earlier sensationalism with reality. While the artificial islands do indeed militarily outclass other claimants' outposts by a significant magnitude, due to geographic limitations their value is better appreciated as deterrence and as a means to bolster Beijing's negotiating positioning. As is pointed out by Pasandideh (2020) for example, the radar installations on the larger artificial islands, though indeed advanced, are still bound by the laws of physics which create a 'radar horizon', which itself is amplified by the near sea level altitude of the artificial islands, causing the radars to have a limited coverage area.⁴⁵ This radar horizon restricts the effectiveness of A2/AD infrastructure on the artificial islands and necessitates the networking of surveillance equipment with either shipbourne radar (which has similar



Figure 4. A depiction of Chinese power projection capabilities from their outposts in the South China Sea. Outer dashed line- bomber aircraft, outer double line- fighter aircraft, inner dashed line- anti-ship cruise missiles, inner double line- surface-to-air missiles. (CSIS. n.d. "Chinese Power Projection Capabilities in the South China Sea | Asia Maritime Transparency Initiative." Asia Maritime Transparency Initiative. Accessed July 26, 2022. <https://amti.csis.org/chinese-power-projection/>).

⁴⁵ Pasandideh, "Do China's New Islands Allow it to Militarily," 1–24, <https://doi.org/10.1080/14799855.2020.1749598>.

horizon limitations as the artificial islands) or with airborne radar (AWACS) for effective target tracking. The need for additional links in the kill chain complicates defense, especially in conjunction with the environment in which the artificial islands are located in where adverse weather conditions can ground flights or make seas too rough for effective target tracking.

The artificial islands are also expensive, both in monetary and political capital, for China. Monetarily the cost of the artificial islands is significant, not only in regard to the immense cost of the initial build-up but also to their maintenance, which itself is a monumental task. Their near sea level altitude leaves them vulnerable to rises in sea level from climate change, susceptibility damages from typhoons and other meteorological events, and natural erosion from tidal forces. Politically, Beijing's continued buildup of the island's capabilities shrinks its capacity for negotiation and its perceptions as a party to the dispute willing to find an equitable solution.

For this analysis's CCM this factor was given four modifiers: rigorous/active expansion, small-scale expansion, status-quo/halted, withdrawal.

Scenarios

The following scenarios were designed from solutions out of this project's CCM. They are envisioned within the time period of the 2030s to the 100th anniversary of the PRC in 2049.

我们的海Mare Nostrum (Figure 5)

Owing to exceptional economic growth and political stability, China has executed a series of bi-lateral and multi-lateral diplomatic maneuvers over the last decade which have gained it significant influence over ASEAN. Sure of its positioning, Beijing has called for a series of summits to negotiate an end to the dispute, offering what many consider to be reasonable terms. These are namely joint resource development, a withdrawal of the maritime militia, freedom of navigation, and sizable investment packages for littoral states. In return, claimant states

PRC Economic Stability	PRC Political Stability	Island Building Program	ASEAN Cohesion	ASEAN Sentiment towards China	Cross-strait Relations	Extra-regional Actor Involvement: PPC	Extra-regional Involvement: Diplomacy
Exceptional growth	Stable: unity	Rigorous, active expansion	Unified	Pro-China sentiment	Open conflict	Significant PPC investment	Pro-ASEAN: active involvement
Predictable growth	Stable: fragmented authoritarianism	Small-scale expansion	ASEAN Way, manageable dissent	Plurality pro-China sentiment	Ongoing crisis/boiling point	Moderate PPC investment	Pro-ASEAN: limited involvement
Recession	Instability: infighting	Status-quo, halted	Divided, bloc formation	Mixed, open to extra-regional involvement	Sabre-rattling, status-quo	Some PPC investment	Push for equitable settlement
Depression	Instability: military cliques	Withdrawal	Fractured, non-functioning forum	Anti-China, seeking extra-regional involvement	Open dialogue, bridge building	Limited PPC investment	Disinterested

Figure 5. Mare Nostrum cross-consistency matrix. PRC- The People's Republic of China, ASEAN- Association of Southeast Asian Nations, PPC- power projection capability.

acknowledge China's suzerainty over the SCS and dismantle military infrastructure on any features they occupy, prompting most claimants to abandon their outposts.

