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What Taiwan can learn from Russia's invasion of Ukraine?

Abstract

The latent conflict between China and Taiwan re-emerged after the Ukrainian invasion by Russia. The Ukraine conflict raised many questions related to the winners and losers of this war, the strategies that are used in this war, and finally, the outcomes of this war.

In our paper on China and Taiwan's potential conflict, we will try to model a potential conflict between the two countries. As in any invasion situation, we always have an aggressor and the aggressed. We will model our scenario as a sequential game in which the aggressor takes the first action, and the aggressed country retaliates. The main issue encountered in this type of game is that the attacked country's capacity to retaliate is limited in that, in most cases, the bombed country avoids being very offensive and tends to adopt some defensive strategies. That makes these games unbalanced in favor of the aggressor, who can afford many strategies and tools to win the game. Thus, our model will base our strategies' outcome on some literature related to these types of conflicts.

Introduction

Game theory is the mathematical study of decision-making, conflict, and social situation strategies. It helps explain how we interact in crucial decision-making processes.¹ In the globalized world we live in, any decision or strategy that any country's authorities take can impact that country and others. This created a status quo seen as the best compromise for all countries.

Notwithstanding this situation, all countries try to protect their interests while avoiding hurting other countries. This equation with multiple variables led some countries to undertake extreme actions and, more often, to their detriment in the long term.

In the last decades, we witnessed many conflicts related to specific countries' borders and sovereignty. The great powers, trying to serve their interests, are confronted with situations where they have to decide whether or not they should invade or attack another country. These decisions are often developed for years, always secretly to not let the time to the target country counterattack or resist. From the "Art of War" by Sun Tsu to "The Second World Wars: How the First Global Conflict Was Fought and Won" by Victor Davis Hanson, many masterpieces tried to depict how wars are undertaken. However, these books do not teach us how the outcomes and strategies behind these wars can be modeled.

Russia's recent invasion of Ukraine teaches us that we are not sheltered from these situations, and it is essential to know the outcomes when these situations arise and what actions need to be taken. In this paper, we will try to model a scenario similar to the Ukrainian invasion and find the best strategies each country, China and Taiwan, can take to win that war.

It is important to note that this paper's intention is not to promote war or make any panegyric of wars. Our only intention is to show how wars can be seen as a game in which both conflict countries try to maximize their payoffs. In addition, knowing the war's outcome can dissuade some countries from taking that step.

Thus, everything mentioned in this paper is done only to show how to model a scenario like the one of China and Taiwan. This model can help anticipate and prepare for a potential conflict between the two countries.

¹ BBC. (2015, February 18). What exactly is 'game theory'? BBC News. Retrieved June 13, 2022, from <https://www.bbc.com/news/magazine-31503875>

History

This part of the paper follows an article written by the Council on Foreign Relations (CFR), an independent, nonpartisan member organization, think tank, and publisher.

Taiwan, officially known as the Republic of China (ROC), is an island separated from China by the Taiwan Strait. It has been governed independently of mainland China, officially the People's Republic of China (PRC), since 1949. The PRC views the island as a renegade province and vows to eventually "unify" Taiwan with the mainland. In Taiwan, which has its own democratically elected government and is home to twenty-three million people, political leaders have differing views on the island's status and relations with the mainland.

Cross-strait tensions have escalated since the election of Taiwanese President Tsai Ing-wen in 2016. Tsai has refused to accept a formula that her predecessor, Ma Ying-jeou, endorsed to allow for increased cross-strait ties. Meanwhile, Beijing has taken increasingly aggressive actions, including flying fighter jets near the island. Some analysts fear a Chinese attack on Taiwan could potentially draw the United States into a war with China. Beijing asserts that there is only "one China" and that Taiwan is part of it. It views the PRC as the only legitimate government of China, an approach it calls the One-China principle and seeks Taiwan's eventual "unification" with the mainland. Beijing claims that Taiwan is bound by an understanding known as the 1992 Consensus, which was reached between representatives of the Chinese Communist Party (CCP) and the Kuomintang (KMT) party that then ruled Taiwan. However, the two sides don't agree on the content of this so-called consensus, and it was never intended to address the question of Taiwan's legal status. For the PRC, as Chinese President Xi Jinping has stated, the 1992 Consensus reflects an agreement that "the two sides of the strait belong to one China and would work together to seek national reunification." For the KMT, it means "one China, different interpretations," with the ROC standing as the "one China."



TAIWAN AT A GLANCE

Area

35,980 square kilometers (slightly smaller than Maryland and Delaware combined)

Form of government

Semipresidential republic

Population

24 million (2022)

GDP

\$774 billion (2021)

GDP per capita

\$33,004 (2021)

Life expectancy

81 years (2022)

Religions

Buddhism 35%, Taoism 33%, Christianity 4%, folk 10%, none or unspecified 18% (2005)

Languages

Mandarin Chinese (official), Minnan, Hakka dialects, Indigenous languages

Sources: CIA World Factbook; Taiwan Directorate-General of Budget, Accounting, and Statistics.

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Taiwan's KMT-drafted constitution recognizes China, Mongolia, Taiwan, Tibet, and the South China Sea as part of the ROC. The KMT does not support Taiwan's independence and consistently calls for closer ties with Beijing. But in the face of recent election losses, KMT leaders have discussed whether to change the party's stance on the 1992 Consensus.

The KMT's chief rival party, the Democratic Progressive Party (DPP), has never endorsed the understanding in the 1992 Consensus. President Tsai, the DPP's leader, has refused to accept the consensus explicitly. Instead, she has attempted to find another formulation acceptable to Beijing. In her 2016 inaugural address, Tsai noted she was "elected president in accordance with the Constitution of the Republic of China," which is a one-China document, and said she would "safeguard the sovereignty and territory of the Republic of China." Tsai also pledged that she would "conduct cross-strait affairs in accordance with the Republic of China Constitution, the Act Governing Relations Between the People of [the] Taiwan Area and the Mainland Area, and other relevant legislation." Beijing, however, rejected this formulation and cut off official contacts with Taiwan.

