

# THE KOREAN JOURNAL OF SECURITY AFFAIRS

**Defeat in Afghanistan: Lessons Ignored, The Deeper Lesson:  
The American Culture of War**

*Adrian Lewis*

**Emerging Technology is Changing the Character of Warfare**

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suggestions for South Korea's space policy**

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## ***The Korean Journal of Security Affairs***

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# **Defeat in Afghanistan: Lessons Ignored, The Deeper Lesson: The American Culture of War**

Adrian Lewis

## Abstract

*The purposes of this essay are first to acknowledge the defeat of the United States in Afghanistan, to recognize that the pain and suffer in the region will continue, and to note the expanding risks from terrorist organizations as a result of the withdrawal of U.S. forces. Still, the withdrawal was the right thing to do. Second, to note that the credibility, prestige, and honor of the United States have been damage, diminished. Nation and states that rely on the U.S. for security should be asking questions. However, it is important to ask the right questions. Third, to explain what the United States is and is not. The United States is not a cohesive, unified nation-state. It is a tribal-state with deep divisions that make it impossible to fight total war or major limited war. Fourth, to identify the lessons unlearned in the war in Afghanistan. The lessons from the war are not new. Finally, to identify the deeper, more important lessons for allies assessing the reliability, capabilities, and commitment of the United States of America. The United States, the state, may show up to fight, but the American peoples, the nations/tribes, will not.*

**Keywords:** *Afghanistan, American Culture of War, Vietnam, United States, Petraeus, nation-state, tribal-state*

## **Acknowledgement and Consequences of the United States' Debacle in Afghanistan**

Recently General Colin Powell, a veteran of the Vietnam War, former Secretary of State and Chairman of the Joint Chiefs of Staff in conversation with journalist Bob Woodward stated:

Afghanistan you're never gonna win. Afghans are gonna win. They have hundreds of these (soldiers) willing to fight and die for this country of theirs. And they're doing it now, and they're going to win. That's why I don't have any problem with us getting out of there.

I agree with this assessment. It was wrong, not in the best interest of the United States, to make such an enormous investment in and commitment to Afghanistan. Still, the images of the United States' humiliating defeat in Afghanistan have been horrific, shocking, and disappointing to much of the world.

Desperate people trying to escape, hanging on to departing aircraft, falling to their death. American diplomats clearing out their embassy, fleeing by helicopter. The emergency redeployment of a brigade from the 82<sup>nd</sup> Airborne Division sent to stabilize the situation and retain control of the Hamid Karzai International Airport. Soldiers and marines trying to hold the airport perimeter against fearful, panic-stricken crowds of Afghans. Chaotic scenes of children and babies being handed over wire fences by crying, grieving parents. The Taliban's dramatic entry into the Presidential Palace, hours after President Ghani fled the country. The desertion and disintegration of the Afghan National Army and security forces, forces that the United States and its allies has spent two decades training and billions of dollars arming and equipping. Taliban fighters in control, patrolling the streets and Kabul. Taliban soldiers heavily armed, equipped with American weapons, driving through the streets in American military vehicles, and wearing American uniforms. Billions of dollars of American weapons, aircraft, and technologies (night vision goggles, communications equipment, GPS systems, etc.) left behind, now in the hands of the Taliban. A suicide bomber killing 13 American soldiers and marines and at least 170 Afghans, including women and children. And an American drone strike wiping out an entire Afghan family, including women and seven children. Internationally it has been gut wrenching to watch the events of 25-27 August 2021. For those who served, for soldiers and marines, not just Americans, but also soldiers of allied states, and their families, this has been a particularly difficult period, because they committed parts of their lives to the security of Afghanistan. They formed bonds of friendships with people the United States was trying to help, but ultimately betrayed and abandoned. After 2,452 American military deaths, and over 20,000 wounded, the United States

abandoned Afghanistan. Now it all seems a waste.

And the long-term consequences of the evacuation of Kabul may be worse than the evacuation of Saigon in 1975. Many Afghans now live in fear and are hiding, afraid that their support of the banished government and work with Americans will mean a death sentence. Many fear the return of Islamic Sharia Law. Already we have seen public execution, public beatings of women. We know that former police-women have been targeted, beaten, and executed, their bodies mutilated. Already women and girls have vanished from school and jobs and ways of life they have known for decades. Starvation and the complete collapse of the state now loom over the peoples of Afghanistan. Children are dying from malnutrition. Without significant external help, a humanitarian crisis is in the making. In other words, the tragedy has not ended. It is painful and sad to watch. There is and will continue to be death, pain, suffering, and physical and emotional damage to the peoples of Afghanistan and the region as a function of the debacle of the United States. We can anticipate that the threats from this region will grow, probably significantly. Defeat will expand the opportunities for Islamic terrorists. Intelligence agencies are already reporting growth in the threat from ISIS. Yes. It has been ugly, very ugly. And for many the peoples of Afghanistan, particularly women and girls, the ugliness is just starting. We all know what the Taliban was before 9/11. How did we get here?

## **Part II: Asking the Right Questions**

*Why do nations and states repeat the same failed behaviors? Why do people persist, continue to practice and implement failed strategies and flawed policies?* It is comforting to believe that human beings are rational, logical beings who learn from mistakes and improve their performance over time. While comforting it is not true. Culturally imbued norms of behavior, culturally imbued ways of thinking and acting, culturally imbued values, attitudes, ethics, and beliefs, no matter how destructive or dysfunctional, frequently override commonsense, logic, reason, laws, treaty obligations, and cumulative learning. Again and again, in all human practices and interactions, culture is the dominant influencer. While it is important to assess performance and identify where improvements can be made, the more profound question is: why do states and nations continuously make the same mistakes and repeat failed practices? Why do they ignore the lessons of the past? Why do they ignore facts, empirical data, and even commonsense?

Political leaders, foreign policy experts, and military leaders in all parts of the world are today assessing America's defeat in Afghanistan. Let me state that a cold, dispassionate, objective analysis of failure is not a sterile, academic effort. It matters, and it should be done professionally and with integrity. Such an

assessment matters to the peoples of Korea, Germany and Japan, the peoples of Israel and Australia, and people in all parts of the Earth, particularly those nations and states that are in some way reliant on the United States for their security. I stress this point because too many nations, too many people look at the United States through rose-colored glass. They have embraced the myth of *American Exceptionalism*, “a Shining City on a Hill” that Ronald Reagan and George H. W. Bush liked to hold up to the world. This myth is part of a long-running American disinformation campaign. Time and again, the United States has abandoned allies, betrayed people who supported it, violated the sovereignty of other countries, violated its (own) laws and ethical proclamations, committed crimes against humanity, and lied to nations, states, and people. In April 1978, following another American debacle, General Westmoreland wrote:

South Vietnam no longer exists; it has been gobbled up by North Vietnam following blatant aggression. The flicker of freedom there has been extinguished probably forever. Our erstwhile honorable country betrayed and deserted the Republic of Vietnam after it had enticed it to our bosom. It was a shabby performance by America, a blemish on our history and a possible blight on our future. Our credibility has been damaged. In our national interest, that unhappy experience should not be swept under the rug and forgotten. *There are lessons to be learned and vulnerabilities in our national system that need careful examination.*

Afghanistan too has shown light on the value of America’s promise. Foreign governments should ask: is the United States a reliable partner, a reliable ally? Will the will of the U.S. government collapse under the right pressure, and will the U.S. again abandon an ally, betray a people? Will war in the Indo-Pacific have the support of the many American tribes/nations? Are the American tribes/nations capable of unified action in war? Is the United States a declining power, and if so, how rapid is that decline? Is the United States capable of maintaining consistent foreign and military policies, or will it change with every new President? With the rise of China, the answers to these questions is more important than during Cold War. Military capabilities cannot be built overnight. New alliances cannot be formed in weeks. Trust, legitimacy, respect, credibility all take time to form. The answers to these questions are important and should cause America’s allies to think critically about the nature of their relationship, the nature of the commitment of the government of the United States.

In France, the political leadership, has openly spoken of realigning its relationship with the United States of building-up European Armed Forces. In India the government is troubled by rise of the Taliban an ally of Pakistan, but has moved closer to the U.S., forming the “Quad.” In Australia political leadership

has decided to move closer to the English-speaking powers, forming the AUKUS alliance, which advances Australia's access to U.K. and U.S. nuclear submarine technologies, but may not enhance Australia's security. It was a cultural decision. *Nations and states reliant on the United States for security should have a Plan B, an alternate plan. They should engage in contingency planning (I am sure they already have). The United States has not always been a reliable, trustworthy ally, particularly with non-Western states.*

### **Part III: What is the United States of America?**

Within a state there can exist multiple nations, cultural entities, and the greater the fragmentation of the cultural body, the nation, the less able the state is to conduct total war or significant limited war. Iraq is an example, a state, made up of three major nations, Shia, Sunni, and Kurds.

To answer the questions posed above, allies need to first understand what the United States is and is not. Today the United States could not fight World War II. The United States is no longer a cohesive modern nation-state. It is a state, like Iraq, made up of many nations, many tribes, that, in many cases, are incapable of working together to achieve even minor objectives, such as, getting the lead out of drinking water, or taking the COVID-19 vaccination. The United States, the state fought the war in Afghanistan. The American people, the nations did not. In fact, it is a mistake to say that America was defeated in Afghanistan. *The United States, the state, was defeated. The American peoples, the nations, were not defeated. They were never at war.* In the classic sense of the word, the United States should not be thought of as a *nation-state*, but more accurately as a *tribal-state*. The American people, the many American tribes, did not support the war and did not show up to fight it. With the help of contractors, PMFs, (Private Military Firms) essentially mercenaries, who have made trillions of dollars on war since 9/11, the state—the government and the armed forces—fought the war. In the first edition of, *The American Culture of War*, published in 2007, I wrote:

After the horrendous attack on the United States on September 11, 2001, the Bush Administration made no demands on the American people. It instituted tax cuts and told the American people to "go shopping." Out of more than 300 million Americans the burden of war fell on less than 1 percent of the American people. The war was not a national effort. In the years that followed the Vietnam War, with the end of the draft, the Armed Forces of the United States form a "military cluster" (0.5 of U.S. households) a professional fighting force with its own unique system and

set of values, ethics, and beliefs. They would fight the future wars of the United States. The most significant transformation in the American conduct of war since World War II and the invention of the atomic bomb, was not technological, but cultural, social, and political—*the removal of the American people from the conduct of war.*

In 2003, the United States initiated a second, unnecessary war in Iraq. In two long wars, the government of the United States failed to require military service from the American people. The American people don't show up to fight the wars of the United States. They have not shown up since the Vietnam War. The United States, with all its great power, was stretched thin in the type of combat power necessary to fight in Iraq and Afghanistan. The consequence was that soldiers and marines died and were unnecessarily wounded in an insurgency war that might have been avoided had the Bush White House and the Rumsfeld Pentagon deployed sufficient numbers of troops at the outset to win the peace. They did not deploy them, because they did not have them, given world-wide commitments; they believed a Revolution in Military Affairs had fundamentally changed the nature of warfare, and they were afraid to call upon the American people to serve. In 2007, General George W. Casey, Chief of Staff of the Army, before the Senate Armed Service Committee stated:

While we remain a resilient and committed professional force, our Army is out of balance for several reasons. The current demand for our forces exceeds the sustainable supply. We are consumed with meeting the demands of the current fight and are unable to provide ready forces as rapidly as necessary for other potential contingencies. Our Reserve Components are performing an operational role for which they were neither originally designed nor resourced. Current operational requirements for forces and limited periods between deployments necessitate a focus on counterinsurgency to the detriment of preparedness for the full range of military missions. Soldiers, families, and equipment are stretched and stressed by the demands of lengthy and repeated deployment with insufficient recovery time.... Overall, our readiness is being consumed as fast as we can build it.

What he really meant was that readiness was being consumed *faster* than the Army could build it. Out of 300 million Americans, less than one percent showed up to fight the war, and the U.S. government, the state, made no effort to call upon the nations to serve. The war went on for twenty years, in part, because the United States lacked the personnel to fully implement its own doctrine, and the American tribes were uncommitted. Since General Casey spoke these words, the

fragmentation, the disintegration of the American national fabric into uncooperative tribes has continued. Today the U.S. Army is significant smaller than it was on the eve of the Korean War, and the state cannot call upon the American tribes to serve.

#### **Part IV: The Lessons of the Wars in Afghanistan and Vietnam: Nothing New**

What follows is divided into two parts: First, an assessment of lessons learned in Vietnam and Afghanistan. The main point here is that while there are lessons to learn from defeat in Afghanistan, there is nothing new. We already had the lessons. *We choose to ignore them.* Second, I would like to identify the deeper lessons from America's defeat.

In 2015 in an article titled, "Reflection by General David Petraeus, USA (Retired) on the wars in Afghanistan and Iraq," Petraeus stated:

In fact, I will diverge now and give you the final lesson.... Before you invade a country, you have to truly understand the country in a granular and nuanced way, and need to have thought through all of the conceivable outcomes—"how does it end,"

For professional soldiers, for people who study war, this is commonsense. Many of the lessons of the Vietnam and Afghanistan wars are commonsense, or lessons delineated by Sun Tzu, in *The Art of War*, or Clausewitz in *On War*. Many of the lessons learned were, in fact, *lessons unlearned* from the war in Vietnam. Today many students of war are trying to analyze what went wrong in Afghanistan. How did the most powerful state on Earth fail to achieve its political objectives in Afghanistan? The analysis of what happened in Afghanistan will go through phases. We are now in the angry phase, when news commentators, retired generals, and others attack President Biden for his decision to withdraw, ignoring the fact that Donald Trump initiated the withdrawal process, probably under the influence Putin, and that the American tribes had withdrawn their support. It will take time for the deeply felt emotions to dissipate, and a more sober, objective analysis is forthcoming. However, we already have a fair assessment of what went wrong. For many students of war the Vietnam War and the twenty years of war in Afghanistan and Iraq provided many of the lessons.

General David Petraeus was the senior commander in both Iraq and Afghanistan. He became the CENTCOM commander, and is credited with reversing the situation in Iraq during the "Surge," under the Bush Administration. In this interview, Petraeus sought to delineate five "strategic lessons" from the

wars in Iraq and Afghanistan. They echo the lessons identified during the long war in Vietnam. In the wake of the Vietnam debacle, General Bruce Palmer, Jr. sought to delineate the “strategic lessons”. General Palmer served under General Westmoreland and was a Field Force commander in Vietnam. Palmer wrote:

One larger lesson concerns the national interest. From the beginning our leaders realized that South Vietnam was not vital to the U.S. interests. Yet for other reasons the nation became committed to the war.

Again, this is commonsense. Many of the strategic lessons from the American war in Afghanistan are fundamentally the same as those from the Vietnam War. In fact, when General Petraeus developed his famous *Counterinsurgency Manual*, he went back to the Vietnam War for lessons and inspiration. In the few pages permitted, I cannot produce a comprehensive list of lessons learned; however, let me highlight a few Petraeus emphasized:

before you decide to conduct an initiative an operation, or a policy ask whether that policy or initiative will take more bad guys off the street than it creates by its conduct.... We created hundreds of thousands of enemies in the end with those two policies.

And by the way, another huge strategic lesson—perhaps the top one is that a counterinsurgency campaign is inordinately more difficult if the host nation leadership is less than cooperative, and if the enemy enjoys significant sanctuary outside areas in which you can operate.

