

Let Taiwan and the Quad Fight Side by Side

How Can the Quad Incorporate Taiwan into Its Military Deterrence against China?

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Abstract

In response to a highly potential military confrontation in the Taiwan Strait, both the United States and Taiwan must look for a strong *collective* defense framework against China's threat, and the Quadrilateral Security Dialogue (QSD or Quad), composed of the United States, Japan, Australia, and India, is a decent platform for that concept. The Quad has a good basis for developing a mutual security system in the Indo-Pacific, although it is still far from a real military alliance. I contend that the Quad can keep working on legalizing and institutionalizing the mechanism while also developing its military strategy. At the same time, the Quad and Taiwan can develop to incorporate one another into their mutual defense network starting with lower-grade meetings, then moving to summits and foreign affairs-defense (2+2) ministerial conferences, intelligence sharing, joint staff assignments, and joint military exercises. The Quad-Taiwan defense cooperation preserves several options to establish their common military strategy and accumulate energy in deterring and denying China's island invasion plan. Rather than enthusiastic discussions of these "the Quad Plus Taiwan" issues, however, going back to the beginning to persuade each other to take the next step is more important.

As China's military threat to the Indo-Pacific region is quickly increasing, the United States is also expanding its military presence in the area to counterbalance potential tensions and uncertainties raised by the People's Liberation Army (PLA). Although Washington is still a global military hegemon, the US government recognizes that there is a need to establish a *collective* defense mechanism in the Indo-Pacific to deter Beijing's military intentions and actions. The Quadrilateral Security Dialogue (QSD or Quad), composed of the United States, Japan, Australia, and India, has been a strategic platform or forum that

holds summits and other meetings on regional security issues since 2007. In previous years, the Quad moved quickly in a military security direction, and the Quad's content switched to a military alliance from concepts of "framework" or "network."¹ Following that development, the Quad seems to be the major foundation for Washington and its allies and partners to counteract Beijing.

It is assumed by Stephen Walt that an aggregate military power is mightier than merely one or two individual powers, and can generate greater deterrence against a potential rival.² In practice, however, the Quad is still far from a real military alliance. This implies that if the United States seeks to build up an Asian North Atlantic Treaty Organization (NATO) in the Indo-Pacific, the Quad is a good model providing a strong foundation but leaving considerable room to catch up. In other words, the security and military personnel of Quad members and others might need to consider the *legalization* and *institutionalization* problems of a future Asian collective defense mechanism before they can discuss what military security and military capability the alliance can have.

Although legalization and institutionalization of the Quad are important to establish a collective defense mechanism in the Indo-Pacific, discussions on these matters might not keep pace with strategic environment changes in the region. In fact, China's various military actions, such as militarization of the South China Sea (SCS) islands, growing intrusions into Taiwan's air defense identification zone (ADIZ), increasing aggression surrounding the Senkaku Islands, and gray-zone operations already raise great challenges for the Quad and have made the security situation in the West Pacific more complex. Therefore, Quad member states and other Indo-Pacific countries must continue developing a multilateral defense mechanism as well as accelerate outlining their common military strategy.

In outlining a military strategy against China's threat, the Quad must recognize its strategic environment first. Compared to the South and East China Seas, a military confrontation is more likely to take place in the Taiwan Strait.³ This implies that the Taiwan Strait is most critical, geopolitically, and strategically, to the Quad and the Indo-Pacific. The reasons are as follows: First, in the SCS, as China has moved to the stage of militarization of the islands it occupies, it is expected that China will build more military bases in the SCS, and that raises difficulties for Washington to counterbalance against Beijing. For China, the marginal benefit of launching a war in the SCS is not great, and it can instead choose to continue expanding its strategic strong points until they cover most or all of the region. Second, in the East China Sea (ECS), China is hesitant to attack Japan due to the mutual defense mechanism between Tokyo and Washington. Real, meaningful control of the Senkaku Islands requires Beijing to attack, land, occupy, and *militarize* the islands. For China, these military operations are costly and risky,

and it is very difficult to calculate the military's chance of winning a war against a joint US-Japan force. Third, although a military invasion of Taiwan is as costly and dangerous as China's military occupation of the Senkaku Islands, the marginal benefit to China would be *overwhelmingly* huge if it successfully took over the island. Once China controls Taiwan, Beijing not only can disconnect the communication lines between the SCS and the ECS but also pass freely through the First Island Chain. Beijing always considers preserving its vast military advantage over Taipei with other political, economic, and social measures to influence the island. If Beijing could eliminate a military intervention by Washington or could win the war against Taiwan as quickly as possible, before Taiwan receives any international assistance, the Chinese military would invade Taiwan. Certainly, Washington's strategic ambiguity also leaves space for Beijing to seize any opportunity to accomplish its historical mission.