In a 2019 speech, Xi reiterated China's longstanding proposal for Taiwan: that it be incorporated into the mainland under the formula of "one country, two systems." That is the same formula used for Hong Kong, which was guaranteed the ability to preserve its political and economic systems and granted a "high degree of autonomy." Such a framework is deeply unpopular among the Taiwanese public. Pointing to Beijing's recent crackdown on Hong Kong's freedoms, Tsai and even the KMT have rejected the "one country, two systems" framework.²

² Council on Foreign Relations. (n.d.). *Why China-Taiwan relations are so tense*. Council on Foreign Relations. Retrieved June 13, 2022, from <https://www.cfr.org/background/china-taiwan-relations-tension-us-policy-biden>

Modeling of strategies

China's strategies

- Bombardment(heavy damage but no surrender)

Blitzkrieg, meaning 'Lightning War', was the method of offensive warfare responsible for Nazi Germany's military successes in the early years of the Second World War. Combined forces of tanks, motorized infantry, and artillery penetrated an opponent's defenses on a narrow front, bypassing pockets of resistance and striking deep into enemy territory. The German Air Force (Luftwaffe) provided close air support, bombing key objectives and establishing local air superiority. Radio communications were the key to effective Blitzkrieg operations, enabling commanders to coordinate the advance and keep the enemy off balance.

The article titled "The German 'Lightning War' strategy of the Second World War" explained these techniques' characteristics in detail.

These techniques were used significantly in 1939 when the Polish Army was destroyed in a series of encirclement battles. In May 1940, Hitler attacked France, his panzer divisions smashing through slow-moving French formations and cutting off the British Expeditionary Force at Dunkirk. Spectacular success was also achieved during the invasion of the Soviet Union in 1941, and large numbers of Soviet troops were captured.³

According to the British representatives of the Inter-Allied Aviation Committee, the effect of Trenchard's strategy⁴ "would be that the German government would be forced to face very considerable and constantly increasing civil pressure which might result in political disintegration." After the war, Trenchard lost no time in applying this thinking to conflict with Britain's most likely continental adversary, France: "I feel that although there would be an outcry, the French in a bombing duel would probably squeal before we did... The nation that would stand being bombed longest would win in the end." Whether bombing the enemy population would have a long-term material effect on the enemy's industrial capacity hardly mattered because air wars were expected to be short and intense. Instead, Trenchard believed that strategic air attacks would

³ The German 'Lightning War' strategy of the Second World War. Imperial War Museums. (n.d.). Retrieved June 15, 2022, from <https://www.iwm.org.uk/history/the-german-lightning-war-strategy-of-the-second-world-war>

⁴ The concept of strategic area bombing (or 'terror bombing') which the RAF adopted in Britain's Second World War on the Germans, and which it used par excellence in the Dresden massacre in February 1945, originated in the new form of warfare developed by England in 1917/8 and first implemented against German and Ottoman civilians.

trigger popular revolts: "The end of war is usually attained when one nation has been able to bring such pressure to bear on another that public opinion obliges the government to sue for peace. He became famous for arguing that in air wars, the ratio of the "moral effect" on populations to material effect stood at twenty to one(20/1). The possibility that the enemy might retaliate made getting in the first blows much more critical.⁵

Thus, we can see that bombardment can cause the bombed country to experience heavy losses but does not guarantee a victory nor make a country surrender. In the case of the China- Taiwan conflict, **China can benefit from bombardment only because it will give it air dominance, which is an additional factor or means to win the war but not the main factor.**

As for Taiwan, we can say that Taiwan will experience huge losses, but the outcome will depend on the population's resilience and patriotism. Bombardments reinforce the bombed population's willingness to fight and defend their territories, but this requires a strong sense of "nation".⁶

- Blockade(will take longer before damage)

According to the article "Could China Use a Blockade to Strangle and Conquer Taiwan?" China could attempt an air and maritime blockade around Taiwan as part of a broad strategy to pressure the country into surrender, according to a Defense Department report that was published in 2021.

If China did center its strategy on a blockade, such a respite could partly alleviate the pitfalls of gradualism. China's strategy may seem too clever by half, but it makes sense. In American memory, secession is what slaveholding rebels—evildoers and enemies of national unity—do. What U.S. president risks war to save a modern-day Confederacy? The likeness between liberal Taiwan and the Confederacy doesn't pass the giggle test. But some Americans might buy the comparison. At a minimum, Beijing could hope the analogy's visceral emotional impact would induce Washington to hesitate while debating policy and strategy toward the conflict.

The People's Liberation Army (PLA) could deploy a blockade to stretch and thin out Taiwan's defenders around the island's perimeter while Chinese forces ready a concentrated blow across the strait. China hopes direct action will yield clean and swift results, letting it present Asia, America, and the world with a fait accompli - a done deal. A blockade could enhance its prospects of success around the margins.

But wouldn't a blockade spare China the hazards, costs, and diplomatic blowback of a cross-strait assault? Well, blockades come with dangers of their own. Most notably, they are slow-moving

⁵ British values. trenchard | British Values. (n.d.). Retrieved June 15, 2022, from <http://www.british-values.com/index-to-articles/bombing/democracy/trenchard.html>

⁶ A large body of people united by common descent, history, culture, or language, inhabiting a particular country or territory.

affairs. By itself, no blockade can deliver the speedy results Chinese leaders want. Quite the reverse. Explains naval historian Julian Corbett: "Unaided, naval pressure can only work by process of exhaustion," whose effects are both gradual vis-à-vis its target and "galling both to our commercial community and to neutrals."

A long, slow grind affronts everyone is what Beijing hopes to avoid for the reasons Corbett lists. Therein lies the opportunity for Taipei.

The PLA Navy could station ships either hard by Taiwanese harbors or at a distance to intercept shipping. Its goal would be to starve the islanders, depriving them of natural resources necessary to power a modern industrial economy. That would take time and inflict massive human suffering. Starving out a free people is not a good look diplomatically—especially for a regime fresh off crushing freedom in Hong Kong and instituting concentration camps in Xinjiang.

In light of these realities, combatants typically find blockades unpalatable except as accompaniment to more direct strategies. But they are not easy even then. For example, the American Civil War demonstrates how dicey the politics, legalities, and strategy of blockades can get. Three quick points from that intra-American bloodletting.