“Afghanistan does not equal Iraq.” I then laid out ten or so factors and showed how Afghanistan was arguably more challenging in a number of them at the very least: a lack of revenue generation; the major export crop was illegal; the effects on rule of law; the corruption problem; biggest factor was that the leaders of the Taliban and the other insurgent elements had sanctuaries in Pakistan that put them largely beyond our reach.

These *are not* brilliant new insights. In my book *The American Culture of War*, I endeavored to combine the lessons delineated by people such as Secretary of Defense, Robert McNamara, Generals William Westmoreland, Bruce Palmers, Admiral U.S. Grant Sharp, Journalist David Halberstam, and Niel Sheenan, Professors George Herring, Marilyn Young, and others into a list for my students. I have enclosed an abbreviate list of the strategic lessons of the Vietnam War that apply to the war in Afghanistan for consideration.

—The U.S. Army could train and equip the ARVN, but it could not create the quality and quantity of patriotism and nationalism that were necessary to produce

a modern nation-state. It could not develop in the time available the connectedness necessary for people to fight and sacrifice for an idea, and imagined community, the fledgling nation-state—Republic of Vietnam.

—The government of South Vietnam and the ARVN lacked the leadership, vision, cohesion, legitimacy, commitment, and consistency to organize and fight effectively against the Communist North. Corruption diminished the effectiveness and legitimacy of the government. The Saigon government became too dependent on U.S. leadership, resources, and know-how. It could not survive alone. The departure of American forces destroyed the confidence of the Saigon government and the ARVN.

—Geography and terrain precluded positive control of the borders of South Vietnam, meaning that North Vietnam Communist forces could infiltrate along a 1,000 mile-long front. There was no way to isolate the battlefield.

—The U.S. Army and Marine Corps fought the entire war on the strategic defense. There was no way to win. On the defense, all that was possible was not to lose. Victory, in the classic sense, required offensive operations of strategic importance.

—The PRC precluded major strategically offensive operations against North Vietnam. The geographic circumstances of Vietnam, a contiguous border with the PRC, meant that the Chinese could intervene with significant forces at any time.

—Tactically, the VC and NVA were faster than American ground forces, giving them the ability to disengage, to flee the battlefield and live to fight another day. They were lighter, carried less equipment. They had superior knowledge of the terrain and better intelligence. They did not rotate every twelve months, and thus had greater experience. They had networks of tunnel systems and networks of connections to the people that helped conceal their movement.

—Airpower, deployed under the doctrine of Graduate Response, did not and could not destroy the will of the people or the will of the Communist government in Hanoi. In fact, no airpower doctrine known, short of extermination warfare, would have been decisive in Vietnam. Airpower could not isolate the battlefield, destroy the enemy's means of production, stop the flow of men and material down the Ho Chi Minh trail, or stop the flow of resources from the PRC or Soviet Union.

These lessons from the Vietnam War are also applicable to the war in Afghanistan.

—The U.S. supported government in Kabul failed. Corruptions diminished its effectiveness, and destroyed its legitimacy. The United States tolerated this corruption, wasting billions of dollars. The government in Kabul, like the government in Saigon, became too reliant on the U.S. leadership, resources, contractors, and military for stability and security.

—The Afghan National Army and security forces failed. They became too

reliant on the U.S. The U.S. paid their salary, provided them weapons and training; however corruption damaged efforts to build a professional, loyal fighting force. The officer corps was not fully professionalized, many officers stole from their soldiers. Few Afghan soldiers fought out of patriotism, loyalty to the service or loyalty to the country. We could train people, but we could not make them fight.

—Pakistan provided an open border to the Taliban, as Petraeus noted. The government of Pakistan was not an honest broker. It played both sides. Its intelligence agencies and security forces secretly supported the Taliban and for many years hid Osama Bin Laden. Consequently, there was no way to complete the destruction of the Taliban, no way to isolate the battlefield.

—The nation-building effort failed. The U.S. was ignorant of Afghan languages, culture, and customs, as they were of the Vietnamese language and culture. You cannot win the hearts and minds of people you do not know or understand. Many corrupt Afghans played the Americans, took advantage of the ignorance of their language and culture, and walked away with billions of dollars. The U.S. could not build a nation-state in Vietnam, Afghanistan or Iraq.

—The U.S. Army and Marine Corps developed doctrine they could not employ. The counterinsurgency doctrine in Iraq and Afghanistan required more soldiers and marines than the United States could put in the field. The absence of the American people made it impossible to employ counterinsurgency doctrine, which required a significant number of soldiers.

The limitations of this paper mandate an abbreviated assessment. Still, what is evident is that the lessons were not new. In 2017, I wrote:

The inability of the government of Afghanistan to enforce the laws, to secure the people, and widespread corruption diminished the legitimacy of the Karzai government. By 2006 the Taliban had reorganized and were on the offensive and they had a new strategy. Given the geographic, political, cultural, ethnic, and economic situation in the region, the United States and its allies never had the wherewithal to complete the destruction of the enemy.

There are no new lessons.

## **Part V: The Deeper Lessons: The American Culture of War**

To maximize security and a nation's combat power, that nation must understand the cultures of its enemies and its allies. The consequence for failing to understand your enemies' and your allies' culture and practices of war can be defeat.

What America's allies should study is not primarily the lessons of Afghanistan or Vietnam, but how and why the decisions for war were made and why American political and military leaders continue to ignore the lessons of war? Why did the United States Government, the state, make such a commitment to Afghanistan, to Iraq? The attack on 9/11 does not explain twenty years of war and nation-building and the expenditure of trillions of dollars. How the state went to war is equally important? In reassessing the United States as an ally, the state, and the tribes/nations must both be considered.

Ali A. Allawi, Iraq's first post-war civilian Minister of Defense, wrote:

In official Washington, the ignorance of what was going on inside Iraq before the war was monumental. None of the proponents of the war, including the neo-conservatives, and also no one in the institutes and think-tanks that provided the intellectual fodder for the war's justification, had the faintest idea of the country that they were to occupy.

No wonder that cynicism runs deep regarding America's true motives. Seizure of the oil fields, building Iraq as a base to subvert Iran, breaking up the country as part of a redesigned, fragmented Middle East, removing Iraq as a threat to Israel, these were all arguments held out as the "real" motives behind America's push into Iraq. There was no "American party" in Iraq, no people who were open advocates of an alliance with America.... America's only allies in Iraq were those who sought to manipulate the great power to their narrow advantage.

The United States was ignorant of the Iraq it invaded. It did not care. It did not matter. The decision for war was not primarily a function of the threat posed by Saddam Hussein's Iraq. It was a function of internal U.S. politics, the demands of multiple interests. (No weapons of mass destruction were found in Iraq. In this regard, the tens of billions of dollars spent on the fifteen intelligence agencies were a waste.). In a letter to President Clinton dated January 26, 1998, neoconservatives from an organization called The Project for a New American Century, advocated war to remove Saddam Hussein. The U.S., the state, elected to go to war. Obviously, these are significant issues. I can only sketch partial answers. Consider the conduct of the wars by the state, and second, the condition, the health of the many tribes/nations.

—Corruption. War in American is big business. An estimated \$8 Trillion has been appropriated since Osama Bin Laden's attack on 9/11. The wars in Afghanistan and Iraq, and other operations, have made defense contractors fabulously wealthy. There is no way to account for this enormous sum of money.

Private military firms, heavily employed because the Army and Marine Corps were too small, did not fight to achieve the political objectives of the United States. They were there to make money, to maximize profits, and they did. The longer the war, the more money they made. These PMF lobbied the White House, the Pentagon, and Congress for lucrative contracts. They contribute hundreds of millions of dollars to the political campaigns of Presidents, Senators and Representatives. Retired generals and admirals are also insiders working with and for contractors. Many become wealthy. Dick Cheney, former Secretary of Defense and Vice President, was also the former CEO of Halliburton, a Defense contractor that was awarded tens of billions in no-bid contracts. *Political and military leaders profiting from the wars they initiate and execute is corruption.*

—Military leadership, generals and admirals failed. Leadership at the highest levels of the armed forces failed. The Generals continued to promote themselves and award themselves medals without achieving victory, without achieving the political objectives of the United States, without a realistic assessment of the situation. Tom Ricks, the author of *The Generals*, wrote: “In the wars of the past decade, hundreds of Army generals were deployed to the field, and the available evidence indicates that *not one was relieved by the military brass for combat ineffectiveness. This change is arguably one of the most significant developments in our recent military history—and an important factor in the failure of our wars in Afghanistan and Iraq.*”

—Militarism, outspending all other nations combined to maintain the largest and most advanced armed forces on Earth, possessing enormous military capacity creates a preference for military solutions, over diplomatic, economic or social solutions. One of the reasons the United States went to war in Iraq is: *it looked easy, and there was no threat to not using military force.* With the collapse of the Soviet Union the threat from near-peer powers went away. As a consequence, the operational tempo of the armed forces increased dramatically. Iraq’s military capacity versus the U.S. capacity caused political and military leaders to believe it would be a piece of cake, a short, victorious military campaign. And, most importantly, because it looked easy, there would be no need to call upon the American tribes to serve.

—American Military Methods and Practices. The United States invests heavily in military technologies. The Armed Forces have developed methods and practices designed to kill people most efficiently and effectively without risking American lives. American methods often alienate people and motivate them to fight against us, for example, the employment of drone strikes that kill innocent civilians too frequently. The United States has killed a lot of innocent civilians in Iraq, Afghanistan, Syria, and other parts of the world with drone strikes.

—Cultural/Racial Affinity. Americans lacked cultural affinity for the peoples of Vietnam, Afghanistan, and Iraq. These people lacked the value of, for example,

the British, or the Germans. These people were not part of Western culture or civilization; hence, it was easier to kill, betray, and abandon them. The on-going immigration fight in the United States is in part a function of the American practice of devaluing some people. The former President of the United States, Donald Trump, referred to some countries as “Shithole” countries, and cut off all immigration from these countries. Trump enjoyed the support of the majority of white Americans tribes. Some American tribes are too inward-looking, too chauvinistic to succeed in an insurgency war. The United States cannot win the hearts and minds of people in foreign lands. And men of honor and integrity, men who obey the laws and sovereignty of other countries, men who respect human rights and the dignity of all people, do not always lead the United States.

Again, we can only scratch the surface here. While the defeat in Afghanistan is significant, a broader perspective is necessary. The debacle in Afghanistan is just one indicator of the health of the United States of America. Consider the following facts: The death of more than 750,000 Americans from COVID-19, the worse performance on Earth. The inability of large numbers of Americans to accept the science behind the vaccine and their refusal to get vaccinated, which means more deaths. The epidemic of drug usage. In 2020 an estimated 93,331 people died of drug overdoses. That is more than one and half times the number of Americans who died in the Vietnam War. The incarceration rate, the highest in the world. In California, there are more people in prison than in college. The epidemic of mass shootings. The epidemic of obesity and diabetes. The election of Donald Trump, a man who bragged about assaulting women. The effectiveness of the Russian disinformation campaign that influenced the outcome of the election in 2016, by exploiting tribal divisions. The January 6, 2021, Trump insurrection, attempted overthrow of American democracy. The rise of hate crimes. The United States of America is a *tribal-state*, at war with itself.

## **Conclusion**

*The tribes of America are deeply divided and incapable of consistent, coherent, major efforts in war. Seventy percent of Americans are unfit to serve in the Armed Forces of the United States. While the United States, the state, possesses enormous military capacity, it cannot call upon the American people to serve, which means it cannot fight a total war, and culturally it cannot win an insurgency war. In reassessing alliances, and the reliability and capabilities of allies, a complete picture is necessary.*

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# Emerging Technology is Changing the Character of Warfare

Hammes Thomas

## Abstract

*Emerging technology is changing the character of warfare. The combination of pervasive surveillance with cheap, long-range, autonomous precision weapons means the defense is becoming tactically dominant again. This offers great opportunities for the ROK to increase the effectiveness of its defenses while spending less money.*

**Keywords:** *Warfare, Technology, Advanced Manufacturing, Drones, Missiles, IEDs*

The convergence of 21<sup>st</sup> Century technologies is fundamentally changing the character of modern warfare. While the nature of war, what it is, will always include the tensions of Clausewitz's primary trinity – passion, chance, and reason – as well as fog and friction, the character of warfare, how it is fought, is changing rapidly. Since the Germans developed *Sturmtruppen* tactics near the end of World War I, offense has been the dominant form of war.<sup>1)</sup> However, today the balance is shifting back to what Clausewitz termed the stronger form of war – the defense. This is not a unique occurrence but part of a continuing pattern of shifts between offensive and defensive dominance of the tactical battlefield.

While this paper will discuss emerging technology as a primary driver of this shift, it is very important that the reader understand that major changes in the character of warfare also require changes across the political, social, and economic fields. Technology alone does not force a shift in the character of war, nor is it even essential for one to occur. For instance, prior to the French Revolution, European warfare was a matter for kings and fought by small armies of full time professional soldiers. The French Revolution, both a political and social revolution, changed all that. It made war a matter that mobilized the entire population. As a result, the French could put armies numbering hundreds of thousands in the field. And yet there was little technological change during over 20 years of war. *HMS Victory*, Lord Nelson's flagship, was 40 years old at Trafalgar. The Land Pattern, or Brown Bess, Musket remained the standard weapon of the British Army throughout the war. In fact, it was in service from 1722 until 1838.<sup>2)</sup> Yet, even without accompanying technological change on the battlefield, the Wars of the French Revolution and the Napoleonic Wars represented a true Military Revolution. For the first time in the modern era, whole societies mobilized and major nations all supported armies with hundreds of thousands of men.

At other times, technology has been essential to change. World War I's Western Front stalemate saw all the armies employing the advantages that flowed out of the French Revolution. The mass mobilization of their populations was supported by the mass production enabled by the Industrial Revolution. Yet the *Sturmtruppen* tactics of 1918 could not have evolved without the light automatic weapons and mortars that made the offensive work again at the tactical level. And only the interwar development of aircraft, armor, motor transport, and radio communications enabled the Germans to transform *Sturmtruppen* tactics into *Blitzkrieg* to restore the offense at the operational level. It also illustrates that simply having access to new technologies does not mean a nation can use them effectively. The British, French,

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1) Bruce M. Gudmunsson, *Stormtroop Tactics: Innovation in the German Army, 1914-1918*, Praeger Books, 1995.

2) Mark Miller, "The Musket that Changed the World: The Land Pattern 'Brown Bess'," *American Gun Digest*, September 27, 2020, <https://www.gunsamerica.com/digest/the-musket-that-changed-the-world-the-land-pattern-brown-bess/>, accessed November 7, 2021.

Russians, and Americans did not employ *Blitzkrieg-like* tactics until after the Germans demonstrated them decisively by conquering France in May 1940.

Today, rapid and far-ranging advances based on economic and technological changes are fundamentally changing the character of war again. They are creating a world in which pervasive surveillance will enable massed, long-range precision fires based on civilian technologies but only for those who, like the Germans, can anticipate how these technologies will change warfare. Cameras, accelerometers, GPS receivers, Synthetic Aperture radars (SAR), infrared sensors, and system electronics have all been miniaturized to facilitate better cell phones and autonomous commercial vehicles. These same systems, as well as emerging ones like non-GPS navigation, are enabling cheap guidance systems for a wide variety of weapons.