Based on argument above, the Quad needs to develop its military strategy and operations by incorporating Taiwan's defense capability and Taiwan must look for military cooperation with the Quad as well. Thus, this article seeks to answer the following questions: What will it take, and how, for the Quad to strengthen its collective defense mechanism, and what and how can Taiwan participate? What military strategy can the Quad and Taiwan use to work together to construct a common deterrence and denial to China's military threat? And what military capability can the Quad and Taiwan build together for operations in the future battlefield? In the end of the article, I conclude that both the Quad and Taiwan need to persuade each other to take the next step to start their dialogues, communications, and exercises of mutual defense cooperation.

The Quad and Taiwan's Participation

Options for an Asian Collective Defense Mechanism

The Quad has a good basis for developing a strong mutual defense system in the Indo-Pacific, and NATO is an excellent model for how to develop an actual *Asian* collective security mechanism. Although the Quad is expected to be an "Asian NATO" by many advocates, there are several reasons discouraging the forum from forming a solid military alliance mirroring NATO in Europe. First, an examination of various security environments, threat perceptions, and defense strategies of not only the member states of the Quad but also other states in the Indo-Pacific shows it is highly challenging for them to build up a true multilateral military alliance, although the states recognize China's expansionism is most likely to endanger peace and stability in the region.⁴ Second, another difficulty is

due to a historical factor. Victor Chan defines the US choice of bilateral alliances in East Asia after World War II as a “powerplay,” arguing that Washington preferred to exert its control over potentially dangerous allies, such as South Korea, Taiwan, and Japan, during the Cold War period. Because the United States did not want to be entrapped in these countries’ specific military confrontations with either Communist China or the Soviet Union, implementing a bilateral mutual defense model instead of a multilateral one was easier for containing allies and safer for preserving security in Asia.⁵

To promote the Quad as a strong collective defense system for balance of power in the region, the Quad and Indo-Pacific nations also face two hidden conflicting options. One choice follows NATO as a raw model. The nations work on *legalizing* and *institutionalizing* the mechanism as a standing organization based on international conventions and the shared commitment and consensus of the member states. Although this option can establish a solid, viable, and credible unity to deter China’s threat, the weakness is that setting up the regime is very time-consuming, and it might not keep up with the pace of China’s military development. Another option is to abandon the thinking of the NATO model and concentrate on continuing and upgrading military cooperation through the Quad framework instead of crafting a hard unit for the nations. There are also two sides to this option: The advantage is that the Quad could be able to respond to contingencies with greater flexibility, but the disadvantage is members might not be united in action, and there are no legal constraints compelling them.

Regarding the dilemma involving this course of action, I contend that the Quad member states and other Indo-Pacific nations must keep working on legalizing and institutionalizing the multilateral defense mechanism while also moving toward a true Asian NATO in terms of military cooperation. In other words, considering the formalization of the organization is not a precondition for the Quad to develop its defense plan, conversations about institutionalization are not immediately beneficial to the Quad. At this moment, accelerating to summarize a common military strategy and demonstrating deterrence and denial capabilities in confronting China’s military challenge are more important to the Quad.

Interestingly, the Quad is not a tight mutual defense alliance but a relatively loose and flexible framework for similar-minded nations to communicate and cooperate with each other on a wide range of topics, military and nonmilitary. The idea of “Quad Plus” is also flexible and calls for other states without membership but with deep connections to regional issues to participate in the mechanism.⁶ As the Quad seeks to accumulate power, intelligence, and energy of related states in the Indo-Pacific to preserve balance in the region, Taiwan, the actor most directly

on the Quad's security agenda, should be willing and welcomed to participate in the Quad's defense framework.