One, what foreign powers think matters—and the language political leaders use to describe things shapes how they think and what they do. At the outset of the war, the Abraham Lincoln administration mistakenly announced that the Union Navy would impose a blockade on the breakaway Confederacy. Mistakenly because a blockade is a legal act of war, it confers status and a measure of legitimacy, signifying that a combatant might prevail and take its place in the society of nations.

Think about it. War is something lawful belligerents do when they cannot resolve their differences through diplomacy. Union leaders wanted to brand the Confederates insurgents or pirates—denying the South any patina of legitimacy and discouraging foreign powers from granting it diplomatic recognition or involving themselves. The official narrative held that the war was a purely internal matter. And yet Washington couldn't walk back its diplomatic and legal blunder. The early misstep left the possibility that European powers might interject themselves into the struggle.⁷

Thus, a blockade can be a part of a more extensive strategy that will give China a significant advantage. However, this strategy cannot guarantee a victory for China unless Taiwan decides to use deterrence as its primary strategy.

⁷ Could China Use a Blockade to Strangle and Conquer Taiwan?. <https://www.19fortyfive.com/2021/07/could-china-use-a-blockade-to-strangle-and-conquer-taiwan/>

- Amphibious invasion (Check data but seems to be less effective)

Despite Beijing's longstanding desire to invade and conquer Taiwan and achieve "one China," China simply lacks the military capability and capacity to launch a full-scale amphibious invasion of Taiwan in the foreseeable future.

As mentioned in the report titled - China Can't Execute Major Amphibious Operations, Direct Assault on Taiwan-, "China has never renounced the use of military force and continues to conduct military exercises," Shriver said.

However, China does not appear to be currently investing in the equipment likely required for a direct assault on Taiwan, such as large amphibious assault ships and medium landing craft necessary for a large beach assault, according to the report. The bulk of China's recently created marine corps forces currently lacks proper equipment or operational training.

"There is also no indication China is significantly expanding its landing ship force at this time – suggesting a direct beach-assault operation requiring extensive lift is less likely in planning," the report states.

Instead, China's recent spate of military exercises and the PLA Navy's focus on building large aircraft carriers, escort cruisers, and amphibious transport dock (LPD) ships suggest the military, for now, is geared toward blue water naval operations and smaller expeditionary missions.⁸

Thus, launching an amphibious attack will have a low outcome for China because China does not have enough equipment for that purpose. In addition, the recent exercises made by China suggest that an amphibious attack is not in preparation.

If China persists in using that strategy, this will allow Taiwan, on the other hand, to take advantage of the situation by reducing the capacity of China in terms of personnel. Taiwan has an edge in that it will see the enemy coming and can be very efficient just by using some underwater mines as Ukraine did for Odesa. However, this also prevents Taiwan from being supplied with weapons from other countries. China can then use this strategy to force Taiwan to isolate itself.

- Von-Neumann Morgenstern strategy which implies Naval, Blockade, and Nuclear escalation

This strategy is the best strategy for China to win the war.

⁸ Werner, By: Ben, et al. "Report: China Can't Execute Major Amphibious Operations, Direct Assault on Taiwan." USNI News, 3 May 2019, <https://news.usni.org/2019/05/03/report-china-cant-execute-major-amphibious-operations-direct-assault-on-taiwan>.

As mentioned in the article "China Could Choke Taiwan With a Blockade?" China could attempt an air and maritime blockade around Taiwan as part of a broad strategy to pressure the country into surrender, according to a Defense Department report that was published this year.

Over the years, many strategists have speculated that China might try to take over Taiwan. So, it seems significant that the Defense Department's annual report on China, titled Military and Security Developments Involving the People's Republic of China (PRC), raises concern about that possibility. The report claims that the People's Liberation Army (PLA) may pursue a dual-pronged strategy that includes a joint blockade, missile strikes, and the "seizure" of Taiwan's offshore islands.

"PLA writings describe a Joint Blockade Campaign in which the PRC would employ kinetic blockades of maritime and air traffic, including a cut-off of Taiwan's vital imports, to force Taiwan's capitulation," according to the report. "Large-scale missile strikes and possible seizures of Taiwan's offshore islands would accompany a Joint Blockade in an attempt to achieve a rapid Taiwan surrender." "When you surround an army, leave an outlet free." --Sun Tzu

Given that Taiwan is roughly one hundred miles from the coast of mainland China, it would not be difficult for the 320-ship-strong PLA Navy to maintain a large, concentrated naval force surrounding the island. Furthermore, Chinese drones and fighters would likely have little trouble establishing air superiority around the perimeter of the Taiwanese coastline, mainly if aircraft avoided triggering Taipei's air defenses by flying around the main island instead of over it. However, Taiwan's SkyBow III missile system has a reported range of two hundred miles. That means it could be difficult for Chinese aircraft to operate outside the line of fire. Plus, Taiwan is reportedly considering placing the missiles on one of the smaller islands closer to China. This is likely why the report indicates that any attack by China would include long-range ballistic missile strikes on Taiwan. These attacks would ostensibly be made on fixed Taiwanese air defense sites.

The report speculates that such a blockade strategy would involve electronic warfare tactics. Perhaps China could use its space assets to jam or disable Taiwanese GPS and communication systems while concurrently launching advanced cyber intrusions into Taiwanese systems.

"The PRC will also likely complement its air and maritime blockade operations with concurrent electronic warfare, network attacks, and information operations to further isolate Taiwan's authorities and populace and control the international narrative of the conflict," according to the report.⁹

China will assure a significant gain by using this strategy. On the other hand, Taiwan will be caught in a vise-like and will hardly be able to counterattack due to the multiple strategies China uses.

⁹ China Could Choke Taiwan With a Blockade? | The National Interest.
<https://nationalinterest.org/blog/reboot/china-could-choke-taiwan-blockade-199819>

Taiwan's strategies

– Deterrence strategy

When a state adopts a deterrence strategy, it signals that it does not seek a fight but still considers some interests to be so vital that they are worth fighting. It implies a defensive intent without weakness. It aims to prevent aggression while being non-aggressive.¹⁰

Deterrence requires convincing China that it would lose in a military contest, a strategy known as deterrence by denial. An alternative strategy, deterrence by punishment, attempts to persuade China that even if it could win, the costs of trying would be so significant that they would outweigh any possible gains.