Advanced manufacturing – robotics, 3D printing, task-specific artificial intelligence, and other advances – are making it possible to produce drones and missiles at dramatically less cost than traditional manufacturing. As always, the Korean battlefield will be one of massed forces. But this time, the mass can be augmented by precision. As the technologies essential to precision weapons have become orders of magnitude cheaper, it has become possible to produce precision weapons systems in large numbers and integrate them into land, sea, and air systems. In 1989, a commercial GPS receiver cost over \$100,000 and weighed 53 pounds. Today, they are available on Amazon for under \$100 and weigh ounces. Synthetic aperture radars are available for \$250 and have much greater resolution and reliability than their very expensive predecessors. LIDAR (light detection and ranging) costs have also come down by a factor of over 100. The cost of computing power has dropped even more dramatically. In 1980, a gigabyte of memory cost over \$6 million, today it costs 16 cents.

The widespread commercial availability of these technologies is leading us to a battlespace where persistent surveillance will guide masses of precision weapons in attacking any exposed targets.

## **Persistent Surveillance**

The effective employment of extended range precision weapons requires highly capable, intelligence, surveillance, reconnaissance (ISR) and command and control (C2) systems. Ongoing massive global commercial investments in two fields – commercial space and commercial drones – are making this exquisite ISR available to all nations. Commercial investment in space means that constant surveillance of the planet by visual, infra-red, multi-spectral, radar, and electromagnetic sensors will be here very soon. Led by Planet Lab, a number of commercial companies already image the entire planet daily with resolution down to three meters. As part of their business models, these companies also provide interpretation of the fused visual,

radar, and electronic emissions imagery they sell.<sup>3)</sup> Several companies have even moved beyond the optical frequencies. HawkEye360, a private company, developed a satellite that uses radio frequency (X-band, S-band, and VHF) monitoring and analysis to provide locations of specific ships and units to within 3 kilometers. The company plans to place a constellation of 18 in orbit.<sup>4)</sup> This constellation will allow revisit times of less than an hour.<sup>5)</sup> By 2022, Capella Space will have its own 36 satellite constellation that will provide SAR imagery of anywhere on the planet every hour.<sup>6)</sup> SAR's ability to see through clouds and even heavy vegetation means it provides a massive increase in the value of commercial satellite imagery to military forces. Other firms and scientific researchers are already employing LIDAR satellites to survey the earth. LIDAR's ability to see through heavy vegetation has recently led to the discovery of thousands of ancient Mayan structure in the jungles of Central America. This effort was led and funded by a U.S. university which equipped a single small aircraft with LIDAR and in two days conducted a detailed aerial survey of 237 square kilometers. LIDAR penetrated the thick jungle canopy to detect the hard stone ruins in enough detail the researchers could identify 7,900 two to three room dwellings in numerous communities as well as the roads and water infrastructure that supported the communities.<sup>7)</sup>

As noted, these companies sell not only raw data but finished, integrated intelligence products that can localize a target on land or sea. Progress in this field is being driven by commercial demand from non-technical users. To process the high volume of images requested, commercial firms are rapidly improving automated analysis tools.<sup>8)</sup> In particular, there is a high commercial demand for change detection that compares images collected over time and notes any changes. This intelligence is of great commercial value. For instance, multi-spectral imagery allows futures traders to analyze grain production in real time and anticipate the quantity of the harvest. Oil futures traders can see how rapidly shale oil drilling rigs

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3) "Imagery and Insights, Delivered Where You Want to Work," Planet, <https://www.planet.com/products/>, accessed November 7, 2021.

4) "HawkEye 360 Pathfinder Cluster Mission to identify RFI locations," *eo*, June 11, 2021, <https://directory.eoportal.org/web/eoportal/satellite-missions/h/hawkeye>, accessed November 7, 2021.

5) *Ibid.*

6) Gavin Haines, "'No place to hide' for illegal fishing fleets as surveillance satellites prepare for lift-off," *Mongabay*, August 30, 2019, <https://news.mongabay.com/2019/08/no-place-to-hide-for-illegal-fishing-fleets-as-surveillance-satellites-prepare-for-lift-off/>, accessed October 30, 2021.

7) Laura Geggel, "Details of stunning Maya acropolises and sophisticated civilization revealed by laser scans," *Live Science*, April 30, 2021, <https://www.livescience.com/lidar-maya-yucatan.html>, accessed November 7, 2021.

8) Edward Lempinen, "A machine learning breakthrough uses satellite images to improve lives," *Berkeley News*, July 20, 2021, <https://news.berkeley.edu/2021/07/20/a-machine-learning-breakthrough-using-satellite-images-to-improve-human-lives/>, accessed October 30, 2021.

are being constructed or the volume of oil/gas in storage tanks and tankers. Clearly, the same software can be very valuable to military intelligence. In the long-term, it can allow intelligence analysts to track changes to facilities, transportation networks, industrial output, and thousands of other changes that are simply too numerous for human photo interpreters to track. In a crisis, it will allow intelligence officers to observe enemy movements/buildups in near real time even in bad weather.

Commercial firms are investing heavily in drone technologies to provide everything from surveillance to package delivery. To be commercially viable, delivery drones must be able to fly to a specified point with one meter of accuracy, take off and land vertically, navigate in GPS denied environments, be electronically shielded from radiation bursts, carry significant payloads, and fly to increasing ranges. Finally, they must be inexpensive enough for a company to own and operate thousands of these drones – and lose some for a variety of reasons. In short, commercial firms are investing heavily in developing drones that will be ideal for military use too.

The heavy investment has resulted in rapidly increasing range, precision, endurance, and autonomy for commercial drones. Volansi (previously Volans-i) has autonomous, VTOL drones capable of delivering packages out to 550 kilometers at speeds up to 110 kilometers per hour.<sup>9)</sup> The company has used these drones to support delivery of emergency supplies during natural disasters.<sup>10)</sup> In 2019, Drone Delivery Canada presented its largest and longest. range Cargo Delivery Drone. The company nicknamed it Condor and states it can deliver a cargo capacity of 180 kilograms out to 200 kilometers.<sup>11)</sup> Aurora Flight Sciences has developed sensor and control packages that can be installed in any existing aircraft to turn it into a remotely controlled drone.<sup>12)</sup> It is clear that commercial competition will continue to drive improved performance in both fixed wing and helicopter drones.

Clearly commercial drones can be converted for use as both ISR and strike platforms. This paper will deal with drones as strike weapons later. For now, it will focus on how drones can improve both ISR and C2. Once again commercial firms are leading the way. Aerovel is producing the Flexrotor. This man-sized drone has already been used for a wide variety of commercial missions – fishery management, guiding ships through sea ice, monitoring traffic in the Chesapeake Bay, and

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9) Brian Heater, “Long-range delivery drone maker Volansi raises \$50M,” *TechCrunch*, September 15, 2020, <https://techcrunch.com/2020/09/15/long-range-delivery-drone-maker-volansi-raises-50m/>, accessed November 15, 2021.

10) “The Future of Aerial Logistics Starts Now,” <https://volansi.com/>, accessed November 15, 2021.

11) “Drone Delivery Canada Unveils ‘Condor’,” Drone Delivery Canada,” February 21, 2019, <https://www.helis.com/database/news/cargo-drone-delivery-condor/>, accessed November 15, 2021.

12) Warren Duffie, Jr., “Special Delivery: New Autonomous Flight Technology Means Rapid Resupply for Marines,” Office of Naval Research, December 13, 2017, <https://www.onr.navy.mil/en/Media-Center/Press-Releases/2017/2017-AACUS>, accessed November 15, 2021.

catching poachers in the Pacific Ocean. During the sea ice mission, fog closed in. The operators later noted

Low visibility would have put a typical manned aircraft's crew in danger, but Flexrotor simply returned to the fog-shrouded ship, landed automatically, and waited for the skies to clear. The whole reconnaissance operation was much safer and more practical than any manned-aircraft option, and less costly.<sup>13)</sup>

Given winter weather conditions in Korea, the inclement weather capability of modern drones is vital. In addition, Flexrotor drones are particularly useful due to their small size, vertical take-off and landing capability, autonomous, long-endurance (over 30 hours), and versatile sensor package of multi-spectral imagers or synthetic aperture radars (SAR).<sup>14)</sup> Thus they not only can fly in inclement weather, they can continue to provide ISR through the weather and foliage. These systems can also be equipped with a communications relay package to allow them to relay information from other Flexrotors at a greater distance. The VTOL capability means they have been flown from parking lots, fields, research vessels, ice breakers, U.S. Coast Guard, and U.S. Navy vessels. Their relatively low cost (reported as \$200,000 in 2015) and minimal manning requirements mean they can be fielded in sufficient numbers to provide tactical commanders with organic, responsive ISR.<sup>15)</sup> And of course, AeroVel is only one of dozens of companies competing to improve drone capabilities and usefulness.

The rapid advances in commercial drone technology are influencing military drones too. The U.S. Navy and Marine Corps are fielding the V-BAT as a rugged, vertical take-off and landing (VTOL) drone to provide commanders a highly responsive, medium-endurance (8 hours) ISR platform.<sup>16)</sup>

Aurora Flight Sciences has really pushed the performance envelope with its Orion UAV. It operates from any small airfield but can fly autonomously for five days with a 450 kilogram payload. The payload can include multi-spectral, synthetic aperture radars, LIDAR, communications packages, or a combination of these

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13) Andy Nickerson, "AeroVel Flexrotor Unmanned Aerial System," *Sea Technology*, <https://sea-technology.com/aerovel-flexrotor-unmanned-aerial-system>, accessed November 12, 2021.

14) "Flexrotor Small Tactical Unmanned Aerial System," Air Force Technology, <https://www.airforce-technology.com/projects/flexrotor-small-tactical-unmanned-aerial-system/>, accessed October 29, 2021.

15) M. Moon, "Drone can stay in the air for two days to spot fish poachers," *Engadget*, August 6, 2015, <https://www.engadget.com/2015-08-06-aerovel-flexrotor-fisheries.html>, accessed November 12, 2021.

16) "US Navy selects Marti UAV's V-BAT for VTOL UAS prototyping effort," *Naval Technology*, April 29, 2021, <https://www.naval-technology.com/news/us-navy-selects-v-bat-for-vtol-uas-prototyping/>, accessed October 29, 2021.

sensors. On shorter missions, it can carry a payload of up to 1,600 kilograms.<sup>17)</sup>

Drones can also provide communications nodes for command and control systems. With the ability to sustain hundreds of pounds of communications gear aloft for hours and even days, large drones can provide long-endurance communications networks to provide alternative communications pathways in time of war. Even smaller drones can be linked together into low-probability of intercept, local networks to provide temporary C2 for tactical units.

As with satellite services, it is commercial demand that is driving the very rapid improvements in range, precision, and payloads across the range of drones from small hobby systems to large, long-range delivery and surveillance systems. Thus we can expect continued remarkable advancements in all aspects of drone performance.

## Cheaper Autonomous Precision Weapons

The second major technological advance driving rapid changes in the character of war are autonomous weapons. These weapons require both on board navigation (to get to the desired battlespace) and sensors (to determine which targets to attack in that battlespace.) Navigating to the target area has been mastered. Today, every smart phone has a GPS receiver so cheap GPS navigation for weapons has clearly been mastered. At the same time, numerous researchers are examining alternatives to provide for location in GPS denied areas.

University's and commercial firms are producing drone navigation systems today that do not require and external signal to determine the location of the drone. Massachusetts Institute of Technology created an autonomous drone fleet that used LIDAR, onboard communications, and wireless communication to map the floor of a canopied forest.<sup>18)</sup> IEEE published a paper on using optical flow navigation, based on how animals navigate, to create a very low power, non-GPS onboard navigation system.

The use of hardware and power consumption in the optical flow navigation is very much less when compared to other navigational aids and thus it is being developed for micro air vehicles enabling to fly in cluttered environments with high maneuverability fast mapping and very little overall system weight.<sup>19)</sup>

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17) "Revolutionary Endurance in a Flexible ISR and Communications Platform," Aurora Flight Sciences, <https://www.aurora.aero/medium-altitude-long-endurance-uas/>, accessed November 15, 2021.

18) Alan Cameron, "In MIT project, drones map without GPS," *GPS World*, January 9, 2019, <https://www.gpsworld.com/in-mit-project-drones-map-without-gps/>, accessed November 12, 2021.

19) C. Aasish, et. al., "Navigation of UAV without GPS," *IEEE Explore*, <https://ieeexplore.ieee.org/document/7097260>, accessed November 12, 2021.

Military organizations are also employing Inertial Navigation to operate in GPS-denied areas.

The second half of the targeting problem – determining what to attack in the battlespace – requires a combination of sensors and limited or task-specific artificial intelligence (AI). Once again commercial developments aimed at creating autonomous vehicles have resulted in massive drops in the costs of lightweight, low-power electro-optical and radar sensors. Systems like the Israeli produced Harop autonomous drone/loitering munition have proven that limited or task-specific AI can merge the inputs from optical, radar, and electronic signals to allow it to be an effective autonomous suicide system. Harops and other drones/loitering munitions dramatically demonstrated their effectiveness in the recent Nagorno-Karabakh Conflict.<sup>20)</sup> The Harop also has a psychological effect on the battlefield. When this loitering munition enters its terminal dive and accelerates to 400 kilometers per hour, the engine creates an unnerving wail much like the German Stuka dive bomber in World War II. It can be heard in the video embedded in the article titled 'The Sound Of This Nighttime Suicide Drone Strike Is Absolutely Terrifying.'<sup>21)</sup>

## Operational implications

Electro-optical and electronic warfare sensors can provide a great deal of information that, combined with external sensors such as satellites and drones, can allow the defenders to visualize the battlefield using passive sensors. And the increasing range of a variety of smart weapons systems mean they will have the advantage of fighting from very widely dispersed, prepared positions. While most current systems must be manned to operate, autonomous and remote control systems are being developed worldwide. As these systems mature, defenders can be located at a distance from their weapons and thus not be at risk even after firing.

The evolution of massed, long-range, precision weapons and persistent surveillance can provide major advantages to the defense if the ROK builds a force structure that optimizes their use. It may also finally provide a viable counter to the north's artillery massed along the DMZ.

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20) John Antal, "The First War Won Primarily with Unmanned Systems," [https://higherlogicdownload.s3.amazonaws.com/AUVSI/7bc57aaa-ae26-4c7a-93f9-512dc4a1bca0/UploadedImages/Ten\\_Lessons\\_from\\_the\\_2d\\_Nagorno-Karabakh\\_War\\_by\\_John\\_Antal\\_2021-03-08F.pdf](https://higherlogicdownload.s3.amazonaws.com/AUVSI/7bc57aaa-ae26-4c7a-93f9-512dc4a1bca0/UploadedImages/Ten_Lessons_from_the_2d_Nagorno-Karabakh_War_by_John_Antal_2021-03-08F.pdf), accessed November 14, 2021.

21) Thomas Newdick, "The Sound Of This Nighttime Suicide Drone Strike Is Absolutely Terrifying," *The Drive*, April 21, 2021, <https://www.thedrive.com/the-war-zone/40265/the-sound-of-this-nighttime-suicide-drone-strike-is-absolutely-terrifying>, accessed November 14, 2021.

However, like all major force transitions, it will be difficult and time consuming to overcome institutional and political resistance to the necessary changes. The transition can be eased by the relatively inexpensive concept of marrying new to old technology as a path to the new force structure.