It is true that while the larger security concern may be shared between the Quad (and the Quad Plus) constituent members, their threat-perceptions of China are not always the same. However, Taiwan's threat by China is strongly connected to the development and security of the Quad as well as the whole Indo-Pacific region. Compared to the Quad member states, the case of Taiwan's threat from China is much more urgent and is completely a fundamental issue of *survival*. An invasion of Taiwan by China is primarily a strategic-*existential* threat to the island. In contrast, relationships between the Quad members and China are a matter of *development* in a long term. Their struggles with China are more defined as a strategic-*developmental* competition rooted in their conflictual strategic ambitions. The Quad and the Quad Plus need to realize that once they lose Taiwan to China, their survival is perhaps not threatened by Beijing immediately, but development and security will be surely coerced sooner or later. They will also lose strategic advantages to Beijing and competing with China will be costlier.

Co-participation of the Quad and Taiwan

As I posit above that a military confrontation is more likely to take place in the Taiwan Strait, compared to contingencies in the SCS and the ECS, it is reasonable for the Quad and Taiwan to incorporate one another into their mutual defense framework. Although Taiwan has indicated a strong wish to defend itself, increasing its military cooperation with and connection to the regional defense network is not only beneficial to the island per se but also a great advantage to peace and stability in East Asia. In the same way, without Taiwan's involvement, the Quad is unlikely to react to a contingency in the Taiwan Strait appropriately.

However, an examination of the international situation shows that it is not particularly easy for the Quad and Taiwan to work together on a military security agenda. The main reason is that both sides are still concerned about China's response and the uncertainty of deteriorating the status quo in the Strait. Although Taiwan gained considerable diplomatic and military support from both the Trump and Biden administrations over the past years, Taiwan's political and military relations with the Quad were still very limited. There are two key dimensions to look at in future cooperation between the Quad and Taiwan: One is the number of states working with Taiwan on the military security issue, and the other is the level or type of Taiwan's participation with the Quad in mutual defense teamwork. See Figure 1. From the perspective of the number of states that work with Taiwan, the ideal scenario for Taiwan, and the worst for Beijing, is if all four Quad member states (the United States, Japan, Australia, and India) and other states (the

Quad Plus) cooperate with Taiwan on deterring the threat posed by China's military. However, achieving this scenario would be very difficult. In reality, only the United States appears to diplomatically and militarily support Taiwan—but even then, without official recognition or a mutual defense pact between the two countries. Recently, Japan seems to have changed its attitude toward the Taiwan issue and become active to the possible warfare in the Strait.⁷ But the other two Quad members are less likely to work together with Taiwan. From the perspective of the level of Taiwan's participation in the Quad, there are various types of Taiwan's engagement from low to high. Taiwan and the Quad can start with the lower grade to hold track 2.0 or track 1.5 meetings, for either nongovernment or lower-level government, to discuss the security environment and the network's defense strategy. Then, Taiwan and the Quad could share intelligence, or the Quad could invite Taiwan to attend a joint conference or military drill as an *observer* in the interim phrase. This would indicate both sides intend to promote military cooperation. Last, at the highest level of cooperation, the Quad and Taiwan could hold summit and foreign affairs-defense (2+2) ministerial meetings and incorporate Taiwan into the Quad's joint military exercises and operations. Undoubtedly, the two models of Taiwan's participation at the medium and highest levels will be strongly opposed by China, and as a result will not be accomplished easily.