Policymakers should choose a strategy by analyzing its costs and risks, balanced against the extent of the U.S. interests at stake. This policy brief concludes that the costs and risks of deterrence by denial are not justified based on U.S. interests. Although there are many compelling reasons to prefer that Taiwan remain democratic and retain its affinity with the West, these outcomes are not so vital as to merit a strategy for which the immediate consequence of failure is high-end war with a nuclear-armed adversary.

Thus, this strategy does not give an advantage to Taiwan as it could even trigger the war. China's outcome in that situation is higher than Taiwan's because a deterrence strategy from Taiwan can give some excuses to China to initiate the war. But, this strategy can allow Taiwan to gain some time. Thus Taiwan will be, to some extent, worst off by using this strategy. Using deterrence can also show China the capabilities that Taiwan has, allowing China to prepare itself better. "Mystify, mislead, and surprise the enemy"— Sun Tzu, The Art of War

– Overall defense concept

In this concept, Taiwan's armed forces finally had a logical blueprint to help them survive the first strike and wage a prolonged, decentralized, multilayered campaign of attrition.

Unfortunately, the Overall Defense Concept was more popular with American analysts and officials than it was with currently serving Taiwanese generals and admirals. Driven by personal animosity and true asymmetry undercuts the rationale for pursuing high-profile, high-prestige, and high-cost weapons, these military leaders and civilian enablers purged the Overall Defense Concept as soon as Lee retired. There are rumors that the ministry has even banned senior officers from using the term, and that message has trickled down into the

¹⁰ Freedman, L. (1970, January 1). Introduction-the evolution of deterrence strategy and Research. SpringerLink. Retrieved June 17, 2022, from https://link.springer.com/chapter/10.1007/978-94-6265-419-8_1

junior ranks. Notably, the term does not appear in either the 2021 Quadrennial Defense Review or the recently released National Defense Review.

As mentioned in the article "Taiwan's Defense Plans Are Going Off the Rails," having thrown the Overall Defense Concept in the dustbin, the Ministry of National Defense reverted to form. Except for this time, defense officials no longer bothered to pretend that Taiwan could afford enough outdated jets, ships, submarines, and tanks to deter — let alone defeat — a determined attacker. Instead, vague references to "grey-zone competition" now justify their pursuit, dressing up the old way of doing things in fashionable jargon. Meanwhile, the ministry is trying to acquire a larger inventory of longer-range missiles in the hopes that it can use the threat of punishment by missile bombardment to convince the Chinese Communist Party not to invade.¹¹

As Taiwan is not well prepared for this strategy, trying to implement it will be catastrophic as China will be well prepared and very determined. The outcome for China will be, however, very high because they will be able to break down the whole Taiwan defense system. This will pave the way to victory for China.

– Asymmetric strategy

This is one of the best strategies that Taiwan can afford.

The U.S. government believes that Taiwan's best chance for survival against Chinese invasion is in a "porcupine strategy" of asymmetric defense. It would bristle with anti-ship missiles, anti-tank munitions, and air-defense weapons, enabling a prolonged campaign of survival and attrition. These capabilities would seriously degrade, if not entirely defeat, a Chinese invasion, buying Washington time to intervene before Beijing completes and consolidates its conquest.

Thus this strategy will give Taiwan the best outcome while making China worse off.

– Ad-hoc Partnerships

According to the article "Preparing for the nightmare: Readiness and ad hoc - project 2049", while there is a good reason for senior authorities in Taiwan to hope and plan for potential ad hoc coalition operations with intervening U.S. forces, the Taiwan Relations Act (TRA) is no substitute for a mutual defense treaty. The susceptibility of Taiwan's leadership to coercion is dependent upon several factors. Perhaps most important is Taiwan's ability to survive initial strikes, reconstitute an operational capability, deny or reduce the PLA's capacity for offensive

¹¹ Taiwan's Defense Plans Are Going Off the Rails. <https://warontherocks.com/2021/11/taiwans-defense-plans-are-going-off-the-rails/>

operations, and increase the PRC's willingness to negotiate on terms more favorable to Taipei. This would include undercutting the PLA's ability to project force through passive means, striking directly at PLA power projection at its source, and/or raising the costs of PLA action through attrition. Combined with other instruments of national power, such an effort would be intended to increase the costs of PLA military action and force a negotiated settlement on favorable terms as soon as possible and before the escalation of conflict. The PLA guiding strategy of "rapid war, rapid resolution" increases Taiwan's requirement to conduct operations without the international community's help.¹²

This strategy can be efficient; however, its implementation is challenging because many Taiwan partners will not directly intervene to avoid being considered by China as Cobelligerents. China also has nuclear weapons, so no country will risk a nuclear war by intervening. The intervention's opportunity cost for the countries just by considering the nuclear matter is meager, and then *the outcome for Taiwan is low but not bad if these partnerships only concern military training. The outcome for China is also inferior as it will only use the nuclear weapon only in case of existential threat and definitely does not want to reach this point. Thus, the only benefit for Taiwan in implementing this strategy is to reinforce its army. Apart from that, none will win from this situation if it involves military intervention from other countries.*

¹² Preparing for the nightmare: Readiness and ad hoc - project 2049. (n.d.). Retrieved June 16, 2022, from https://project2049.net/wp-content/uploads/2020/09/Preparing-for-the-Nightmare_Readiness-and-Ad-hoc-Coalition-Operations-in-the-Taiwan-Strait_Stokes_Yang_Lee_P2049_200901.pdf



(Figure 1: The Taiwan Strait Area. Source: The "Project 2049 Institute.")

Modeling of final outcomes

Modeling a scenario of two countries in conflict can be challenging and requires each step or sequence in the model to be backed by some literature and previous research. Then, our objective in this part of the project is to make each payoff and strategy of both countries as plausible as possible.

First of all, the different outcomes of the war can be weighted based on the history of previous wars and the current situation in that indo-pacific region.

- **Reunification without fighting**

China can use attractive policies that align with Taiwan's values and beliefs to initiate this outcome. If China makes an effort to "seduce" Taiwan through its economic expansion and the improvement of issues associated with freedom and democracy, and if Taiwan is willing to join China and make a couple of compromises, this outcome can be reached. Thus, this outcome requires both countries to make some compromises.