For instance, long-range missiles can be mounted on existing military or even commercial vehicles eliminating the requirement to develop and field yet another expensive military vehicle. For over a decade, the Russian firm, Kontsern-Morinformsystema-Agat, has promoted its Club-K or Kalibr-class family of missiles mounted in standard shipping containers.<sup>22)</sup> Rosobonorexport, which specializes in Russian defense equipment, provided promotional material showing the containers mounted on commercial trailers, merchant ships, and rail cars. As part of the sales pitch, Rosobonorexport offered to containerize the entire family of Kalibr missiles as well as drones. The company claims their current containerized missiles have ranges out to 1,500 miles.<sup>23)</sup> By taking a modern missile system and mounting it in a standard shipping container, the Russians provided at least two key advantages. First, it vastly increased the number of vehicles that could carry these weapons. Any commercial truck, rail car, ship, or barge capable of carrying a standard 20 or 40 foot container is now a potential weapons carrier. So there is no cost involved in developing and maintaining a military platform to deploy the weapon. Second, until the missiles are raised to the firing position, it is virtually impossible to tell these containers from the tens of thousands of containers located in advance countries. These containers are ubiquitous even in underdeveloped countries.

The balance of this paper will consider how the Republic of Korea and exploit these new battlespace conditions and technologies to deter and, if necessary, defeat north Korean aggression.

## Defense Dominance

By employing cover, concealment, and passive or distributed sensors, defenders can observe and track the attacker without generating targetable signatures themselves. This combined with long-range, precision weapons in large numbers is recreating the 1914-1917 battlefields of Western Europe where a defender could identify, engage, and destroy any target within range on the surface. Except today defenders are not limited to line of sight and the short-range artillery of World War I. Today's defender can have near constant surveillance over and engagement ranges

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22) Michael Stott, "Deadly new Russian weapon hides in shipping container," *Reuters*, April 26, 2010, <https://www.reuters.com/article/us-russia-weapon/deadly-new-russian-weapon-hides-in-shipping-container-idUSTRE63P2XB20100426>, accessed November 14, 2021.

23) "Club K Missile System," Rosobornoexport, Russian Defence Export, <http://roe.ru/esp/catalog/marina-de-guerra/armas-de-la-nave/klab-k/>, accessed November 14, 2021.

to 500 miles. Thus any fixed facility can be easily targeted by a variety of long-range, precision weapons. Even mobile systems will be at risk to autonomous, active hunting drones.

Recent developments in advanced manufacturing have made it possible to produce small drones in the tens of thousands. In 2014, University of Virginia Professor David Sheffield 3D printed the Razor, a small autonomous drone. He attached a small jet engine and two batteries to provide power. Flight control/autonomy was provided by a cell phone. His team could print and assemble the drone in 28 hours. It was hand-launched and had a range of 50 kilometers.<sup>24)</sup>

In 2015, Carbon 3D released a printer that was over 100 times faster than the one used by Sheffield.<sup>25)</sup> This means he could have printed 100 of these autonomous drones in a day in 2015. Printing speeds have increased considerably since then. In addition, United Parcel Service projects that 3D printing will dramatically reduce the need for package shipping. It has started work on a 1,000 printer plant at its shipping hub in Louisville, KY, a 100 printer regional plant in Singapore and another in Germany, and is offering retail 3D printing in an increasing number of stores worldwide.<sup>26)</sup>

The implications are staggering. Using only the 2015 3D printer speeds, a 100 printer plant (the size of those planned in Singapore and Germany) could produce 10,000 drones a day. A 1,000 printer plant could produce 100,000 drones per day. While these will be small drones, an explosively formed warhead that weighs only 100 grams can penetrate 1.25 centimeters of steel. If it impacts on the hood of a vehicle, it will be sufficient to cause a mobility kill. If it strikes the rockets on a Multiple Rocket Launcher, it will cause catastrophic secondary explosions.

## Implications for ground forces

Given the restrictive and harsh terrain of Korea, ground forces will benefit most from the growing family of missiles and drones. Each of the five traditional invasion

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24) "3D Printing Drones on Demand," *Fabricating and Metalworking*, May 3, 2016, <https://www.fabricatingandmetalworking.com/2016/05/3d-printing-drones-demand/>, accessed November 14, 2021.

25) Daniel O'Conner, "Introducing Carbon3D the fastest 3D printer ever?," *tctmagazine*, March 17, 2015, <https://www.tctmagazine.com/additive-manufacturing-3d-printing-news/introducing-carbon-3d-the-fastest-3d-printer-ever/>, accessed November 14, 2021 and "UPS to open 3D printing factory in Singapore with Fast Radius," *tctmagazine*, September 20, 2016, <https://www.tctmagazine.com/additive-manufacturing-3d-printing-news/ups-on-demand-3d-printing-singapore/>, accessed November 14, 2021.

26) "CloudDDM — Factory With 100 (Eventually 1,000) 3D Printers & Just 3 Employees Opens at UPS's Worldwide Hub," *3DPrint.com*, May 4, 2015, <https://3dprint.com/62642/cloudddm-ups/>, accessed November 14, 2021.

routes into the Republic of Korea forces an attacker into choke points. The increasing range and autonomy of drones means defending units can be widely dispersed but still concentrate their fires. The fact that even small, inexpensive drones can cause mobility kills on wheeled vehicles will reduce invader mobility to the pace of dismantled infantry.

Recent events have clearly demonstrated ground forces will be subject to attack by the emerging families of swarming drones.<sup>27)</sup> While the Nagorno-Karabakh Conflict highlighted the utility of high-end, long-endurance drones like the Harop and Bayraktar TB2, inexpensive autonomous drones are flying now and can be mass produced using advanced manufacturing techniques. Both the United States and China are experimenting with launching drone swarms from vehicles and containers. China has launched 48-small drones from a single, imitation H1 Hummer truck.<sup>28)</sup> The U.S. Defense Advanced Research Projects Agency is developing OFFSET – a software package that will allow small-unit infantry to control up to 250 drones at once.<sup>29)</sup> The challenges of manufacturing, launching, and controlling large drone swarms have been mastered. Therefore, it is not unreasonable to expect a suitably organized defender to be able to launch hundreds or even thousands of loitering munitions against each brigade-size attack.

Even without drone launchers, dismantled infantry units can vastly increase their range and firepower by marrying new systems to old. The U.S. Marine Corps is testing the Drone 40 (already in use by UK forces). This small drone can be launched by hand or fired from a M203 40mm grenade launcher. With a flight time of 30-60 minutes and a range of 20 kilometers, it can carry a variety of packages – to include small anti-armor warheads.<sup>30)</sup> Currently priced around \$1,000 each, the producer hopes to cut costs to \$500.<sup>31)</sup> The low cost and autonomous operation means large swarms of active hunters can be generated by a single rifle company.

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27) Shaan Shaikh and Wes Rumbaugh, “The Air and Missile War in Nagorno-Karabakh: Lessons for the Future of Strike and Defense,” Center for Strategic and International Studies, December 8, 2020, <https://www.csis.org/analysis/air-and-missile-war-nagorno-karabakh-lessons-future-strike-and-defense>, accessed November 1, 2021.

28) Dave Hambling, “China Releases Video Of New Barrage Swarm Drone Launcher,” *Forbes*, October 14, 2020, <https://www.forbes.com/sites/davidhambling/2020/10/14/china-releases-video-of-new-barrage-swarm-drone-launcher/?sh=4dbd7932ad7f>, accessed November 14, 2021.

29) Dr. Timothy Chung, “OFFensive Swarm-Enabled Tactics (OFFSET),” Defense Advanced Research Projects Agency, <https://www.darpa.mil/program/offensive-swarm-enabled-tactics>, accessed November 14, 2021.

30) Brett Tingley, “Marines Train With Handheld Swarming Drones That Can Also Be Fired From 40mm Grenade Launchers,” *The Drive*, July 9, 2021, <https://www.thedrive.com/the-war-zone/41479/marines-train-with-handheld-swarming-drones-that-can-be-fired-from-40mm-grenade-launchers>, accessed November 1, 2021.

31) Kelsey Atherton, “A drone with a can-doom attitude,” *CAISRNET*, June 5, 2021, <https://www.c4isrnet.com/unmanned/2019/06/05/a-drone-with-a-can-doom-attitude/>, accessed November 1, 2021.

On a slightly larger scale, the Polish Army has contracted for thousands of units of the Warmate family of small drones. These weapons are small enough a two-man team can transport and employ them on foot. The initial tests done in 2016 apparently mated RPG warheads (high explosive, high explosive anti-tank (HEAT), and thermobaric) to a new but inexpensive drone. The result was a man-portable anti-tank drone with a range of 15 kilometers. Since then, the manufacturer has continually upgraded the system to include limited autonomy. Poland pays about \$7,500 per armed drone that with a top-down attack using an anti-armor warhead permits the operator to destroy wheeled and light armored vehicles as well as crew-served dismounted weapons on the battlefield.<sup>32)</sup> The prices is a dramatic reduction from the \$70,000 the U.S. military paid for similar Switchblade drone that was used extensively in Afghanistan.<sup>33)</sup>

Moving up the scale to more capable systems, the Hero family of loitering munitions produced by Israel provides a wide range of options for deployment.<sup>34)</sup> Because they can be canister or rail launched, they can be married to a variety of vehicles. They range in size from a few up to 40 kilograms and can range from 10 to 150 kilometers. In the rugged terrain of Korea, even the short range version would allow ROK soldiers to put a couple of ridgelines or many buildings between their launching positions and the targets.

Vehicle mounted weapons systems can provide further reinforcement for the ground forces. Several nations have mounted the containerized Israeli Spike missiles in existing vehicles. M-113 Armored Personnel Carriers, BMP Infantry Fighting Vehicles, BDM Airborne Fighting Vehicles have all been upgraded with these long-range anti-tank systems. Spike missiles can also be launched from light vehicles and helicopters. A package of 8 Spike Missiles can be mounted in military vehicles, commercial vehicles, or simply emplaced on the ground. The ROK has purchased a number of the largest missile in the family, the Spike NLOS (Non-Line of Sight). These weapons are capable of precision attacks at over 25 kilometers. And, at \$210,000 per unit, these missiles cost less than the U.S. Javelin but have over 6 times the range. Nor do they require the gunner to initially have line of sight to the target.

The bottom line for ground combat is that infantrymen can have the ability to kill any enemy vehicle or weapons system from a distance. They not only don't have to

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32) Joseph Trevithick, "The Polish Military Is Now Officially Armed With The Warmate Suicide Drone," *The Drive*, February 19, 2021, <https://www.thedrive.com/the-war-zone/39353/the-polish-military-is-now-officially-armed-with-the-warmate-suicide-drone>, accessed November 1, 2021.

33) Rich Smith, "AeroVironment Will Upgrade the Switchblade," *Motley Fool*, May 11, 2016, <https://www.fool.com/investing/general/2016/05/11/aerovironment-will-upgrade-the-switchblade.aspx>, accessed November 15, 2021

34) "UVision: Smart Loitering Systems," <https://uvisionuav.com/main-products/> accessed November 1, 2021.

expose themselves to the enemy, they don't even have to be within visual range.

## **Counter-battery concept**

One of the most difficult challenges facing the ROK is eliminating northern artillery before it can cause massive damage to the environs of Seoul. The combination of pervasive surveillance and massed drones provide a potential solution. Constant surveillance using multi-spectral and SAR systems will allow ROK commanders to immediately locate enemy artillery when it moves out of its shelters. As always, ROK counterbattery fire can then engage. Unfortunately, the time consumed by acquiring, targeting, assigning, and successfully engaging the targets, combined with the very large number of northern artillery pieces means Seoul and its environs will still suffer considerable damage. Even the professionalism of ROK artillery cannot prevent this.

But augmenting the artillery with relatively inexpensive suicide drones orbiting over likely enemy artillery locations means these drones can attack autonomously as soon as the artillery pieces expose themselves. Unlike tube and rocket artillery, the drones cannot be subjected to counter-battery fire from the north's artillery. Further, the precision of suicide drones mean the attacks can focus on particular vulnerabilities like the rocket pods and ammunition vehicles. While current sensors and software will not be 100% accurate, they will identify and destroy many artillery pieces.

There may be concern expressed about the ability of drones to discriminate between friend and foe but in the early hours of the fight, enemy artillery will still be north of the DMZ. Since drones can be programmed to limit their attacks to north of that line, target discrimination becomes less critical. They can also be programmed to destroy any trucks or light armored vehicles north of the DMZ to disrupt the north's maneuver units.

## **Upgraded IEDs**

In addition to high technology solutions, the Army can adopt simpler systems. The ROK already has an elaborate and effective program for mining and obstacle creation but recent events have shown yet another way to complicate an attacker's movement. For almost 20 years, IEDs (Improvised Explosive Devices) defied extensive U.S. efforts to neutralize them. Pairing legacy IEDs with modern surveillance and triggering devices could allow minimally trained reserves to observe and engage enemy formations from a great distance. Just as important, modern systems could allow one team or even an individual to monitor and trigger numerous IEDs. Depending on the anticipated countermeasures, a team could use

cheap video cameras located on buildings, telephones poles, trees, etc. to observe the target area. The camera feed could be delivered to the operator by wire or radio connection. The operator could then be connected to the explosive device by the same methods. When the sensors reveal an enemy in the target area, the operator can detonate the IED from a safe distance and out of sight of the target. Local forces or reserves would be best qualified to place these devices and supervise the evacuation of civilians to protect them.

To augment the defensive barriers, ammonium nitrate fertilizer could be used to provide relatively cheap, but very large devices. A standard 20-foot container can carry 25,000 kilograms of fertilizer – effectively a 25 ton bomb. These large devices could be prepositioned for rapid employment by reserve forces at key choke points. Many businesses have equipment for handling standard shipping containers. Thus reserves can move the containers to designated wartime locations and insert the detonators. These containers can be hidden inside buildings that are adjacent to key chokepoints. While enemy engineers can clear mines and breach obstacles, massive detonations will immobilize an advancing column for a significant period of time. Further, the extensive number of shipping containers found in almost all towns and even farms would force the attacker's to constantly pause until engineers checked the container. They will also be forced to check each building large enough to conceal a container.

In effect, local reserve forces could create smart minefields based on local knowledge of terrain trafficability by season. The only action required on mobilization would be installing fuzes, placing the devices, and connecting the observation and firing systems. Since these systems could make use of civilian vehicles for deployment, they will be very difficult to track or preempt. Of particular importance, it is not necessary to train reserve forces to the level they can engage heavy armor in close combat. Instead, they will be trained to remain at a distance, activate the IEDs, and withdraw to their next position.

## **Implications for air forces**

A key question today is whether ROK and U.S. forces can defend their base facilities against swarms of missiles and rockets. After years of neglecting airbase defense, U.S. forces are working hard to fill the gap. The United States is betting heavily on directed energy – lasers and microwave (electromagnetic pulse) – weapons to defeat swarm attacks. The U.S. Department of Defense doubled its budget for directed energy weapons from FY-17 to FY-19, upping it to \$1.1 billion. These systems show great promise but still face numerous challenges.

Unfortunately, lasers are still subject to atmospheric conditions. Lasers also require a great deal of power that tends to limit the capability of mobile systems.