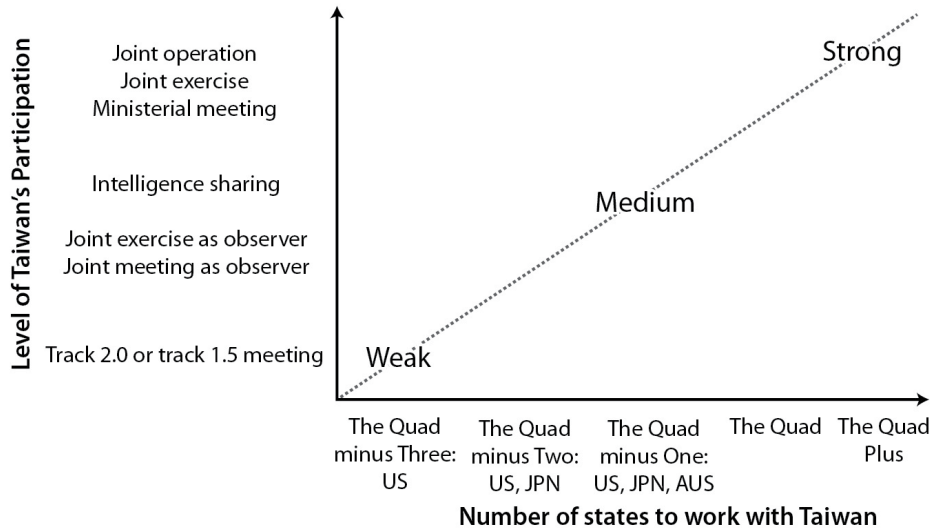


Figure 1. The Quad and Taiwan: Two Dimensions to Look at Their Cooperation

Although there are challenges that prevent the two from cooperating, the Quad and Taiwan can work together step by step and start with track 2.0 or track 1.5 dialogues first. Inviting Taiwan as an observer to attend joint military meetings

and exercises will definitely upset China, but the Quad is unlike the United Nations and the World Health Organization, and Beijing is neither a member nor a leader of the security framework. The Quad should preserve its independence to develop its own strategy without fear of China's anger. Additionally, sharing defense intelligence is a good option for the Quad and Taiwan, as information is critical either for their assessment of the situation or a future military operation against an attack by China. A "Quad Plus Taiwan" cooperation framework on intelligence sharing and information exchange could be another Five Eyes to more precisely survey and interpret Beijing's development.

The Common Military Strategy of the Quad and Taiwan

Good management of the strategic environment in the Indo-Pacific region is critical to see if the Quad and Taiwan can successfully construct and carry out a mutual defense strategy. From the perspective of the big picture, as there are several hot spots that could blow up into military crises in Asia, the United States and its allies and partners must properly respond to situations on the India-China border and in the SCS, the Taiwan Strait, the ECS, and the Korean Peninsula simultaneously if possible. As situations in the other four areas are under their control, it is easier for the Quad and Taiwan to prepare for a contingency in the Strait. Yet some might argue that the US military is unable to take on two major regional conflicts at the same time.⁸ There is a similar question for China as well: Can Beijing simultaneously conduct two or more large military confrontations in Asia? The same question or challenge seems fair to the Quad and China, which implies both might not be able to handle two or more major military conflicts at the same time.

Deterrence and Denial

Regarding the Quad-Taiwan mutual military strategy, I contend the need to implement a strategy of both deterrence *and* denial in the Taiwan Strait. In his work "Indo-Pacific Deterrence and the Quad in 2030," Justin Diehl contends the Quad must employ a strategy of Deterrence by Denial to develop credible military capabilities and integration to deter China's hostility and assertiveness.⁹ Diehl's theory is applicable to the Quad, and the framework is founded on an effective military architecture demonstrating its reliable deterrence capability against China. A powerful denial capability not only can derail the rival from achieving its ambition but also can increase the cost of launching a military confrontation. Once the rival hesitates to take military action to fulfill its goal, the denial strategy has a deterrence effect in avoiding war. However, if one side already conducts deterrence and denial strategies at the same time, and the deterrence

works, the side likely will not be convinced to either discard the deterrence or the denial to focus on one single strategy.

The Taiwan Strait situation is similar to the deterrence and denial picture above because Taiwan and the United States have separate deterrence and denial strategies. While Taipei's own defense capability demonstrates its resolve to implement this dual strategy against China's military threat, Washington's military operations in Taiwan's surrounding areas and its arms sales to the island show the United States is conducting a deterrence and denial strategy in the Strait as well. In response to China's military threat to the Strait and potential invasion of Taiwan, the key principle for Quad–Taiwan mutual security cooperation should be *maximizing* their energy in deterring and denying China's plan for taking over the island.