"Chinese leader Xi Jinping says he prefers China take control of Taiwan through peaceful methods rather than military means."¹³ That shows the interest for China to reach reunification without fighting. China is then ready to use all peaceful means to achieve its objectives. However, for Taiwan, that reunification is not

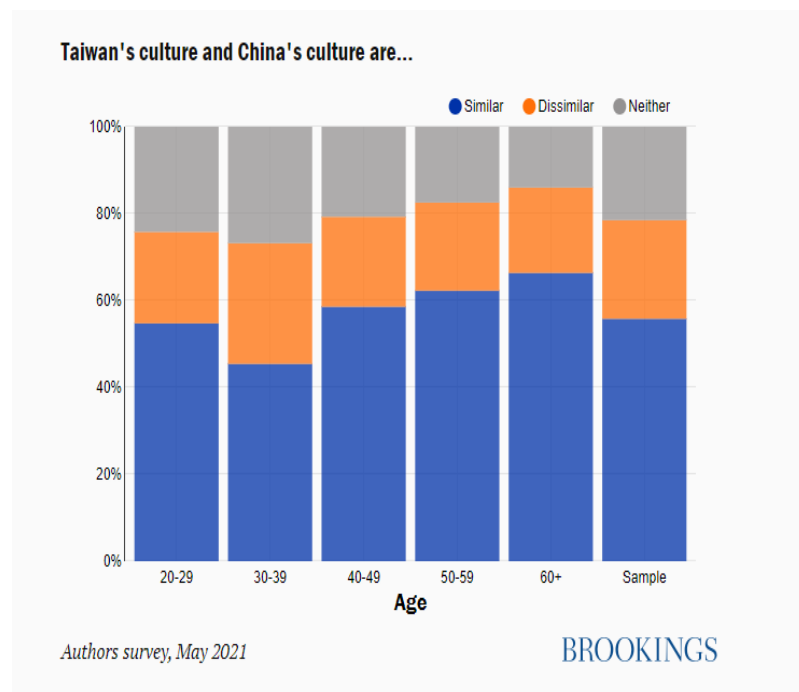
In the article "Why is unification so unpopular in Taiwan? it's the PRC political system, not just culture", a survey of 1,000 Taiwanese people in May 2021 yielded evidence that Taiwanese identity may not be primarily ethnocultural or ethnonational. Instead, the Taiwanese have a complex relationship with Chinese culture. The idea that Taiwanese people reject unification out of a sense of ethnocultural difference from China finds little support in our survey. Most respondents -56%- said Taiwanese culture was similar to Chinese culture. While that perception varied across age groups, it was the strong plurality view in all age groups and a majority view in all but one (age 30-39). The percentage that viewed the two cultures as dissimilar was roughly the same as the percentage that declined to answer.

People who identified as Taiwanese only were less likely to see a close cultural link with China than those who identified as both Chinese and Taiwanese, but even among those who identified

¹³ Shivaram, D. (2021, October 9). *China's Xi Jinping urges a 'peaceful reunification' with Taiwan*. NPR. Retrieved June 14, 2022, from <https://www.npr.org/2021/10/09/1044714406/xi-jinping-china-taiwan-peaceful-reunification>

as Taiwanese only, the proportion that saw Chinese culture as close to Taiwanese culture was more significant than the proportion that rejected that view. (There were not enough respondents in the survey who chose "Chinese only" to produce meaningful results.)

The PRC government (PRC stands for the **P**eople's **R**epublic of **C**hina) celebrates its political and economic performance at home and its rising status abroad, but Taiwan people are not impressed. In our survey, 63% of respondents had a negative view of the PRC government; only 8% had a positive view. That's especially true of young people, but there was no age group that saw the PRC government in a positive light.¹⁴



The rejection of reunification is then more linked to political than cultural matters. That posits that the idea of peaceful reunification can make both countries better off but on the condition that China changes its political philosophy.

As we are not in that situation, China will be better off than Taiwan if this type of reunification is done. It is also important to note that this outcome is different from

¹⁴ Rigger, S., Nachman, L., Mok, C. W. J., & Chan, N. K. M. (2022, March 11). *Why is unification so unpopular in Taiwan? it's the PRC political system, not just culture*. Brookings. Retrieved June 14, 2022, from <https://www.brookings.edu/blog/order-from-chaos/2022/02/07/why-is-unification-so-unpopular-in-taiwan-its-the-prc-political-system-not-just-culture/>

negotiation in the sense that there is no need for compromises from China. The country in that situation that needs to adapt and make big compromises is Taiwan.

- **slow victory/Defeat (Frozen or wearing war)**

If China decides on reunification by force, this implies going into a war with Taiwan. As for Taiwan, dashing toward independence also means going into a war with China because China sees this action as a threat to itself. These two actions by both countries will lead China to react and use one of its strategies to win that war. Among China's strategies, the best is to use a combination of strategies that implies Naval, Blockade, and Nuclear escalation. When China uses this strategy, Taiwan will have the choice among four strategies. If Taiwan, in response to China's strategy, chooses the strategy of "Overall defense," then the outcome will be a slow victory/Defeat (Frozen or wearing war) of Taiwan.

"When you do as everyone else does, don't be surprised when you get what everyone else gets."- Peter Kaufman

As the article "Attrition warfare: When even winners lose. Farnam Street" mentioned, the International Encyclopedia of the First World War defines attrition warfare as "the sustained process of wearing down an opponent to force their physical collapse through continuous losses in personnel, equipment, and supplies or [wearing] them down to such an extent that their will to fight collapses."

Attrition warfare is considered a somewhat dirty tactic, although necessary in some situations. Indeed, theorists are divided as to whether attrition is a particular tactic rather than a ubiquitous feature of all conflict.

Traditional military theorists such as Sun Tzu ("Supreme excellence consists of breaking the enemy's resistance without fighting") and Machiavelli ("Never attempt to win by force what can be won by deception") evangelized clever tactics. These methods tend to result in fewer casualties, waste fewer resources, and display superior intellect rather than strength.