A notable voice of dissent in ASEAN throughout these developments has been the Philippines, which continues to oppose any settlement where its claims in the Spratlys are not recognized. In response, Beijing has sent the PLAN to 'quarantine' Thitu Island, the largest of the Philippine occupied islands in the SCS. Despite the Filipino outcry on the global stage, Western actors who are bogged down in a prolonged trans-Atlantic crisis, only nominally oppose the move, unwilling to risk worsening relations with China which has increasingly flexed its economic power to insulate itself from international reprisal.

Stability crisis in China (Figure 6)

Less than optimum economic growth in the late 2020s further discouraged population growth, as many young couples found it burdensome, or even impossible to have families large enough to avoid a demographic crisis. This was redoubled in the early 2030s as manufacturing jobs increasingly moved to Southeast Asia and Africa, leaving many coming-of-age Chinese with few opportunities for employment. Within the Chinese communist party factionalism has emerged as various ministries, provincial governments, and prominent political figures constantly shift blame for the series of downturns the country is facing.

The PLA, seemingly the only functioning organization within China, has scaled back many of its provocative operations to avoid risking an international crisis which could break the fragile social cohesion which remains. In the SCS this has seen the PLAN limit its deployment of strategic assets to the features it occupies. Also, the PLAN has begun curtailing the operations of the maritime militia in the theater. This in itself is a delicate matter as many of the fishing crews which constitute the militia rely on subsidies from the government as fish stocks throughout the SCS have moved northward due to climate change.

China's economic and political instability has seen it lose much of the influence it built in ASEAN since the 2010s, and with the exception of resolutely pro-China Cambodia and Laos, many ASEAN members looked to increase their ties with other

PRC Economic Stability	PRC Political Stability	Island Building Program	ASEAN Cohesion	ASEAN Sentiment towards China	Cross-strait Relations	Extra-regional Actor Involvement: PPC	Extra-regional Involvement: Diplomacy
Exceptional growth	Stable: unity	Rigorous, active expansion	Unified	Pro-China sentiment	Open conflict	Significant PPC investment	Pro-ASEAN: active involvement
Predictable growth	Stable: fragmented authoritarianism	Small-scale expansion	ASEAN Way, manageable dissent	Plurality pro-China sentiment	Ongoing crisis/boiling point	Moderate PPC investment	Pro-ASEAN: limited involvement
Recession	Instability: infighting	Status-quo, halted	Divided, bloc formation	Mixed, open to extra-regional involvement	Sabre-rattling, status-quo	Some PPC investment	Push for equitable settlement
Depression	Instability: military cliques	Withdrawal	Fractured, non-functioning forum	Anti-China, seeking extra-regional involvement	Open dialogue, bridge building	Limited PPC investment	Disinterested

Figure 6. Stability crisis in China cross-consistency matrix. PRC- The People's Republic of China, ASEAN- Association of Southeast Asian Nations, PPC- power projection capability.

powers. The most earnest in this geopolitical shift are Vietnam and the Philippines who have entered into negotiations with Western military powers to not only increase economic and diplomatic ties, but also create new security relationships. Both seek modern military hardware which until recently China had been able to dissuade them from acquiring, and in the case of the Philippines, a rejuvenation of its relationship with the US has seen the opening of new joint bases littoral to the SCS and increased R&D investments for indigenous weapons production.

Dispute stagnation (Figure 7)

China remains steadfast in its 10-dash claims to the SCS and after having occupied its artificial islands for so many years a sense of normalcy has developed around the dispute. The islands host intelligence gathering infrastructure and A2/AD installations as well as small squadrons of aircraft, though these are primarily used for surveillance and routine patrols. In internal media and educational material China continues to promote its claims, externally however Beijing avoids most discussion of the dispute as the long-standing status-quo has permitted it to shift resources elsewhere.

ASEAN has long been divided on how to approach the dispute, with blocs forming between littoral and non-littoral member states and, out of a sense of pragmatism, discourages its discussion at summits, both in light of deep economic ties with China and in light of continuing realities regarding the disparity of military capacity between Beijing and other claimants. Those who occupy features in the SCS have made moderate upgrades to larger outposts to deter aggression from China though the efficacy of these is questionable as the PLAN/AF continues to outpace all other SCS claimant's military capabilities.

Western powers remain vocally supportive of other claimants in opposition to China, but after decades of relative inactivity in the theater, this is largely diplomatic with only the United States deploying any power projection capabilities to the SCS. American naval forces conduct routine FONOPS in the theater, but these are limited in scope and are announced well in advance to avoid direct confrontation.