Based on argument above, I outline two new directions for how the Quad and Taiwan can work together to strengthen their collective deterring and denying capabilities against China. One is to create a Quad–Taiwan joint deterrence force today and then upgrade its deterrence capability over time. Doing so will seriously increase the cost of direct conflict, and Beijing will recalculate its island attack project. There might be no clear line between deterrence and denial in this case because they are strongly *interdependent*. As the Quad and Taiwan increase their mutual deterrence capability, that implies they also expand their joint military energy, and vice versa. Instead of focusing on the United States or on US–Japan cooperation, the key is to invite more friends to stand by Taiwan and to increase the level of Taiwan's participation in the Quad–Taiwan mutual defense mechanism. Therefore, the following military operations are recommended:

1. Establish new Freedom of Navigation Operations (FONOPs) in the Taiwan Strait. The Quad–Taiwan security mechanism can follow the example of the US 7th Fleet's patrols in the Taiwan Strait during the Cold War and ongoing FONOPs to form various multinational naval transits, including Taiwan's navy, in the Strait, rather than current trips by US warships alone. The greater the internationalization of the Taiwan Strait, the higher the difficulty for China to cross the Strait. This principle can be applied to the SCS and the ECS as well.
2. Create a “co-fly and co-navigate” model for aircraft and vessels. As the PLA Air Force (PLAAF) conducts a strategy of intruding into Taiwan's ADIZ and flying over the median line in the Taiwan Strait, the Quad–Taiwan air forces and navies can execute a new model of flying and navigating side by side nearby the island. Unlike Taiwan's dispatch of its fighters to track PLAAF military planes, the Quad–Taiwan air forces can “run into” each other in the international airspace “by chance” and then take the opportunity to drill their shared air operations and tactics. This sce-

nario can also be used for the navies. The model will send a very strong military signal as well as a political message to Beijing.

3. Set up a Quad command center and send standing military staff to the hub. The Quad and Taiwan can establish a full or semi-joint operation command center whether the mechanism chooses to set up its headquarters or not. Standing military staff of each member can be sent to the center to carry out staff assignments for operations. The organizational size of the command center is flexible depending on how critical the situation. The more dangerous the situation, the larger the unit structure. Additionally, the Quad and Taiwan also need to define the role of the command unit and clarify its relationship with the US Indo-Pacific Command.
4. Conduct a series of joint Quad–Taiwan war games and military exercises. The Quad and Taiwan can run a series of war games and military exercises based on the joint staff assignments. This operation can increase Quad–Taiwan mutual defense energy creating great deterrence against China as well as simulate and test the allies’ war plan in a real situation.

Another way to enhance Quad–Taiwan mutual deterring and denying capabilities is to examine the PLA’s possible invasion scenarios and Taiwan’s corresponding operation plans. During each stage of the PLA’s attack, Taiwan has strengths and weaknesses in reacting to the strike. The Quad and Taiwan should work together to reevaluate the island’s advantages and disadvantages in these operation scenarios and try to simultaneously improve the strengths and compensate for weaknesses. Some detailed military strategies are suggested as follows:

1. Enhance the Quad–Taiwan intelligence-sharing capability. Accurate intelligence and information are fundamental for examining and interpreting China’s intentions and actions. The Quad and Taiwan must maximize sharing of their intelligence on the PLA’s movement, especially on its missile deployment and mobilization of the landing platform and personnel, including amphibious vessels and airborne troops. Intelligence sharing should start *before* the war begins and continue throughout the whole defense operation.
2. Work together to control the Miyako and Bashi channels before or right at the beginning of war. It is difficult to predict if the PLA will attack Taiwan from the west only or from the west, east, and elsewhere simultaneously. If the battlefield can be limited to Taiwan’s west, defending will be relatively simple for Taiwan and its allies. Thus, discouraging the PLA Navy (PLAN) from deploying its force east of Taiwan, between the First and Second Island Chains, is very important, and the Quad and Taiwan need to block off the Miyako and Bashi Straits together. They can divide

the job—while the Quad can work with Japan in the Miyako Channel, it can collaborate with Taiwan in the Bashi Channel.¹⁰ Currently, they have the advantage.