Attrition warfare is usually a last resort only. And most of the time, when you win, it's only temporary. By not scoring a decisive blow, the winners leave room for the losers to believe they can win the next time.¹⁵

¹⁵ Attrition warfare: When even winners lose. Farnam Street. (2019, October 22). Retrieved June 14, 2022, from <https://fs.blog/attrition-warfare/>

From the previous definition, we can conclude that this strategy makes China worst off and Taiwan better off in some way as it allows Taiwan to resist as long as possible. Resisting the invasion is somehow a kind of victory for Taiwan as it means that the aggressor is not able to progress and then not able to win the war.

Then, an attrition strategy will make China worse off and Taiwan better off but to a certain extent. It is important to note that the attacked country will never be better off than the aggressor as the attacked country most of the time loses some territory and stops itself from using some offensive strategies beyond its borders (Most of the attacked countries try to respect international conventions as far as they can to get the support of the maximum countries).

- **Decapitation of the government**

China has the choice of four strategies. If China chooses the Blockade strategy, this gives Taiwan options among four strategies. If Taiwan chooses the deterrence strategy among the others, this leads to the Taiwanese government's decapitation, an outcome that Taiwan does not want.

According to the article "The war on Ukraine: The beginning of the end of Putin's Russia," the decapitation of the government scenario is the worst scenario for the attacked country because it prevents it from negotiating anything with the aggressor and will be fully under-controlled. Negotiation is critical in the sense that it avoids a situation of chaos.

But, it is also important to note that it doesn't mean that the aggressor will have an easy task.

The example of Ukraine shows how it can be difficult for the aggressor to "really" take control of a country by trying to settle an artificial government.

It seems likely that one of the primary goals of the Russian Attack on Ukraine was to seize Zelensky and force him to sign a capitulation agreement. But from the moment of capture, the president would no longer lead the country; and if the president becomes unable to fulfill his or her duties, the Rada speaker, Ruslan Stefanchuk, is constitutionally next in line to lead the nation. The Kremlin would need to hunt for that person and others in the line of succession, but all its efforts would be for naught. Furthermore, the Ukrainian president—or his or her substitute—does not have the power to sign any capitulation document without the parliament's collective decision to that end. And the collective will in Ukraine is singularly focused on a diametrically opposite scenario: resist the Attack, overcome the attackers, and win. No legally binding capitulation is possible.¹⁶

¹⁶ The war on Ukraine: The beginning of the end of Putin's Russia. Wilson Center. (n.d.). Retrieved June 14, 2022, from <https://www.wilsoncenter.org/blog-post/war-ukraine-beginning-end-putins-russia>

Then, even if this strategy will make Taiwan worse off, China will not be better off also.

- **Surrender**

The choice of China to use bombing as a strategy among its four strategies will lead Taiwan to choose among four strategies also. The use of the deterrence strategy by Taiwan will make it vulnerable to the bombardments of China and oblige it to surrender to avoid huge losses. This is an outcome that Taiwan does not want. This is not an outcome that Taiwan wants.

This is the third-best scenario for China in the sense that this seal the victory of China and can allow China to install the government they want.

Considering the example of world war II, every August, newspapers are dotted with stories of Hiroshima and Nagasaki, accompanied by a well-picked-over -but never resolved- the debate over whether atomic bombs were needed to end the Asia-Pacific war on American terms. What is left to learn 75 years (and with so much spilled ink) later? For Mark Gallicchio, the answer is in the domestic politics of the United States and Japan, which drive a narrative that unwinds less like a debate than a geopolitical thriller.

"Unconditional" offers a fresh perspective on how the decision to insist on "**unconditional surrender**" was not simply a choice between pressing the Japanese into submission or negotiating an end to the conflict. It also traces ideological battle lines that remained visible well into the atomic age as the enemy shifted from Tokyo to Moscow.

President Harry Truman believed **unconditional surrender** would keep the Soviet Union involved while reassuring American voters and soldiers that their sacrifices in a total war would be compensated by total victory. Disarming enemy militaries was the start; consolidating democracy abroad was the goal. Only by refusing to deal with dictators could Germany and Japan be redesigned from root to branch.

If Taiwan surrendered, this could be positive for China because it would send a strong signal to the countries willing to support Taiwan, to stop providing their help. This is one of the best ways to avoid military losses from China's side, but it is a bad scenario for Taiwan because they will allow China to install and implement whatever policies they want. This is also a bad scenario for Taiwan in the sense that it will prevent them from implementing their own policies.

- **Reunification with fighting**

If China decides to force Taiwan into a reunification, this gives China a choice among four strategies. If China chooses the Naval, Blockade, and Nuclear escalation, this will force Taiwan to also select among four strategies: deterrence strategy, overall defense concept, asymmetric strategy, and ad-hoc Partnerships. If Taiwan chooses the deterrence strategy, this will lead to a victory for China in the sense that the deterrence strategy is inefficient against the Naval, Blockade, and Nuclear escalation. The overall outcome of these previous actions is the reunification of China and Taiwan. This is not an outcome that is good for Taiwan.

As mentioned in the New York Times article "100 days of War: Death, destruction and loss", taking the example of the Russia-Ukraine war, Bruno Tertrais, deputy director of the Paris-based Foundation for Strategic Research, said both sides could become bogged down for months or years in a war of "positions" rather than movement.

"This is not a bad scenario for Russia, which would maintain its country in a state of war and would wait for fatigue to win over the Westerners," Mr. Tertrais wrote in a paper for the Institut Montaigne. "Russia would already win to some degree by putting the occupied regions under its thumb for a long time."

Nevertheless, Mr. Tertrais believes a progressive material and moral collapse of the Russian effort remains more probable, given Russian troops' low morale and Ukraine's general mobilization.

Amin Awad, the United Nations' crisis coordinator for Ukraine, said that regardless of who wins the conflict, the toll has been "unacceptable."

"This war has and will have no winner," Mr. Awad said in a statement. "Rather, we have witnessed for 100 days what is lost: lives, homes, jobs, and prospects."¹⁷

The scenario of reunification by way of war is not an advantage for China and Taiwan, but Taiwan will be more worse off as it is the attacked country. Both countries will bear a huge loss, but China can afford these losses given the size of its army's personnel.