PRC Economic Stability	PRC Political Stability	Island Building Program	ASEAN Cohesion	ASEAN Sentiment towards China	Cross-strait Relations	Extra-regional Actor Involvement: PPC	Extra-regional Involvement: Diplomacy
Exceptional growth	Stable: unity	Rigorous, active expansion	Unified	Pro-China sentiment	Open conflict	Significant PPC investment	Pro-ASEAN: active involvement
Predictable growth	Stable: fragmented authoritarianism	Small-scale expansion	ASEAN Way, manageable dissent	Plurality pro-China sentiment	Ongoing crisis/boiling point	Moderate PPC investment	Pro-ASEAN: limited involvement
Recession	Instability: infighting	Status-quo, halted	Divided, bloc formation	Mixed, open to extra-regional involvement	Sabre-rattling, status-quo	Some PPC investment	Push for equitable settlement
Depression	Instability: military cliques	Withdrawal	Fractured, non-functioning forum	Anti-China, seeking extra-regional involvement	Open dialogue, bridge building	Limited PPC investment	Disinterested

Figure 7. Dispute stagnation cross-consistency matrix. PRC- The People's Republic of China, ASEAN- Association of Southeast Asian Nations, PPC- power projection capability.

Analysis

To begin this section, it is important to re-emphasize that these scenarios are not meant to be predictive in the sense that using GMA is akin to gazing into a crystal ball. Rather, these scenarios show possible futures with the criteria and boundaries outlined earlier in the paper in order to provide thought-provoking analytical prompts which are able to highlight the most consequential factors in the SCS dispute. As well, the three scenarios presented are not meant to carry any weight of eventuality, though they were chosen from the hundreds of realistic scenarios produced out of the CCM in part because they maintain a character of realism and plausibility which could be imagined as eventual outcomes of the SCS dispute. With this in mind, the analysis below highlights both the nuances within the scenarios presented as well as themes within the SCS dispute uncovered by the GMA methodology.

Foremost is the centrality of China in the dispute; its political and economic stability is the linchpin of SCS affairs. These two factors were among the most, if not the most, consequential in the CCM. As well, CCM revealed that even should China be placed in a difficult position internally, externally it could still maintain a minimum of the status-quo where it occupies its artificial features in the SCS. Scenarios where China's political and/or economic stability were at the lowest levels were more often than not, on the low to very low end of the plausibility spectrum.

As was seen in the second scenario even during a time of crisis, China would still be able to exert some influence over select ASEAN member states and maintain security around the features it occupies in the SCS. This can be attributed to China being located in the theater and being able to exercise significant influence simply by the grace of its proximity. Concerning security, even during a period of political infighting, China's littoral status to the SCS allows it to quickly allocate resources should the dispute heat up. PLA/N/AF assets based in southern China can be deployed to combat roles around the Spratlys and Paracels within hours and with sufficient sophistication to outclass all other littoral claimants. The Xian H-6N strategic bomber, and with recent advances in air-refueling, can loiter with a complement of long-range anti-ship missiles and cruise missiles for extended periods and can be landed on larger artificial islands such as Fiery Cross in the event of emergencies.⁴⁶ Additionally many of the modernized surface vessels from the PLAN's South Sea Fleet based in Zhanjiang and submarines based at Yulin on Hainan can reach disputed areas within two to three days and within range of strategic weaponry in one.⁴⁷ The only plausible scenarios where this wouldn't be

⁴⁶ T. Chand, *Modernisation of the Chinese Armed Forces - Air Display of Military Equipment during 70th Anniversary of the PRC-Military Parade 2019* (New Delhi: Centre for Joint Warfare Studies, 2019), 9–15, <https://cenjows.in/wp-content/uploads/2022/02/Modernization-of-China-Jan-2020.pdf>.

⁴⁷ M. Paul, "Maritime nuclear deterrence: submarine-launched ballistic missiles in the South China Sea," *Maritime Nuclear Deterrence* 43, no. 10 (2018): 1–7, <https://www.swp-berlin.org/en/publication/maritime-nuclear-deterrence>.

possible would be in the event of a cross-strait conflict with Taiwan or in the immediate prelude to one.

When analyzing the CCM there were few scenarios found where an 'equitable' settlement to the dispute could be found, and almost none where China withdrew from its occupied features. China is simply in too strong of a position, and looking through a realist lens, has no motivation to negotiate any settlement which doesn't meet all of its geostrategic goals. The zero-sum nature of the dispute for Beijing makes finding common ground for progress difficult, if not impossible.