Fortunately, lasers favor the defense of fixed facilities since the systems can tap into base or national power systems or, if needed, large field generators. The United States has not yet fielded any lasers to protect fixed facilities. However, the U.S. Army will field its first four laser equipped Stryker tactical vehicles in FY-22.<sup>35)</sup> The system is designed to engage aircraft, rockets, artillery, mortars, and drones. This first platoon of prototypes will be used to refine the technology, tactics, and logistics for future organizations. Obviously, they could be assigned to air base defense but there will be a very limited number of systems for the foreseeable future.

While laser research continues to absorb the majority of defense spending on direct energy weapons, microwave weapons offer even greater potential for dealing with swarms of drones or aircraft. Rather than having to acquire each target individually and direct the laser for sufficient time to destroy that target, a microwave system can generate a pulse to sweep across an area and disable many targets at a time. The key question is the ability of these systems to overcome electronic hardening and shielding to disable the targets. And of course, unlike lasers, microwave weapons are not effective against ballistic weapons like artillery, mortars, and rockets.

Until many more air defense weapons are fielded, fixed air bases remain vulnerable to massed attacks. This vulnerability will limit the effectiveness of allied air forces in a conflict. However, if the air forces adopt VTOL, long-endurance ISR and strike drones, they can reduce their dependence on air bases. In addition to not requiring an air base to operate, modern drones have vastly longer on-station time than manned aircraft. While a modern strike fighter requires repeated visits to a tanker to loiter over a target area, a V-BAT drone has over 8 hours endurance, a Harop over 30 hours, aTB2 over 25 hours, and a Flexrotor over 30 hours. Thus these relatively low cost, unmanned systems could loiter over the DMZ to immediately identify and engage artillery as it moves out of hardened positions to fire. For the lifetime cost of one F-35, the ROK could field hundreds of these autonomous and semi-autonomous drones. This would also free up manned aircraft to respond to the Combined Force Commander's immediate needs.

Long-range rocket and missile systems will also provide an alternative to aviation for strike missions. Given the ranges involved in an inter-Korean conflict, one has to ask if the U.S. Army's Precision Strike Missile (PrSM) cannot take over most of the strike missions assigned to manned aviation. Currently under development, the Army projects the PrSM will have a range of 500 kilometers by 2023 and 800 kilometers by 2025. Since they are compatible with the Multiple Launch Rocket System (MLRS) there is no need to develop a new platform to use these missiles.

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35) Devon L. Suites, "Army to field laser-equipped Stryker prototypes in FY 2022," *Army News Service*, August, 20, 2021, [https://www.army.mil/article/249549/army\\_to\\_field\\_laser\\_equipped\\_stryker\\_prototypes\\_in\\_fy\\_2022](https://www.army.mil/article/249549/army_to_field_laser_equipped_stryker_prototypes_in_fy_2022), accessed November 1, 2021.

Another possibility is the Kongsberg Naval Strike Missile. The U.S. Marine Corps is fielding this missile mounted on the Joint Light Tactical Vehicle (JLTV). This autonomous cruise missile has a range of 180 kilometers but is small enough two can be mounted on the JTLV.<sup>36)</sup>

To provide truly massed attacks, the U.S. Navy and Marine Corps conducted an experiment that launched 1,000 small, autonomous, armed drones from a single C-130. The U.S. Navy has even launched over 100 of these small drones from a flight of F-18s.<sup>37)</sup>

In short, these weapons can provide resilience for long-range strike that, to date, has required manned aircraft operating from fixed facilities. The unfortunately reality is that allied forces cannot provide adequate defense of their airbases against drone and missile attack. While Allied Air Forces have the ability to operate manned aircraft from highways, their sortie rates will obviously be seriously degraded. And the major maintenance facilities that are part of every airbase will no longer be available.

Given the increasing lethality and availability of drones and missiles, it is prudent to consider what other weapons could be purchased in place of a manned aircraft. While Lockheed and the U.S. Air Force have announced the cost of Lot 14 F-35s will be down to \$78 million each, that price does not include the equipment necessary to make the combat ready.

According to the Air Force's aircraft procurement justification book for fiscal year 2021, the \$77.9 million sticker price for the 2020 model F-35A jumps to \$110.3 million per aircraft when all aspects of the program are added together.<sup>38)</sup>

While it is impossible to find a definitive cost of a Harop in open source material, the estimates range from \$100,000 to \$500,000. Using the highest estimate, the ROKAF could purchase 220 Harops for the purchase cost of an F-35A.

But the real cost of manned aircraft comes in operating them. The F-35A has an estimated lifetime of 8,000 flight hours.<sup>39)</sup> Each flight hour currently costs \$36,000.

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36) "Naval Strike Missile," Kongsberg.com, <https://www.kongsberg.com/kda/products/defence-and-security/missile-systems/nsm-naval-strike-missile-nsm/>, accessed November 1, 2021.

37) Joseph Travithick, "The Navy Plans To Launch Swarms Of Aerial Drones From Unmanned Submarines And Ships," *The Drive*, March 1, 2021, <https://www.thedrive.com/the-war-zone/39535/navy-contract-exposes-plans-to-launch-swarms-of-drones-from-unmanned-boats-and-submarines>, accessed November 1, 2021.

38) Dan Grazier, "Selective Arithmetic to Hide the F-35's True Costs," *POGO*, October 21, 2020, <https://www.pogo.org/analysis/2020/10/selective-arithmetic-to-hide-the-f-35s-true-costs/>, accessed November 14, 2021.

39) "F-35 Joint Strike Fighter (JSF)," Department of Defense, <https://www.dote.osd.mil/Portals/97/pub/reports/FY2017/dod/2017f35jsf.pdf?ver=2019-08-19-113748-273>, accessed November

Lockheed is promising to reduce the cost to \$30,000 per hour. (Although Lockheed has consistently exceeded their own cost estimates throughout the life of the F-35 program.) Using the Lockheed low-cost estimate, the lifetime flight hours cost is an additional \$240 million per aircraft for a total of \$350,000,000 per fighter. Based on these numbers, the ROK could purchase 700 Harops for the lifetime cost of one F-35.

Unfortunately despite focused efforts to improve readiness, the F-35 readiness rate is 69 percent so one has to buy three F-35s to have two available to fight. In addition, the \$350 million covers only the purchase cost and operations and maintenance funds. It does not cover the training pipeline for pilots or maintenance personnel. Nor does it cover the cost of running the airfields required for operations. It does not cover the lifetime costs for the personnel necessary to operate and support the aircraft -- or the extensive and expensive support equipment. It is not improbable to estimate the ROK could have 1,000 Harops for the full lifetime support cost of one F-35A. With 6 Harops per truck, the enemy would have to eliminate 166 vehicles to pre-empt a strike. In contrast, the F-35 is very vulnerable when on the ground and only needs to be hit once.

This paper is not suggesting that the ROK necessarily buy Harops in place of F-35s. However, the ROKAF needs to carefully study the cost/benefit tradeoff of using unmanned platforms in place of increasingly expensive, increasingly vulnerable, and decreasingly ready manned aircraft.

## Implications for naval forces

Planned and delivered modern ships have already increased the effectiveness and lethality of the ROK Navy. However, purchasing modern missiles and drones would be a relatively inexpensive way to increase the lethality and range of the Navy's older and small vessels.

The U.S. Navy has demonstrate the use of deck mounted launchers to fire the Naval Strike Missile from Littoral Combat Ships. This missile can also be modified to be fired from helicopters. Other nations have also developed deck mounted launchers that could provide modern missiles for older ships. While it has a Long-Range Artillery Weapon (LORA) quad-pack launcher designed for shipboard use, Israel has also launched LORAs from a commercial ship by simply loading the truck mounted version on the deck, putting to sea, and testing the weapon. They achieved hits at ranges of 90 and 400 kilometers.<sup>40)</sup> The LORA carries either a 600 kilogram unitary or sub-munition warhead.<sup>41)</sup> Clearly, systems like these can

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14, 2021.

40) "Ballistic Missile Firing Trial Completed Successfully," IAI Press Release, June 2, 2020, <https://www.iai.co.il/lora-ballistic-missile-firing-trial-completed-successfully>, ccessed November 14, 2021.

provide significant range and firepower to the ROK Navy older vessels.

The U.S. Navy has also used deck mounted launchers to deploy very large drone swarms. As noted earlier, even small autonomous drones can have considerable range and are effective anti-vehicle weapons. Drones and missiles employing both unitary and sub-munition warheads could provide the ROK Navy with increased capability not only against enemy naval forces but also provide supporting fires to ROK forces ashore.

## **Conclusion**

For a variety of reasons, ROK forces are project to be reduced in size over the next decade.<sup>42)</sup> Fortunately, a new generation of small, relatively cheap, and increasingly autonomous weapons can provide major upgrades to combat capabilities of ground and naval forces. Just as important, they can provide an alternative for air forces if they can no longer operate from fixed bases.

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41) "LORA," Missile Threat, CSIS Missile Defense Project, <https://missilethreat.csis.org/missile/lora/>, accessed November 14, 2021.

42) Benjamin Brinelow, "South Korea's military has big problems that are much closer to home than North Korea," *Insider*, February 3, 2021, <https://www.businessinsider.com/south-koreas-military-modernization-bigger-problem-than-north-korea-2021-2>, accessed November 1, 2021.

# Why Do the Chinese Popular Protests Not Progressively Lead to Regional Uproar? : The Cause of Non-Proliferating Chinese Resistances and Concession Strategy

Jinyong Kim

## Abstract

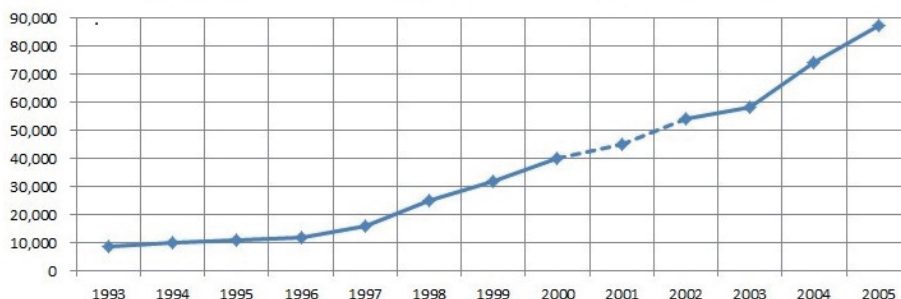
*The present study examines why local protests in China have not proliferated into nationwide protests, despite the rapid increase in local protests in terms of frequency, scope, and intensity. To research this phenomenon, observed only in China, this study investigates and analyzes public protest-related news articles, from the South China Morning Post from 2000 to 2016. The research reveals a three-point strategy adopted by the Chinese government to suppress protests: 1) the coercion strategy, 2) the central government's interference that strongly urges the employment of concession, and 3) the local government's implementation of concession prior to any interference from the central authority. This study demonstrates that the proliferation of mass protests is greatly hindered by the use of armed forces along with the concession strategy, derived from the economic and political interests of both central and local governments.*

**Keywords:** *popular protest; collective resistance; coercion strategy; concession strategy; protest proliferation*

## Introduction

Following the introduction of the neo-authoritarian regime and the Chinese reformations that have persisted since the 1990s, the number of popular protests in China has rapidly increased. As illustrated in Figure 1, in 1993, there were 8,700 public protests recorded in China. The majority of protest participants were laborers, peasants, and citizens. By 1999, the number of protests nearly tripled to 32,000. In the subsequent years, more incidents of protests have been reported, increasing to 54,000 in 2002; 58,000 in 2003; 74,000 in 2004; 87,000 in 2005; and exceeding 90,000 in 2006. Based on these data, protests in China have increased annually at an average rate of 17% during the past two decades.<sup>1)</sup>

<Figure 1> Number of Collective Protest Incidents in China, 1993-2005 (Data for 2001 are not available).



Source: Murray Scot Tanner, "Chinese Government Responses to Rising Social Unrest." Rand (2005); Lihua Chen, "Zhongguo quntixing shijian 10 nian zeng 6 bei." *Xinhua*, July 31, 2005b.

Chinese authorities categorize any public protest activity as a collective incident (*quntixingshijian*); if it involves more than 500 participants, it is categorized as a massive incident (*zhongda quntixingshijian*); and if it involves more than 1,000 participants, it is categorized as a mega-scale collective incident (*tebie zhongda quntixingshijian*).<sup>2)</sup> This specific categorization of collective protests serves as a direct indication that the participants—ordinarily students, peasants, and laborers—have become more organized and effective in expressing

1) Chuanhe Zhang, "Wo guo quntixing shijian de zuixin fazhan taishi, chengyin ji duice yanjiu," *Shandong shehui kexue*, Vol 5 (2010), p. 42; Lihua Chen, "Zhongguo quntixing shijian 10 nian zeng 6 bei," *Xinhua*, July 31, 2005b; Murray Scot Tanner, "China Rethinks Unrest," *Washington Quarterly*, Vol. 27, Issue 3 (January, 2010), p. 14; Xing Xu & Haifeng Wang, "Guanyu dangqian zhongguo quntixing shijian ji ge lilun wenti," *Xuexi yu shizhan*, Vol. 7 (2010), p. 69.

2) Niu Yan & Hai Lin, *Yufang yu chuzhi quntixing shijian dangzhengganbu duben* (Renminribao, 2009), pp. 7-9.

their needs than they had previously been. However, the protestors often resort to brute physical force; damaging local government buildings and public security offices. In response, the local authorities dispatch armed police forces with live ammunition, panzers, and heavy artillery units to suppress the protestors; this strategy has repeatedly led to catastrophic consequences for both parties.

In China, where public participation in politics is restricted, the citizens have also protested through laws, the media, and the petitioning system (*shangfang*). However, those means have been proven inadequate to satisfy the increasing public discontent. Because of the continuously proliferating discontent and insufficient means to alleviate their dissatisfaction, citizens opt, as a last resort, to employ an illegal and non-institutional method, the unauthorized act of popular resistance. Furthermore, China's traditionally maintained social framework, including its culture, heritage, and family lineage, has served effectively as a potent catalyst to facilitate the increase in public protest activities.<sup>3)</sup> Having analyzed the social conflicts in China, it is deduced that the citizens of China, when restricted to limited legal avenues for alleviating their social discontent, are often predisposed to illegal resistance activities, which typically generate increased social chaos. This is mainly because such protest methods enhance the validity and legitimacy of the protest if it develops into a more influential political action through proliferation.<sup>4)</sup> In other words, although illegitimate, collective protests in China provide a conduit with which the common citizens can express their needs.

Although China and other similarly constructed socialistic states have successfully maintained their authoritarian regimes for decades through a Repressive State Apparatus,<sup>5)</sup> there still exist grass-roots resistance activities that have, in the past, led to the realization of democracy. However, despite the presence of rapidly increasing mass incidents, the bottom-up resistance has yet to achieve regional, social, and hierarchical proliferation. Regardless of the high frequency of laborer and peasant-led collective protests, only a few of these protests possess the long-lasting social impact as did the 1989 Tiananmen Square Massacre. In other words, the series of protests whose members belong mostly to the social class of laborer-peasant-intelligentsia have yet to successfully establish pan-regional and pan-class proliferation.<sup>6)</sup>

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3) Elizabeth J. Perry, "Rural Violence in Socialist China," *The China Quarterly*, vol. 103 (September, 1985), p. 439.

4) Yongshun Cai, *Grassroots political reform in contemporary China: Civil Resistance and Rule of Law in China* (Harvard University Press, 2007), pp. 174-175.