- **Negotiated agreement**

It is important to note that the main difference between the negotiated agreement and the reunification without fighting is that the first one implies some concessions and compromises

¹⁷ Hopkins, V., Macfarquhar, N., Erlanger, S., & Levenson, M. (2022, June 3). 100 days of War: Death, destruction and loss. The New York Times. Retrieved June 14, 2022, from <https://www.nytimes.com/2022/06/03/world/europe/russia-ukraine-war-100-days.html>

from both countries while the second one only implies some compromises from Taiwan predominantly. If China chooses the strategy of Naval, Blockade, and Nuclear escalation, and Taiwan chooses the strategy of ad-hoc Partnerships among the four ones, this leads to the negotiated agreement outcome. This outcome can somehow be beneficial for Taiwan in the sense that this gives Taiwan the opportunity to defend its interests during the negotiations and avoid losing everything.

According to the article "The Taiwan Problem and China's Strategy for Resolving It", Taiwanese have become accustomed to democracy. China's political system, unlike its economy and culture, remains unattractive to them, but Beijing's international prestige is rising. So is the pride of ordinary Chinese in their country and its achievements. China can be expected to ensure that the Taiwanese appreciate, like the Chinese, that they too can gain stature from China's enhanced standing and self-confidence. The lure of identification with China looks likely to rise over time, not fall. And, when Beijing judges that the moment is ripe, it will know how to use inducements and implied threats to help the Taiwanese rationalize the agreement to a long-term cross-Strait accommodation that meets the requirements of Chinese nationalism.

In this context, China's achievement of a credible capacity to devastate Taiwan regardless of U.S. intervention in a cross-Strait conflict answers a critical operational question: why should Taiwan negotiate an agreed relationship between itself and the rest of China? No one is ever prepared to negotiate unless doing so is a path to potential benefits or a credible alternative to substantial setbacks or losses. What Beijing is offering Taipei is essentially a symbolically repackaged status quo. The offer definitively outlined in the "eight-point proposal" of 1995- confirms that, under reunification, Taiwan would keep what it already has self-government on terms it itself has decided, an unchanged political democracy, a globally connected capitalist economy, its own armed forces, responsibility for its own defense of its part of China, and so forth.

Keeping what you have is not much of an inducement unless you are afraid you could lose it. When the moment is ripe, therefore, Beijing must act to convince the Taiwanese that they will be able to retain the benefits of the status quo only if they negotiate some form of agreed status consistent with "reunification." The means to do this are increasingly at hand. Beijing will also want to drive home to Americans and Japanese that the only way to guarantee the absence of a PLA (Mao Zedong's People's Liberation Army) presence in Taiwan is for Taipei to accept Beijing's offer to rule this out. China's endgame with Taiwan envisages its eventual preemptive capitulation to the inexorable in response to an offer Taiwan cannot refuse.¹⁸

A negotiated agreement is the best scenario for Taiwan because this will avoid any attack from China, and it will give a specific power to Taiwan to defend its interests. In addition, it is also

¹⁸ The Taiwan Problem and China's Strategy for Resolving It. <https://mepc.org/speeches/taiwan-problem-and-chinas-strategy-resolving-it>

a good scenario for China as if the reunification can be made without fighting, it will be to the advantage of China. China

Game Tree

In our case, each country can know the preferences of the other country. Then, there is no missing information in our game.

In addition, we consider that all the decisions made by each country are rational, and then Elster's model can be used to explain the structure of our game tree.

The article "Game theory and the application to mainland China-Taiwan relations from 1949-1995" posits that usually, rationality leads us to what we ought and can do to attain our expected goals. Which actions will be labeled rational by what kind of criteria? To address this question, we should first scrutinize the optimizing relationship between the actors' desires and beliefs. That is, a rational action should be the best way of satisfying the actor's desires based on his beliefs. Or, in Olson's words, an individual's actions are rational when his objectives are "pursued by means that are efficient and effective for achieving these objectives." Borrowing Elster's model, Figure 1 below represents the interaction among these concepts.

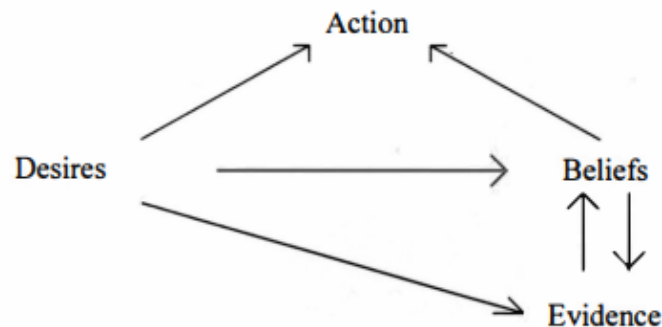


Figure 1. The Interaction Among Concepts.

The procedure for the evolution of rational action is demonstrated in the following model (Figure 2). In principle, rational action consists of three relevant operations (1) finding the best action based on given beliefs and desires; (2) formulating the best-grounded belief derived from given evidence; and (3) collecting the right amount of evidence for given desires and prior beliefs.¹⁹

¹⁹ Chang, P.-tung. (1996). Game theory and the application to mainland China-taiwan relations from 1949-1995.