To reference the 'mare nostrum' scenario, a possibility for settlement could come out of Beijing securing considerable influence over ASEAN members and then pushing for recognition of its claims in return for shared or partial access to the resources of the SCS. Even for claimant states such as Vietnam and the Philippines which occupy their own features, such a deal might be hard to reject, especially if economic pressure is exerted by China. This is redoubled when looking at extra-regional actor involvement; should Western powers be distracted by affairs in their own hemisphere, or perhaps even seeking a rapprochement with China, this would leave other claimants with few realistic options outside of an unequal settlement.

Also, in regard to extra-regional actor involvement, the presence of outside powers is likely to be a norm, however significant power projection investment is more exceptional. Presently the Philippines has signaled continuing its security relationship with the United States after somewhat rocky relations during the Duterte administration.⁴⁸ This is the only likely location where any significant outside military infrastructure is to be located, primarily due to the breathing room that the Philippines has from China compared to the other major claimant, Vietnam, who shares a land border with China and retains a living memory of war with their northern neighbor. However, as was seen with the previous Philippine government, this hinges on Manila's relations with China and if they're looking towards their traditional American ally for support going forward or if they choose to deepen their relationship with China; generally, these two relationships are mutually exclusive.

Finally, an important takeaway from the GMA approach has been an appreciation of the incredible number of outcomes and possibilities that there are for the SCS dispute. As was mentioned earlier, these exist on a spectrum of plausibility which must be taken into account, and once much of the 'noise' of implausible scenarios is removed what is left are those which are firmly rooted in reality. After the analysis of hundreds of different combinations from the CCM which can be said to

⁴⁸ I.S. Bisht, "Philippines Considering Additional US Military Bases," *The Defense Post*, 2022, <https://www.thedefensepost.com/2022/09/14/philippines-additional-us-military-bases/>; R. Nakamura and Y. Shiga, "Philippines may allow U.S. military access during Taiwan crisis," *Nikkei Asia*, 2022, <https://asia.nikkei.com/Editor-s-Picks/Interview/Philippines-may-allow-U.S.-military-access-during-Taiwan-crisis>.

be more partial to reality than to unique circumstance, it becomes apparent that much of the foresight from this research produces scenarios which are similar to the 'dispute stagnation' scenario.

As has been mentioned above, China holds a domineering position in the dispute. Other claimants simply do not have the means to uproot China through military or diplomatic means, and there are certainly very few outlooks, even on the edge of plausibility, where China would willingly withdraw from any of its occupied features. Even with the added support of Western powers there are few avenues to prompt good-faith negotiations towards a truly equitable settlement. Indeed, enhanced extra-regional involvement is likely to push China deeper into its entrenched positioning rather than encourage negotiation.

Conclusion

The SCS is a simmering flashpoint in the world system with consequences extending far beyond its geographic scope. This article has explored the dispute through the GMA methodology and has presented scenarios showcasing hypothetical end results of contemporary trends within the SCS theater. It has shown that the multifaceted dispute does not exist on a linear path towards a predetermined outcome, conversely, there are a multitude of outcomes which exist on a spectrum of plausibility.

Of these outcomes, this research found that a stagnation of the SCS dispute often appeared out of the CCM when crafting scenarios, highlighting the present realities of the dispute wherein all parties have entrenched into their political and physical positions with little alternative outside of direct confrontation. For claimant states, direct confrontation over the future of the SCS is far from ideal, and likely is too high a price to pay for their regional goals. Concerning China, direct confrontation would likely draw in outside powers such as the USA, Japan, and their allies which would make military action not only much more costly but runs the risk of losing the already domineering position it holds in the SCS with its artificial islands and other occupied features in the Spratly and Paracel islands. Direct confrontation for claimants Vietnam and the Philippines, given the present situation, would doubtlessly end in defeat and the withdrawal from their occupied features without the significant support of outside powers who are unlikely to be willing to contribute to any aggressive action in the theater against China. In light of this, claimants are pushed by circumstance to engage in lawfare, saber rattling, and other non-kinetic means of pressing their claims, though as was seen with the 2016 arbitration case such measures can be ineffective at progressing the dispute towards resolution.

Data availability

The data for this article consists of bibliographic references, which are included in the References section.