3. Assist Taiwan in increasing its antiblockade and antibombing capability. According to Ian Easton's three major stages of warfare with Taiwan, the first phrase is blockade and bombing by the PLA to prevent Taiwan from resupplying and communicating with the rest of the world.¹¹ The bombing also aims to weaken and destroy Taiwan's will and counterattack capability against the PLA. The Quad should work with Taiwan to break through the PLA's control of the air and sea and fearlessly clash with the PLA. The Quad can strongly insist on providing transportation and assistance to Taiwan and work together to break the PLA's air and sea control by increasing the Quad and Taiwan's common antimissile capability. This stage is very decisive, and the Quad and Taiwan need to show their resolve right at the beginning of the war. If not, the cost of the coming warfare will increase significantly.
4. Assist Taiwan to protect its counterattack capability. Taiwan's Overall Defense Concept (ODC) highlights that the island must transfer its fighters and battleships to military bases on the east coast to preserve forces.¹² Yet this strategy might not be strong enough to preserve Taiwan's counterattack capability. I contend that the Quad must assist Taiwan to maintain its air force and navy—while Taiwan's fighters can be either predeployed or transferred to airbases in Japan's southwest islands, Taiwan's battleships remain with the Quad naval fleets east of Taiwan. Undoubtedly, the deployment will be highly risky for the Quad (and Taiwan, too), but it is the same to China because Taiwan can maintain its counterattack capability and a joint Quad-Taiwan military force may participate in a war.

Another Alternative: Sourced-Attack on the PLAN's Amphibious Force

In addition to the ODC and joint operations, *asymmetrical warfare* and *innovation* are two critical terms for reconsidering Taiwan's defense strategy during the years in the past and in the future. I propose another alternative mutual military strategy for the Quad and Taiwan; that is, they can conduct a medium- or large-scale sourced-attack targeting the PLA's amphibious vessels and personnel as China initiates the first strike on Taiwan.

If Taiwan suffered a first strike from the PLA (Taiwan would most likely face severe bombing with a huge number of missile attacks at the beginning of the

conflict), the island would have to reconsider its counterattack capability seriously in that moment, beyond focusing solely on force preservation. Protecting its fighters, vessels, ground force positions, and critical infrastructure would be important while under the attack, but this does not necessarily mean that Taiwan and the Quad would need to postpone their counterattack until they moved to the second stage. Instead, the Quad–Taiwan side should be active and start with a sourced-attack operation to break down the PLA’s impending assaults. A reasonable logic works as follows: First, China’s ultimate goal is to take over Taiwan. If China does not occupy the entire island, then the PLA’s dozens of military actions are meaningless to Beijing. Based on this theory, Taiwan and the Quad must reset their goal for the Taiwan Strait operation, which looks to *deny* the PLA’s attack and invasion of the island, instead of entirely defeating the Chinese armed forces. Second, for China to take over Taiwan, the PLA must deliver its amphibious forces across the Taiwan Strait and land on the island’s beaches. In the process of sending amphibious forces, the PLA must dominate the air and sea, covering the advance of the amphibious vessels and personnel. As Taiwan does not have an equivalent scale of weapons and armies that can compete with its Chinese counterpart, in the no international assistance scenario, the island must distinguish the priorities of its military targets and accurately and economically focus on those objectives. In the international assistance scenario, Taiwan and Quad can more economically distinguish the priorities of their military targets and concentrate on them.

Because the PLA’s amphibious assaults would be launched from military bases and positions on China’s coastline (most likely in Fujian, Zhejiang, and Guangdong), Taiwan and the Quad would need to target these potential military facilities and bases. As the PLA’s invasion of Taiwan and landing operations would rely heavily on naval vessels, especially amphibious forces and transport docks, it is strongly recommended that Taiwan and the Quad concentrate their fire on attacking the PLAN’s amphibious transport docks, such as the Type 071 landing platform dock and Type 075 landing helicopter dock, and later, the warships and facilities. Specifically, compared to its Chinese counterpart, the Quad–Taiwan joint force should preserve their advantage of control of the air and sea. Without amphibious transport docks, it is less likely that the PLA could conduct a successful amphibious assault and landing operation. To achieve this strategic goal, the Quad–Taiwan force’s surface-to-surface and antiship missile capability needs to be bolstered.¹³ Additionally, the allies need to reinforce their surveillance capability and intelligence sharing, particularly those related to any movements of the PLA’s amphibious vessels and personnel. Similarly, the Chinese airborne troops

are the target as well, although they are not as significant as the PLAN's amphibious ones at this moment.