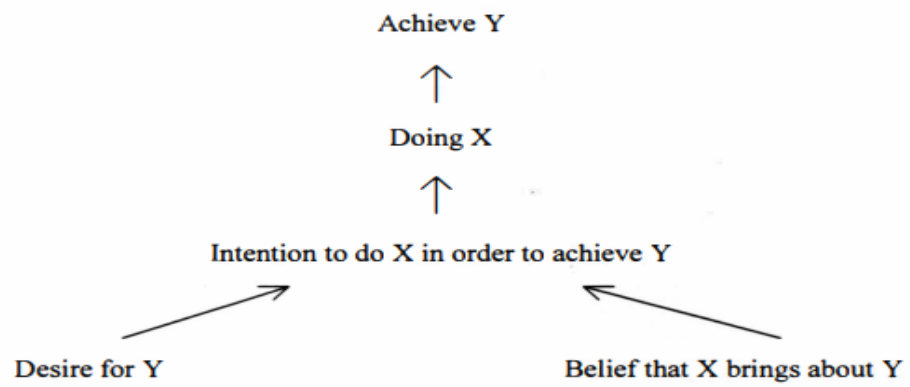
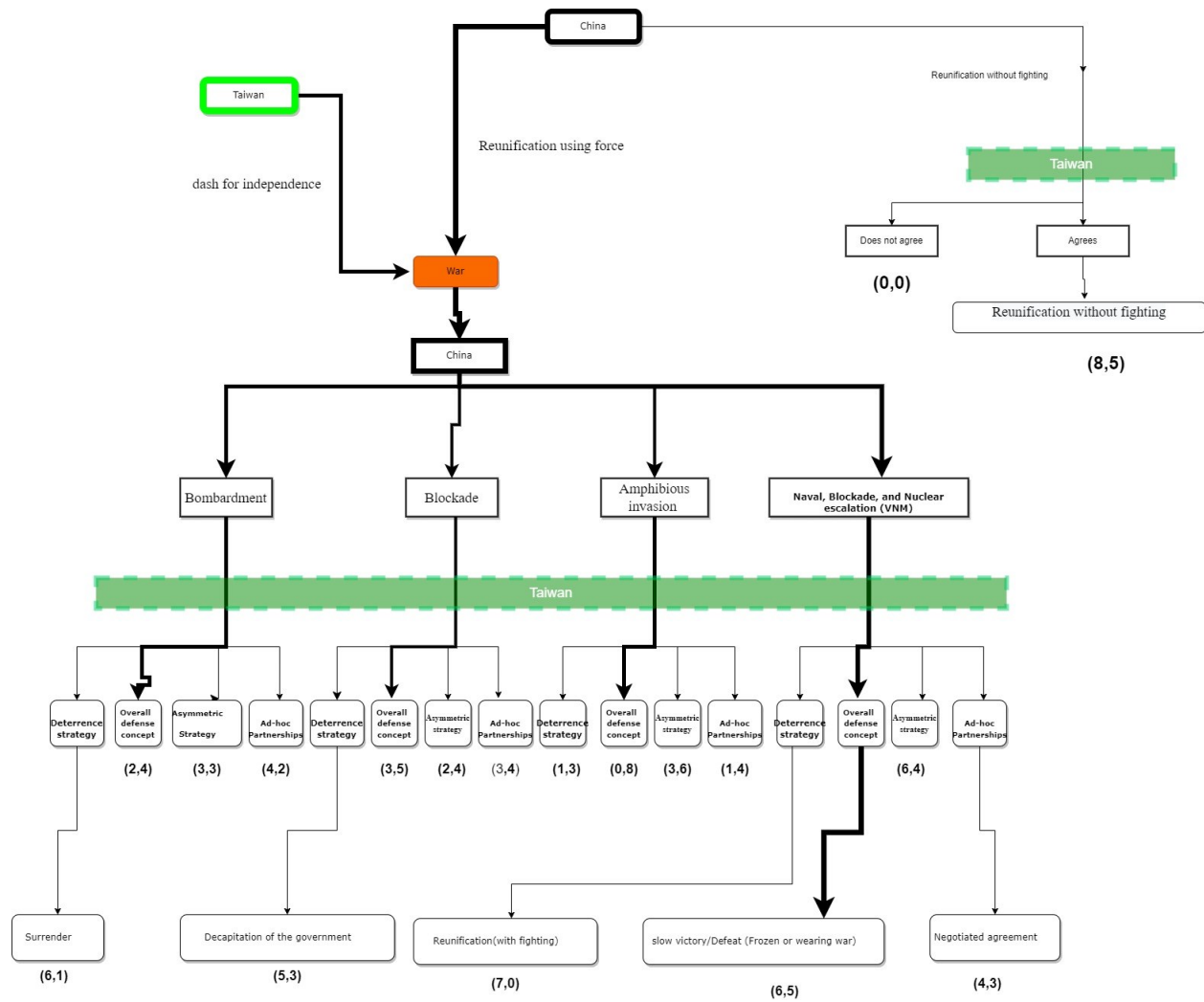


Figure 2. The Evolution of Rational Action.

Sequential Game between China and Taiwan



Strategic Game payoff matrix in the case of war

Strategic Game					
		Taiwan			
	Strategies	Deterrence strategy	Overall defense concept	Asymmetric strategy	Ad-hoc Partnerships
CHINA	Bombardment	(6,1)	(2,4)	(3,3)	(4,2)
	Blockade	(5,3)	(3,5)	(2,3)	(3,4)
	Amphibious invasion	(1,3)	(0,8)	(3,6)	(1,4)
	Naval, Blockade, and Nuclear escalation(VnM)	(7,0)	(6,5)	(6,4)	(4,3)

The Nash equilibrium in our case is the couple ([Naval, Blockade, and Nuclear escalation], [Overall defense concept]).

The dominant strategy for China is "Naval, Blockade, and Nuclear escalation."

Taiwan's dominant strategy is the "overall defense strategy."

The prudential strategy for both countries coincides with the Nash equilibrium.

Conclusion

The dominance of China in all the domains makes our game very unbalanced in favor of China. Thus, most of the strategies that Taiwan can use are defensive. In a war, the defensive strategy tends to be ineffective because the aggressor often knows how the attacked country will react in each scenario. This lack of preparation from the bombed country makes it very difficult for that country to defend itself to win a war. In our sequential game, the tempo is dictated by China. This situation gives China an absolute advantage in that war.

The best strategy for Taiwan is to place all its hope in the overall defense concept. The Ukraine war against Russia showed that this strategy is the best when the aggressor's military power is above the attacked country. This strategy, also known as the "porcupine's strategy" in reference to the animal, allowed Ukraine to gain time and prepare for a long war with Russia. To conclude, the only strategy that can guarantee the sovereignty of Taiwan and a complete collapse of the country very fast is to use the overall defense strategy as this strategy will give Taiwan a minimum control over the outcome of China's invasion." The Attack is the secret of defense; defense is the planning of an attack."— Sun Tzu, The Art of War.

"Strategy without tactics is the slowest route to victory. Tactics without strategy are noise before defeat."

--Sun Tsu--

"I have neither given or received, nor have I tolerated others' use of unauthorized aid."

Zongo Ivan

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