5) Louis Althusser, *Lenin and philosophy and other essays* (Monthly Review Press, 1971).

6) When city dwellers such as college students, intellectuals, and state-owned enterprise workers came to the streets to demand democratic political reforms in the early stages of Chinese reform, they were not interested in the political mobilization of rural populations. See Teresa Wright, *Accepting Authoritarianism: State-society Relations in China's Reform Era* (Stanford University Press, 2010), p. 146.

Lipset's research embodies an economic-deterministic 'Modernization Theory,' theorizing that higher education levels, the growth of the middle-class, and urbanization, which follow the path forged by economic growth, serve as decisive factors promoting democracy.<sup>7)</sup> Moore and Rueschemeyer also share a common view that lucrative growth of socialistic economy likely leads to regime shift to democracy. Moore, especially, places great emphasis on the social role of the middle-class, whereas Rueschemeyer argues that the working class is the decisive driving force of regime change and capitalism.<sup>8)</sup> Based on a similar idea, Rowen suggests that China is likely to fully accomplish liberalization by 2025.<sup>9)</sup> However, compared to the Modernization Theory, the strengthening of the middle-class accompanied by swift economic growth and frequent popular resistance by the lower working class have not successfully triggered either democratization or proliferation of the protest activities. Therefore, it seems evident that the absence of long-lastingly, proliferating, and socio-politically linked political uproar, despite the high frequency of local protests among the lower social class in China, is an odd phenomenon.

On the other hand, the advancement of modern technology has opened new windows of opportunity for the resisters.<sup>10)</sup> Internet service has not only established a new niche for protest proliferation but has also greatly enhanced message-delivering capacity to remotely located areas that are geographically isolated. The implementation of modern broadcasting methods has eliminated the physical limitation of political discourse, and the absence of physical barriers further provides a new foundation for larger-scale and more structured demonstrations that encompass wider regions and social classes. Even so, none of the protests recorded since early 2000, appear to have proliferated to a pan-regional scale despite the leverage supplied by modern technology.

The high frequency of protests among the lower social class along with the highly common usage of mobile devices should have created a pathway through which the protestors could voice their political opinions to a third party. Few scattered protest efforts have accomplished significant protest-related objectives. Nevertheless, the particular protest phenomenon in China begs an important

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7) Seymour Martin Lipset, "Some social requisites of democracy: Economic development and political legitimacy," *The American Political Science Review*, Vol. 53, Issue 1 (March, 1959), pp. 69-105.

8) Barrington Jr. Moore, *Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World* (Beacon Press, 1966); Dietrich Rueschemeyer, Evelyne Huber Stephens & John D. Stephens, *Capitalist development and democracy* (University of Chicago Press, 1992).

9) Henry S. Rowen, "When will the Chinese people be free?" *Journal of Democracy*, Vol. 18, No. 3 (July 2007), pp. 38-52.

10) Guobin Yang, "Contention in Cyberspace," In *Popular Protest in China* eds. Kevin J. O'Brien (Harvard University Press, 2008), pp. 133-136.

question: why have the current collective resistance efforts in China not pan-regionally proliferated despite the increasing episodes of frequent popular protests?

## Literature Review

Previous studies in China have mostly focused on the political system and regime change. However, such an academic approach is difficult to influence high-level politics such as political system change in China at this point.<sup>11)</sup> The 1989 Tiananmen Square Massacre certainly posed a significant threat to Chinese authorities. However, now, despite the number of occurrences, the collective protests have not proven threatening to the Chinese regime because most protests have pertained to low-level political matters, such as conflicts among different individual interests that ultimately emerge as collective resistances. In this context, four alternative hypotheses regarding the popular protests' failure to accomplish pan-regional proliferation are provided along with their limitations.

The first hypothesis argues that the absence of mass mobilization hinders the Chinese popular protests from proliferating. According to Wright, poorly organized collective resistance by student-centered organizations and the neglect of democratic procedures, explains the failure of the 1989 Tiananmen Square Massacre and China's subsequent democratic retreat.<sup>12)</sup> Perry emphasizes that the absence of well-established communication between the rural laboring class and intelligentsia—which was present during the communist revolution—ultimately caused the attempts at collective resistance to fail in the 1990s.<sup>13)</sup> However, the influx of advanced technology has adequately overcome the weakness of poor communication infrastructure, thereby unveiling the logical limitations in Wright's and Perry's approach. Furthermore, Chan's analytic research has revealed that although the intelligentsia, who are more highly educated, retain their political ideologies, they shifted their objectives from political accomplishments to strictly pragmatic and individual freedoms following China's explosive economic growth. This particular lifestyle change significantly hinders the participation of the

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11) Kevin J. O'Brien & Lianjiang Li, *Rightful Resistance in Rural China*, Cambridge (University Press, 2006), p. 99.

12) Teresa Wright, "State Repression and Student Protest in Contemporary China," *China Quarterly*, Vol. 157 (March 1999), pp. 142-172.

13) The Chinese Communist Revolution succeeded because the intellectuals and students had the leadership and organization to mobilize the peasants directly in the local area. However, the contemporary protest showed that for the organized social movements at the national and local level challenging the Chinese Communist Party, mobilization is limited. See Elizabeth J. Perry, "Permanent Rebellion? Continuities and Discontinuities in Chinese Protest," In *Popular Protest in China* eds. Kevin J. O'Brien (Harvard University Press, 2008), pp. 205-206.

intelligentsia.<sup>14)</sup>

The second hypothesis claims that the Chinese police department preemptively prevents the popular protests from proliferating by fully utilizing its controlling power. In response to this particular proposal, Chen argues that the absence of proliferation is only natural in China because of the fundamental societal foundation. It is quite common in the West to establish a social framework to facilitate collective efforts in which social actors, the media, and members of society actively participate. However, China's restrictive censorship—often referred as coercion—poses a great challenge to the Western framework's applicability.<sup>15)</sup> On the other hand, Cai recognizes that coercion is of utmost importance when oppressing uncontrollable social disturbances if concession is improbable or social stability is threatened.<sup>16)</sup> In the mid-2000s, a series of thorough studies on this matter were conducted and published. These studies, which examined China's collective protests, involve analysis,<sup>17)</sup> classification,<sup>18)</sup> threat level,<sup>19)</sup> and controllability of collective protests.<sup>20)</sup> The proposition that the use of coercion, along with information and communication technology, has proven an effective political tool to suppress the protestors is dominate.<sup>21)</sup> Accordingly, the prevailing studies for counter-rioting measures, widely published by the communist party school and Public Safety journals, describe counter-measures to protest incidents, targeted single case studies,<sup>22)</sup> nullification

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14) Che-po Chan, "The Political Pragmatism of Chinese University Students." In *China and Democracy: Reconsidering the Prospects for a Democratic China*, eds. Suisheng Zhao (Routledge, 2000), pp. 207-232.

15) Feng Chen, "Worker Leaders and Framing Factory-based Resistance." In *Popular protest in China*, eds. Kevin J. O'Brien (Harvard University Press, 2008), p. 90.

16) Yongshun Cai, "Local Governments and the Suppression of Popular Resistance in China." *China Quarterly*, Vol. 193 (March, 2008a), pp. 24-42.

17) Shanyun Song & Ziyang Liu, "Guanyu dui dangqian quntixing shijian de zhuyao tedian he fazhan qushi ji ruhe youxiao kaizhan gongzuo de fenxi baogao," *Liaoning fazhi yanjiu*, Vol. 1 (2006), pp. 14-22; Wei Cui, "Dui quntixing shijian de fenxi," *Zhonggong shanxisheng zhijiguan dangxiao xuebao*, Vol. 1 (2010), pp. 54-55.

18) Xiaolin Ma, Peng Zhou, Zhiling Liu, "Dangqian wo guo quntixing tufa shijian de leixing, tedian ji duice," *Jiangdong luntan*, Vol. 2 (2010), pp. 38-44.

19) Jian Zhang, "Quntixing shijian Zhong de ruoshi qunti wenti yanjiu," *Lilunxuekan*, Vol. 1 (2010), pp. 94-97.

20) Ping He, "Xianjieduan quntixing tufa shijian de fazhan qushi ji yingdui celue," *Anhui guangbo dianshi daxue xuebao*, Vol. 3 (2010), pp. 18-21; Ya Li & Meiling Zhang, "Quntixing shijian de lixing chayi yu chuzhi de zhidu youhua," Shanghai chengshi guanli zhiye jishu xueyuan xuebao, Vol. 19, No. 5 (2010), pp. 70-75; Zhangmin Ma, "Quntixing shijian jiqi yufang kongzhi: Yi hebeisheng weilie," *Weishi*, Vol. 8 (2010), pp. 160-163.

21) Qimeng Mao, "Wangluo quntixing shijian de tezheng yu duice," *Ningxia dangxiao xuebao*, Vol. 12, No. 5 (2010), pp. 91-93.

22) Shujun Lu, "Quntixing shijian wangluo jihua zuoyong chutan: Yi P shi zhengdi yinfa de quntixing shijian weilie," *Jiangsu*

of uproars,<sup>23)</sup> and preemptive prevention via public information espionage.<sup>24)</sup>

The third hypothesis suggests that the local authorities reconcile or compromise with the protestors when confronted with protestor demands, thereby dissolving mass collective efforts before pan-national proliferation takes root. That is, a collective resistance—which usually manifests in the form of rioting—serves as a conduit to publicly realize the protestors’ demands.<sup>25)</sup> According to opportunism, Chinese citizens are strongly predisposed to manipulate the local authorities through popular protests rather than promoting democracy.<sup>26)</sup> This opportunistic and shrewd intent is perhaps the chief reason for the absence of protest proliferation. Although seemingly reasonable, it seems that the local authorities may have overly simplified the underlying issue. Most of the rioting incidents, which are commonly caused by minor civil disputes, ultimately lead to the public’s demands for anti-corruption. If the protestors request more complicated demands that may threaten the legitimacy of the local authorities, the authorities are likely to fight the corruption that is present within the governing body. A failure to achieve a corruption-free local administrative body highly increases the feasibility of pan-national proliferation, thereby debunking the notion of reconciliation.

Lastly, the final hypothesis suggests that the Chinese unit (*danwei*) system restricts the pan-national spread of rioting incidents.<sup>27)</sup> However, there have been changes to the unit system through the political and social reformations that have introduced non-state-owned enterprises and privatization of properties. Judging by the current level of modernization level in China, the unit system is unlikely to exert its restrictive power over regional mass protests, although the aged unit system of education, industrialization, and agriculture still remains.

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*jingguan xueyuan xuebao*, Vol. 25, No. 3 (2010), pp. 134-138.

23) Longbiao Zhong, "Wangshang quntixing shijian de tedian, shengcheng ji xiaojie," *Hunan xingzheng xueyuan xuebao*, Vol. 2 (2010), pp. 33-36.

24) Yongliang Guo, "Qingbaoxinxi zai quntixing shijian yufang he chuzhi Zhong de zuoyong," *Jingji xueyuan xuebao*, Vol. 8, No. 1 (2008), pp. 56-57; Zhuhui Peng & Xinbin Gong, "Lun zai quntixing shijian zhili Zhong qingbao gongzuo de kaizhan," *Liaoning jingzhuan xuebao*, Vol. 59 (2010), pp. 50-53.

25) O’ Brien & Li, "Protest Leadership in Rural China," pp. 1-23.

26) Xi Chen, "Between Defiance and Obedience: Protest Opportunism in China," In *Grassroots Political Reform in Contemporary China*, eds. Elizabeth J. Perry & Merle Goldman (Harvard University Press, 2007), pp. 253-281.

27) Sebastian Heilmann, "The Social Context of Mobilization in China: Factions, Work Units, and Activists during the 1976 April Fifth Movement," *China Information*, Vol. 8, Issue 3 (December, 1993), p. 18; Elizabeth J. Perry, "Shanghai’s strike wave of 1957," *The China Quarterly*, Vol. 137 (March, 1994), pp. 1-27; Elizabeth J. Perry, *Shanghai on Strike: The Politics of Chinese Labor* (Stanford University Press, 1995); Chen, "Worker Leaders and Framing Factory-based Resistance," pp. 88-107.

## Research Design and Data Sources

The purpose of this article is to formulate a differentiated proposition from the previously mentioned hypotheses. That is, in order to accurately evaluate the current pan-national non-proliferation of political activities in the form of popular protests, this study examines the concession strategy—a product of hierarchical dynamics between the central and local authorities, whose fundamental medium is a coercive strategy used to suppress public protests by ultimately discouraging the scattered collective resistances from pan-national escalation. This concession strategy is effective for a variety of reasons. First, the political environment of China became highly decentralized following the 1978 reformation. The decentralized relationship between the central and local governing bodies is believed to provide a logical ground from which to study the recent group-oriented protests in China. The peculiar political environment has generated divergent understandings between the central and local authorities. The central government cunningly manipulates the frequent public collective protests to strengthen its governance, while the local authorities exploit the incidents as an escape route from the interference of the central. These idiosyncratic hierarchical dynamics between the two governing bodies have established a mix of coercive and concession strategies that ultimately nullifies the scattered collective efforts—commonly manifested in the form of public rioting—from pan-national advancement.

In order to provide an adequate empirical analysis, field research methods such as interviews and surveys must be conducted. However, there are few reliable resources in China regarding such a sensitive social matter as mass rioting. Had there been accessible data, the credibility of the information is hardly guaranteed; thus, the risk of inaccuracy persists. Therefore, a thorough analysis of any accessible data with credibility is performed as required.

According to the article published in 2004, by the Ministry of Public Security of China, labor rights, government-involved land requisition, demolition and deportation, reformation of state-owned enterprises, and deportation compensation have been identified as the direct causes of collective protests.<sup>28)</sup> Given that most reported collective efforts that involve the members of working classes are non-political, the analysis has been limited to the general protests.<sup>29)</sup> The selected subjects of this article are laborers and peasants whose collective resistance efforts are well organized and influential enough to threaten the political authorities.<sup>30)</sup>

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28) Lihua Chen, “Quntixing shijian kaoyan zhongguo.” *Jinji guanli wenzhai* 16 (2005a), p. 30.

29) Xinmin Gao & Guihan Wu. *Lingdao ganbu yingdui quntixing shijian anli pingxuan* (Zhonggong zhongyang dangxiao chubanshe, 2011), p. 2.

30) Because peasants and laborers are relatively less dependent on the state, they are more open to political change. See Wright, “*Accepting Authoritarianism: State-society Relations in China’s Reform Era*,” p. 3.

The rioting activities executed by the peasants and working class have proven physically more violent and politically threatening. Moreover, the members of the working class, as praetorian guards in socialist states, supply the economic and political impetus.<sup>31)</sup> Naturally, any uproars from this particular social class have the capacity to provoke such a political impact that its influence cannot be neglected by either the central or senior authorities. Hence, collective resistance from the members of the working class—especially laborers and peasants—has been selected as the main target of analysis.

In order to maintain impartiality and accuracy, a few filters have been implemented for data collection. Given that the Chinese government categorizes a collective resistance of greater than 500 participants as a massive group-oriented incident, any reported events of greater than 500 participants have been selected.<sup>32)</sup> Other notions to be considered are 1) the use of coercion; 2) the potentiality of pan-continental proliferation—social classes, regional, and constructiveness of leadership are accounted—; 3) generally classified protests besides political protests; and 4) incidents with clearly identified beginnings and ends. The data were collected from the South China Morning Post, China's official news broadcaster, Sina News, and Hong-Kong's China Labor Bulletin from 2000 to 2016. Additionally, articles and interviews from the same period published by corresponding regional and foreign news media and the China National Knowledge Infrastructure-owned publications have heavily been scrutinized. However, there seem to be discrepancies among the sources.