In terms of asymmetrical warfare and innovation, I propose that unmanned systems can be applied to the sourced-attack operation. Based on Eric Chan's analysis, the Quad and Taiwan can learn a lesson from the Armenia-Azerbaijan war to employ numerous unmanned aircraft systems (UAS) just right at the beginning of a Taiwan military conflict. In both theory and practice, UAS can play a defensive role in detecting the PLA's movements as well as an offensive power to attack the PLAN's amphibious assault ships and transport docks.¹⁴ The Quad-Taiwan joint force should combine massed UAS with their surface-to-surface and antiship missiles to destroy the PLAN's amphibious assault operations either in harbor or at sea. On November 3, 2020, the United States just announced the sale of four MQ-9B unmanned aerial vehicles to Taiwan to assist enhancing its defense capabilities. This is a good start for the Quad and Taiwan to work on this strategy together.

Co-building the Quad-Taiwan Military Capability for Defense Against an Invasion

As the Quad and Taiwan outline a common military strategy for deterring and denying the PLA's island-invasion plan, what military capability can they set up together for a real operation in the future? Based on the discussion of the Quad-Taiwan military strategy above, the following recommendations are suggested: (1) establish and improve their intelligence sharing, (2) start joint operations and improve their *interoperability* with combined military exercises, (3) comprehensively enhance their missile-attack capability, (4) increase sea mine use during an operation, and (5) promote their strategic-economic ties by codeveloping defense-technological industries.

First, as the Quad-Taiwan mutual defense mechanism prepares for an invasion in the Taiwan Strait, the group must establish and improve their intelligence-sharing capability regarding China's latest intentions and actions for invading Taiwan. Accurate assessments of the PLA's move toward confrontation are based on precise intelligence and information collection, shared among the Quad-Taiwan members. An aggregate "the Quad Plus Taiwan" has great intelligence, surveillance, and reconnaissance potential; analysis based on teamwork should be very helpful for the allies not only to prepare for the conflict but also to prioritize and target the PLA's troops and facilities. In 2020, the Trump administration announced plans to sell four weapons-ready MQ-9B remotely piloted aircraft and related equipment to Taiwan, and this equipment is very beneficial for collecting and investigating information about the PLA. Therefore, the Quad and

Taiwan should deploy a huge number of unmanned reconnaissance aircraft in coordination with traditional investigation approaches, such as reconnaissance planes and satellites.

Second, the Quad and Taiwan should initiate combined staff assignments and military exercises to develop joint operation capability against a potential attack by the PLA. Currently, Taiwan and the Quad do not have any symbolic or substantial military cooperation, and even military collaboration with the US armed forces is very limited. In responding to China's highly likely invasion of the island, it will be challenging for Taiwan to defend itself alone. The invasion will most likely be repelled if Taiwan and the Quad work together. The allies cannot go into the field without preparation; they must perform joint exercises first. Thus, the Quad and Taiwan should think about conducting a series of staff assignments, war games, and military drills, and it would be better to execute them in a joint operation to establish the alliance's interoperability.

Third, according to either the phrase "preservation of warfighting capability" defined by Taiwan's ODC or the idea of a sourced-attack on the PLAN's amphibious force, increasing the mutual missile-attack capability is perhaps the most critical objective for the Quad and Taiwan. To preserve Taiwan's forces in the face of China's strategic blockade and bombing, the island and its allies must enhance their common *air defense* capability to *intercept missile attacks from the PLA as well as destroy the PLAAF's fighters. In this stage, using land-based, surface-to-air, and air-to-air anti-ballistic missiles is critical for the allies.*¹⁵ Additionally, *as the PLA's amphibious vessels and platforms must be destroyed when the invasion begins, the Quad and Taiwan also need to use their missile capabilities, all land, sea, and air based, to counterattack the enemy's amphibious force immediately, including the other Chinese naval vessels if possible. Regarding weapons systems, Taiwan's Tien Kung-2, Patriot PAC-3, and Avenger Air Defense Systems are critical to its air defense, and the Hsiung Feng II and III missiles are vital to the island's coastal defense.*¹⁶ On October 21, 2020, the United States also announced it would sell the High Mobility Artillery Rocket System (HIMARS) to Taiwan. This is an important step to strengthen the island's missile-attack capability. Missile attacks should be the centerpiece of the counterattack operation. Furthermore, because large surface vessels and land-based launch platforms would be easy targets at the beginning, the Quad and Taiwan should also reemphasize developing many but small and fast attack ships, such as the Kuang Hwa missile boat, and many mobile, camouflaging, and hidden missile and rocket systems, which can avoid the PLA's attacks.¹⁷