Through data analysis, this study has found that the response of Chinese authorities to any collective resistance frequently involve 1) use of armed forces, 2) failed attempts of physical coercion and concession, and 3) concession only; and prior to 2000, the dispatch of armed forces was observed to be the governments only employed option. Stemming from this observation, the cases that included both coercion and concession strategies—as a response from the government—have been carefully separated to determine logically what hierarchical dynamics between the central and local governing bodies are present and which of the two strategies has consequently dissolved collective protests.

## The Chinese Government's Response to Collective Resistances

The most important question that needs to be answered is what prevents the Chinese citizens' collective resistances—normally in a form of protests—from achieving pan-national proliferation? The rioting activities in China have increased

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31) Barrington Moore Jr., *Authority and Inequality Under Capitalism and Socialism: USA, USSR and China* (Oxford University Press, 1987), p. 99.

32) Yan & Lin, *Yufang yu chuzhi quntixing shijian dangzhengganbu duben*, pp. 7-9.

to an incredible frequency. However, none of these riots have garnered nationwide support from the public in the absence of any social impact, and one could speculate that the mix of coercion and concession strategies by the Chinese authorities is chiefly responsible for this distinct phenomenon. One of the two strategies, the coercive strategy, arises from the dynamic relationship between the central and local governing bodies, whereas another strategy, the concession strategy, is generated by both the clash between the central’s attempt to strengthen its grip on the local authorities in the highly decentralized political environment and the desperate struggle of the local governing bodies to maintain their autonomy by departing from the central’s control.

The Chinese government categorizes each collective resistance effort according to the individual objectives of that effort—labeling them a protest (*kangzheng*), dispute (*jiufen*), or riot (*saoluan*). A protest is an action by individuals in society who hold little to no political power in society that expresses discontent to the ruling parties and corresponding institutions such as legislative and judicial branches. A dispute occurs when a discrepancy exists among the parties of equal ground. The participants—mostly from the working class—of a dispute usually fight for an economic gain, such as modification of labor regulations. A riot is a violent mass protesting event that does not designate what its targeted objectives are—as seen in the incidents of Lhasa’s ‘3.14 riot’ and 2009’s Urumqi ‘7.5 riot’.<sup>33)</sup>

During the period between 2000 and 2016, 24 different reported cases of resistance efforts have carefully been filtered and selected by excluding any political collective efforts and implementing various measures of qualification.<sup>34)</sup> The list includes the following protests.

<Table 1> The List of Protests

March 1, 2002	Daqing Oilfield Workers’ Protest
April 27, 2003	Tianjin SARS Patients Rejection
October 27, 2004	Hanyuan Protest
November 18, 2004	Chongqing Mass Protest
April 10, 2005	Zhejiang province Huashui Protest
June 27, 2005	Anhui province Chizou Protest

33) Cijiang Wang, *Chongtu yu zhili: Zhongguo quntixing shijian kaocha fenxi* (Renminchubanshe, 2013), pp. 146-147.

34) The outbreak of popular protests and the causes are easily grasped through media coverage. However, few protests can be seen from beginning to end involving more than 500 workers and farmers, given the central and local government dynamics.

December 6, 2005	Guangdong province Dongzhou Protest
January 9, 2006	Guangdong province Panlong Protest
January 16, 2006	Sichuan province Jianghua Protest
October 23, 2006	Jiangxi province Nanchang Student Protest
November 10, 2006	Sichuan province Guangang Protest
June 28, 2008	Guizhou province Wengan Protest
November 3, 2008	Chongqing Taxi Protest
November 6, 2008	Zhejiang province Shaoxing Protest
November 17, 2008	Gansu province Longnan Protest
July 23, 2009	Jilin province Tonghua Steel Protest
June 9, 2011	Guangdong province Xintang Peasant Workers' Protest
August 14, 2011	Liaoning province Dalian Chemical Factory Protest
September 21, 2011	Wukan Protest
October 26, 2011	Zhejiang province Zhili town Protest
November 20, 2011	Guangdong province Haimen Protest
July 1, 2012	Sichuan province Shifang anti-pollution Protest
July 26, 2012	Jiangsu province Qidong Protest
July 12, 2013	Guangdong province Jiangmen uranium plant Protest

As mentioned above, the three protest-suppressing responses by the Chinese government have been applied to evaluate each of the listed rioting incidents. Table 2 lists the number of times each strategy—involving coercion and concession—was used to suppress the incidents.

**<Table 2> The Chinese Government's Chosen Methods of Suppressing Protests**

Coercion	Concession by the Local	Concession after the Central Interference	Etc.	Total
12	6	4	2	24

Source: Data collection and analysis by the author

According to Table 2, the government employed a concession strategy in

approximately 39% of the incidents, demonstrating that China's means for suppressing massive collective resistance is largely concentrated on the use of coercion and concession. This raises another question: what are the required conditions to effectively implement the concession strategy besides the employment of coercion, which has proven to be an ineffective crowd control measure?

Since the 1978 economic reforms, the political environment of China has become highly decentralized. The use of coercion by the central government to interfere with suppressing collective resistance efforts has also been a potent political apparatus to effectively keep the local authorities, who are often deeply corrupt, in check. The central government's political elites have garnered the central's authority and legitimacy by sacrificing the lower working class to strengthen the Chinese authoritarian regime by organizing and arbitrating the corporal corruption network. Furthermore, China's public security apparatus, which has previously used physical force and coercion, has recently been minimally armed. However, the public security employees have been reequipped to more efficiently suppress the current trend of mass protests. The redevelopment of public security regulations and equipment has been largely responsible for the failure of pan-national proliferation—despite the explosively soaring frequency of collective resistance incidents—by sabotaging any possible pathway to proliferation. Should there be an outbreak of collective efforts in a remote rural region, the Chinese police department would immediately block every telecommunication means to prevent the spread of information, which would hamper the mobilization of additional protestors from nearby regions. After blocking communication lines, the government evaluates the cause of discontent that led to the riot. As soon as the source of dissatisfaction is identified, either a coercion or delay strategy is executed to effectively bring the incident to a halt, thereby disrupting any regional spread of the unrest and preventing pan-national proliferation.

Moreover, when faced with challenging demands from the protestors, the Chinese government resorts to the coercion strategy rather than opting to reconcile with the dissatisfied public. The required conditions for employing coercion are 1) the presence of a highly probable threat posed against the central government as the product of well-organized collective resistance efforts; 2) significant possibility of synergetic pan-national spread that may disturb regime security in China as the collective resistance coordinates with other anti-authoritarian regime activists; 3) acquisition of potent political leverage through a coalition of minimally influential collective efforts.<sup>35)</sup>

Although the use of coercion seems highly effective, such a forceful

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35) J. Craig Jenkins & Charles Perrow, "Insurgency of the powerless: Farmworker movements (1946-1972)," *American Sociological Review*, Vol. 42, No. 2 (April, 1977), pp. 249-250.

implication may not only backfire—promoting the pan-national spread of an initially small-scale demonstration—but may also generate a lingering cost-benefit problem. According to the Ministry of Public Security (2000), the use of coercion when suppressing any public protest should be limited. A handful of specialists have noted that the constant use of coercion to dissolve protests without an immediate implementation of the newly devised strategy creates an atmosphere that makes it highly likely that frequent outbursts of mass public protests may soon grow beyond the government's control, especially in China's rapidly growing economy.<sup>36)</sup> Therefore, the concession strategy has conveniently been adopted instead. However, the Chinese authorities have clarified that the use of concessions will not entirely replace the use of coercion. Moreover, given that many small-scale public protests are controlled by the local authorities, there is no need in such situations for the central or provincial governments to intervene.<sup>37)</sup>

The early political opportunity structure theorists have argued that the use of coercion is widely effective for suppressing public protests. However, recent research has revealed that the traditional coercion strategy is likely to backfire without a profound understanding of the perplexing relationship between the government's response and the protestors who are progressively becoming more complicated. When an uproar from the lower working class of peasants occurs, there are different factors that may enhance repercussions following the use of coercion. First, the coercion strategy is likely to cause adverse consequences when authorized by the leader of a township or County-level city instead of the central authorities. Next, there is the conflict of interests among those spearheading the demonstrations and the town residents. In order to secure necessary financial power, protestors forcefully demand donations and food from the residents, actions with which the townspeople do not agree. In addition, if central authorities attempt to involve or recruit the intelligentsia to maintain social security, this may lead to undesired consequences.<sup>38)</sup>

Despite the probability of backfire, the use of the coercion strategy remains an important suppressive tool because neither the central nor the local authorities can always employ concession strategies. Given that China currently experiences frequent massive protests, the grave problem is the high possibility that multiple demonstration groups will establish alliances, thereby introducing even larger, multi-dimensional protests. Therefore, when a local governing branch faces a challenging circumstance in which a suppressive means is limited to coercion, it is an unspoken rule that the central authorities permit the use of physical force. Although ordinarily driven by self-interest for securing political benefits, there are

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36) Tanner, "China Rethinks Unrest," pp. 137-144.

37) Yongshun Cai, "Power Structure and Regime Resilience: Contentious Politics in China," *British Journal of Political Science*, Vol. 38, Issue 3 (July, 2008b), pp. 411-432.

38) O' Brien & Li, "Protest Leadership in Rural China," p. 22.

four specific circumstances in which an option to suppress potentially threatening protests is limited to the use of coercion instead of concession.

Notably, one circumstance under which political elites in China will, without any hint of hesitation, use coercion to suppress all collective protests is when the protest is likely to threaten the regime or negate the fundamental principles of communism.

Another circumstance in which coercion will be used is in the face of well-organized physical violence. The massive protest that took place in Guangdong province Shanwei on December 6, 2005, over a land compensation dispute is one such example. For the first five months of the dispute, the protest was peaceful, but it eventually turned into a structured act of violence in which protestors held local officials hostage. Armed police were dispatched to the site, and three protestors were killed.<sup>39)</sup>

The third notable trigger for a coercive response to a protest is the presence of any support from foreign sources. A distinguished example is the Daqing Petroleum Industry protest that was provoked by biased corporal benefits and forced unemployment in 2002.<sup>40)</sup> The Daqing protest was believed to have received both direct and indirect support from the International Labor Organization; in addition, the protestors independently established an unauthorized labor union.<sup>41)</sup> The central authorities were well aware not only that the demands posed by the protestors were quite overwhelming but also that the presence of foreign advocacy could threaten the Chinese authoritarian regime. As a result, the government responded to the incident with coercion.

Lastly, it is worth noting that Beijing employs coercion due to the significant risk of the spread of resistance efforts when protests establish a firm alliance with the third party whose political ideologies and violent tactics commonly stir the public as this increases the probability of pan-national proliferation of a collective resistance.<sup>42)</sup> An alliance forms among different demonstrating parties when the objectives of the parties are similar or when aligning with another the relationship established possesses the capacity for synergetic proliferation. If the two demonstrating groups lack common objectives, the third party serves as a mediator that can bridge the two parties together, thereby promoting a coalition.<sup>43)</sup>

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39) George Friedman, "The Shanwei Shootings and China's Situation," (2005) available at <https://worldview.stratfor.com/article/shanwei-shootings-and-chinas-situation> (accessed on Jan.10, 2017), pp. 1-2.

40) Trini Leung, "A Cry for Justice: The Voices of Chinese Workers," *Albert Shanker Institute* (2008), p. 8.

41) *China Labour Bulletin Press*, "China Labour Bulletin Press Release on Daqing Oilfield Workers' Protests," Mar 6, 2002; *China Labour Bulletin Press*, "Daqing workers continue their protest on Tieren Square on June 4," June 6, 2002.

42) Xinhua, "Jiedu liu zhong quanwei Jueding: Tuoshan chuli quntixing shijian," Dec. 8, 2006.

43) Sidney G. Tarrow, *Power in Movement: Social Movements and Contentious Politics*

Although the coercion strategy still remains an important suppressive tool, there have been multiple incidents in which the concession strategies are more suitable. The following section discusses which notions and conditions have led to the application of concession.

## **The Concession Strategy from the Dynamics of the Central and Locals**

The dynamic clash of the central's attempt to strengthen its hold on local governments in the decentralized environment and the local authorities' desire to maintain autonomy has resulted in the concessive policy. The concession strategy is largely divided into two different modes: 1) the central's interference that strongly urges the use of concession and 2) the local government's implementation of concession prior to any interference from the central authority. Accompanied by the concessive policy, the suppressive ability of coercion is significantly enhanced. The effectiveness of the interchangeable use of the two strategies is confirmed as the pan-national proliferation of any protests has yet to take root.

What has given rise to the concession strategy? Prior to the political reforms, when centralization prevailed, the central government vertically directed any suppressive actions against the protests through coercion. After the reformation, which decentralized political power, the central government granted political-economic autonomy to local governing bodies.<sup>44)</sup> Thus, the right to control and suppress any collective resistance efforts has also been endowed to the local governments. Under the regime of Mao Zedong—before the reformation—the central political elites had vertically controlled the local branches, thereby further centralizing the political influence. However, the reformation, led by Deng Xiaoping in 1978, decentralized and re-distributed the political power to the local governing bodies just as the economy shifted from a managed economy to a market system. Although the highly decentralized political structure of China has dramatically weakened the central's political influence, the central authorities have reluctantly accepted the structural change because Deng Xiaoping prioritized economic growth. It seems only reasonable to have established the decentralized setting by guaranteeing more autonomy to the local branches in order to gain full support from the local authorities and maximize economic development in regions with tremendous growth potential.

However, collective protests provide the central government the perfect opportunity to strengthen its authority over the local governments in the highly

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(Cambridge University Press, 2011), p. 192.

44) Jan S. Prybyla, "Who has the emperor's clothes?: Economic relationship between the central and local governments in mainland China," *Issues & Studies: A Social Science Quarterly on China, Taiwan, and East Asian Affairs*, Vol. 32, Issue7 (1996), pp. 27-28.

decentralized political environment. The central authorities cleverly manipulate incidents of collective resistance as a political medium to regain control, while local branches attempt to minimize interference from the central body. This peculiar relationship between the central and local authorities has produced unique political dynamics that ultimately introduces concessive strategies. In the decentralized environment, the local governments—as the direct mediators and suppressors—have implemented the concession strategy when the use of coercion from the local police department has proven inadequate. Furthermore, the local authorities, by taking a moderate stance, have attempted to minimize any cost-ineffectiveness in the suppression of protests and chances of pan-national spread. In other words, the local governing bodies have sought to avoid not only the unnecessarily high cost of suppressing protests but also any potential backfiring from the suppression.

Coupled with the potential opportunities for interference, the decentralized political structure works to the central government's benefit as it helps the government avoid responsibility and criticism.<sup>45)</sup> Naturally, the protestors blame the local governments instead of the central authorities should the local authorities choose to recklessly control a riot. In the case of massive collective resistance, the central government is able to strengthen its grip on the local branches and boost its legitimacy of authority by interfering with the infamous corruption that runs rampant among the local authorities and by accepting the demands of the protestors. Therefore, the central government enables the local governments to employ the concessive strategies after significantly interfering with the local's suppressive methods and corruption. However, the locals may choose to implement the concession policy before any intrusion from the central government in order to maintain their governing autonomy and protect their wealth from illegal confiscation.