Fourth, mines in the sea and on the beach are also very important to Taiwan's coastal defense. The mines should also be the core of a joint operation. In theory and in practice, sea mines are difficult to detect, and they can successfully delay an

enemy's amphibious assaults. Mines deployed in the sea are weapons that provide great deterrence and uncertainty to the enemy because they are difficult to discover. To overcome that obstacle, the enemy needs to send minesweepers to clear the sea lanes for a landing. In this circumstance, the minesweepers themselves are weak and are likely to be destroyed either by sea mines or by missiles and coastal artillery attacks. In terms of asymmetrical warfare, deploying sea mines and other mines is a good measure to counterbalance a potential PLAN crossing and amphibious assault.¹⁸ Thus, the Quad and Taiwan need to develop quicker minelaying capability, just before China launches an amphibious assault, to deter and stop the PLA from crossing the Taiwan Strait. In general, sea mines can be classified into two types: defensive and offensive. Arranging sea mines just outside Taiwan's harbors is a defensive operation that could protect the ships and facilities inside the ports. Deployment in the Taiwan Strait or by the median line in the Taiwan Strait could be a defensive/offensive operation to deter and prevent the PLAN from crossing, and deployment just in front of China's naval bases could be viewed as an offensive operation placing a blockade that could stop any PLAN vessels from leaving port. The Quad and Taiwan can utilize different strategies to set up barriers in the Strait.

Fifth, in addition to military cooperation, the Quad and Taiwan also need to expand their collaboration in the realms of strategic-economy and defense-technological industry. For Taiwan, the island must reconsider enlarging but *relocating* its potential industries and investments, such as information technology and integrated circuitry, to its reliable allies as to prevent threat and risk placed by China. For the Quad, the four member states can codevelop advanced technologies with Taiwan to preserve an advantage of struggling with China not only in military but also in economic and technological competitions. Although Taiwan is developing self-reliant defense at this moment, including constructions of the nation's indigenous submarines, vessels, and new advanced jet trainers, it can look to deepen its defense-technological connection and cooperation with the Quad allies. On the other hand, the Quad members can take the chance to integrate with each other and with Taiwan to develop more substantial and material capabilities in military, technology, and economy, particularly in the areas of unmanned and autonomous weapons systems, to counterbalance China.

Conclusion

Although the Quad is still far from a real military alliance, and true mutual defense cooperation between the Quad and Taiwan is in its infancy, an aggregate military power is more powerful than merely one or two powers. As the Indo-Pacific region faces an increasing Chinese military threat, the Quad members and

Taiwan can generate greater deterrence by building up a collective security mechanism. The current issue is whether they can realize the development seriously and whether they are determined to face the challenge together. Time is not on the side of the Quad and Taiwan. Discussions on legalization and institutionalization of the Quad or a Quad–Taiwan defense framework are important to the collective defense mechanism in the Indo-Pacific, but these conferences are not keeping pace with the strategic environment changes in the region. Action is needed now. The Quad and Taiwan must overcome their overconsideration of China’s reaction and actively prepare for maintaining peace and stability in the Taiwan Strait. Once they are incorporated in a mutual defense framework, the strong deterrence and denial will keep China from crossing the Taiwan Strait and breaking through the First Island Chain.

It is a great challenge for Taiwan to defend itself alone. Most likely, China’s island invasion plan can be thwarted if Taiwan and the Quad stand together. Increasing Taiwan’s military cooperation with the regional mutual defense network is not only beneficial to the island but also a great advantage to Quad members and other states in the region. Without Taiwan’s involvement, the Quad is less likely to respond effectively to a Taiwan Strait contingency. However, as people enthusiastically discuss, argue, or debate with one another how the Quad and Taiwan can establish a common defense strategy and increase the corresponding military capability, going back to the beginning to persuade each other to take the next step is more important. ✪

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