The concessive strategies were introduced after the political reformation in the late 1990s, as decentralization of power reached its pinnacle. The implementation of anti-corruption policies and reconstruction of the government's executive body have further solidified the foundation for the concession strategy. The significant changes in Chinese politics have provided opportunities not only for the central political elites to interfere with the local branches when a protest occurs but also for the local authorities to protect their privately owned properties. As this study's analysis concludes, frequent use of concessive strategies by the locals has been observed since 2000.

The introduction of concession is closely linked to the shift in the political elite's effort to establish a harmonious (hexie) society by strengthening the legitimacy of the current authoritarian regime after November 2002—Hu Jintao's

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45) Cai, "Power Structure and Regime Resilience: Contentious Politics in China," p. 430.

administration. Such political change has caused the communist party to adjust its response to protests. For instance, official terminology to describe a collective resistance incident has become neutral. The previously used “mobbing crowds (baotu)” and “illegal associations (feifajihui)”—that possess socially negative implications—have been replaced with more impartial terms like “mass incidents.” The newly introduced terminology directly reflects its profound depoliticization as well as the characteristics of frequently occurring mass incidents, which are unavoidable elements of life for Chinese people.<sup>46)</sup> Although there has not been an elaborate strategy to promote social reformation and infrastructural security, political attempts to widen legal channels for the protestors to voice their opinions have grown. As a result, the governing bodies have begun to adopt concessive strategies when dealing with protests, regardless of occasional threats posed by thoroughly organized collective resistance efforts.<sup>47)</sup>

Similarly, in 2005, the State Council of China requested that the local authorities carefully respond to any mass.<sup>48)</sup> Furthermore, in November 2008, Meng Jianzhu—China’s police chief—placed special emphasis on a cautious approach to suppressing any incidents of collective resistance efforts.<sup>49)</sup> His statement presents “3 careful uses (san ge shenyong)” which include the 1) careful use of police force (shenyong jingli), 2) careful use of arms (shenyong wuqi jingxie), and 3) careful use of coercion (shenyong qiangzhi cuoshi). That is, the use of arms by the police force is strictly limited when confronting violent protestors to avoid any physical destruction or damage.<sup>50)</sup>

It is not evident when the concessive strategies were officially introduced. However, the Chinese government’s changed attitude regarding mass incidents appeared and was acknowledged by the press around the beginning of the 21st century. Therefore, it seems only natural to conclude that the use of concession was made official in 2000.

The existence of both types of responses to collective resistance efforts generates another question: what are the required conditions for the local authorities to choose either coercion or concession? When a mass incident breaks out, the local governments initially respond with coercion under the supervision of the central government. As the suppression fails to effectively bring the incident

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46) Yang Su & Xin He, “Street as courtroom: State accommodation of labor protest in South China,” *Law & Society Review*, Vol 44, Issue 1 (March, 2010), p. 162.

47) Tanner, “China Rethinks Unrest,” pp. 149-150.

48) Guanyu jijū yufang he tuoshan chuzhi quntixing shijian de gongzuo yijian, January 29, 2005.

49) Xinhua, “Gonganbuzhang cheng chuzhi quntixing shijian yao shenyong jingxie.” Nov.3,2008; Beijing Times, “Gonganbuzhang zhuanwen cheng chuzhi quntixingshijian yao shenyong wuqi jingxie,” Nov. 4, 2008.

50) Yanqi Tong & Shaohua Lei, “Large-Scale Mass Incidents and Government Responses in China,” *International Journal of China Studies*, Vol. 1, No. 2 (October, 2010), p. 502.

under control, there are four categories of threats that can initiate the concessive strategy. The first is the presence of a high probability that the use of coercion will backfire and the incident may lead to pan-regional spread. The next one is a cost-benefit analysis in which the use of coercive methods imposes a greater cost than concession. The third is the existence of any casualties that may ultimately result in a political cost for the local authorities. The last is the central’s intervention urging the locals to enforce a concession when coercive means fails to resolve mass incidents.

<Table 3> Pro et Contra of the Local Governments’ Response to Mass Incidents

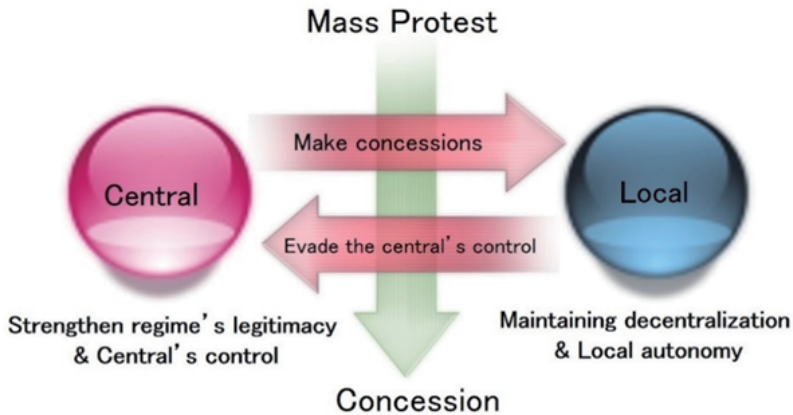
Response to Mass Incidents	Coercion	Concession
Pros	Prevention of additional incidents, Political cost	Avoidance of the central intervention
Cons	Dismissal of official when proliferation occurs, Legal punishment	Budget loss

Source: Data collection and analysis by the author

As illustrated in Table 3, each pro and con has been categorized according to each type of governmental response to mass incidents. Careful analysis of the table reveals that adoption of concession—with the corresponding burden of allocated budget loss—through which the central’s intervention is avoided, is a more attractive and rational choice for the local governments than the implementation of coercion—with the possible assumption of full responsibility when the suppressive attempt fails. Moreover, the use of concession that provides a conduit for the local authorities to escape from the central’s grip seems more appealing than it has ever been because avoidance of the central’s intervention is directly affiliated with escaping from publicizing political corruption that is deeply rooted in Chinese politics. In other words, the introduction of concession is triggered and further promoted by the implementation of China’s anti-corruption policy in 2000.<sup>51)</sup>

51) Jinyong Kim, “China’s Strengthening Anti-Corruption Competency and Changes in Countermeasures for Collective Protests,” *Asian cultural studies*, Vol. 30 (2013a), pp. 5-41.

&lt;Figure 2&gt; Hierarchical Dynamics between the Central and Local Governments



Source: Data collection and analysis by the author

As shown in Figure 2, the central government avoids direct conflict with the locals as the local authorities attempt to evade the central's control in the decentralized political environment. When challenged with mass protest incidents, the central government—through its right to inspect and make personnel changes—strengthens its authoritarian legitimacy by intervening in the corrupted local government's abuse of power and urging the local government to accept the terms proposed by the protestors. Also, the central government remains protected from any harms related to the failures of those suppressive attempts because the local governments possessing governing autonomy take full responsibility.<sup>52)</sup> Consequently, the central government's political elites maintain a decentralized local autonomy. On the other hand, the locals may assume a concessive stance towards protests prior to central government interventions in an attempt to retain their autonomy. For example, the local government's decision to take a concessive position stems from a thorough cost-benefit analysis when confronted with mass incidents (corruption, arbitrariness). In conclusion, both central and local governments manipulate mass incidents as a political medium for accomplishing their objectives—the central intending to strengthen its legitimacy with minimal risk and the local attempting to sustain regional autonomy.

52) Cai, "Power Structure and Regime Resilience: Contentious Politics in China," pp. 411 – 432.

## The Modes of the Central Intervention and Cases

As shown in Table 4, the modes of responses to protests have been categorized according to the scale shift of the central government. Scale shift occurs when the protestors—challenged by limiting factors—receive incentives from foreign states or international organizations and steer toward pan-national spread with the aim of accomplishing regime change. It also reflects a circumstance in which the rights of protestors are protected when the political elites disband use of armed forces. Scale shift encompasses both bottom-up and top-down political proliferation of mass incidents as protests continue to linger.<sup>53)</sup> Accordingly, the particular mode of scale shift of interest is bottom-up spread in which any locally occurring social disturbances proliferate to the central authorities. Therefore, as demonstrated in Table 4, any coercive implications and intervention from the central government are specified as 1) coercion, 2) the local's concession prior to the central intervention, and 3) the local's concession after the central intervention.

<Table 4> The Responding Modes According to Interventions of the Central Government

		The Central Intervention (Scale-Shift)	
		Present	Absent
Central vs. Local's Interest (Accordance/Discordance) →	Coercion	X	①
	Concession	③	②

Source: Data collection and analysis by the author

China's political reforms have established a politically and economically decentralized environment in which the central government constantly attempts to strengthen its political influence on the local government, while the local authorities try to maintain their governing autonomy and avoid central intervention. Both central and local authorities manipulate mass incidents as a political medium through which they can reap potential political advantages. This particular relationship between local and central governments resulted in the implementation of concession when faced with mass protests. However, any regime-threatening collective resistance effort of ① from Table 4 naturally establishes a consensus between the central and local governments, disregarding the hierarchical dynamics, as it ultimately leads to suppression under the central supervision. It is a generally accepted, unspoken rule that any use of coercion by the local governments is not supervised by the central. However, abuse of coercion or potentially threatening or unexpected mass incidents, which may result in a pan-national spread, triggers the central's intervention. On the other hand, the

53) Tarrow, *Power in Movement: Social Movements and Contentious Politics*, p. 193.

local authorities choose ② to avoid central intervention and to successfully resolve mass incidents when there exists a disaccord of interests between the central and local governments. The selection of ③ seems rational because such a decision allows the local government to maintain their autonomy and prevents the assumption of any responsibilities from failed suppressive attempts. However, if the local’s suppressive attempts failed, the central intervention followed by an urged implementation of the concessive stance enhances and strengthens the central government’s legitimacy.

Based on this understanding of the local and central governments’ responses to protests, what are the guidelines that determine which method to choose when dealing with mass incidents? Who are the main actors that make such decisions? And what effects does the central intervention have in the suppressive strategy?

In order to carefully deduce possible answers to the posed questions, cycles of contention are applied to probe the potential effects of the central intervention when suppressing mass incidents. Although there exist discrepancies in specifics, the cycles of contention provide a generally divided chronological framework that facilitates accurate evaluation: 1) diffusion, 2) exhaustion, 3) radicalization and institutionalization, and 4) restabilization—repression and facilitation.<sup>54)</sup> In the following example, the lower working classes are targeted because the members of lower working classes are frequent actors in mass incidents in China. Lastly, three exemplary incidents involving violence and structured leadership that have failed to pan-nationally spread due to several limitations are selected in Table 5 as each incident clearly reflects the hierarchical dynamics between the central and local authorities.

<Table 5> The Case and Corresponding Strategies to Collective Resistances

① Coercion	② Concession prior to the central intervention	③ Concession after the central intervention
Daqing Laborers’ Protest	Tonghua Steel Laborers’ Protest	Hanyuan Peasants’ Protest

Source: Data collection and analysis by the author

The first example, the Daqing protest, was a large-scale, well-structured, three-month long protest that may have caused scale shift, prompting the central’s intervention. However, the local authorities did not hesitate to take a coercive stance against the incident. The involvement of a third-party in the Daqing protest canceled out the hierarchical dynamics between the central and local bodies, naturally leading to the continuation of coercion without the central’s intervention

54) Tarrow, *Power in Movement: Social Movements and Contentious Politics*, p. 198.

in the local's decision. The Tonghua Steel incident is a fine example of the local government implementing a concession without any mediation from the central government. The last incident, involving Hanyuan peasants, is a case in which scale shift is observed as the central's intervention strongly urged the local government to accommodate the protestors.<sup>55)</sup>

### **Why Have Popular Protests in China Failed to Pan-Nationally Spread?**

It can be now easily deduced how the local authorities respond to mass incidents as the required situational elements triggering either coercion or concession have been identified. When mass incidents occur, the Chinese authorities dictate that an assigned local leader must assume full responsibility for any failed attempts to suppress the protest.

The Chinese political elites (Provincial level people's government), when taking responsibility for a failed suppressive attempt, strictly observe that the assigned administrative personnel—of vertically structured departments and horizontally established management system (tiaokuaijiehe)—must fully assume overall responsibility for any failed attempts. That is, a person of local administrative charge and corresponding local political elites share responsibilities (shui zhuguan, shui fuze).<sup>56)</sup> However, this particular local-autonomous Chinese governing system indirectly forces the local authorities to take a concessive stance in protests and implement any possible suppressive means to avoid pan-national spread in order to escape from the burdening weight of responsibilities. Although concessive strategies accompanied with coercion have become the dominant response towards mass incidents following the 2000s, implementation of concession alone is hardly a silver bullet against every collective resistance effort. This causes the local governments to balance the weight of probable consequences of adopting coercion and concession strategies; concessive take strictly follows the initial implementation of coercion—dispatching the police department. That is, the employment of local police forces is first executed as either local or central authorities decide to choose a concessive strategy.

It has now been clarified that the initial coercion is ordinarily followed by concession as long as there exists a lingering conflict of interest that spurs the

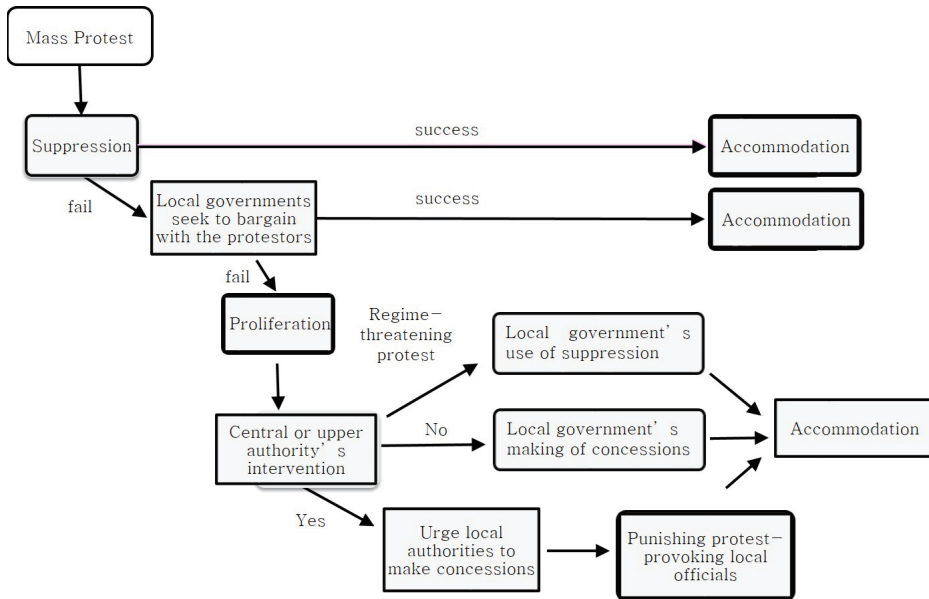
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55) Jinyong Kim, "Studies on the China's Strategy against Collective Protests: Focusing on the Cases Intervened by Central Government," *Dispute resolution studies*, Vol. 11, No. 2 (2013b), pp. 168-169.

56) Huang, Shue & Jianwen Ma, Lun gonganjiguan chuzhi quntixing shijian yuanze, *Guangdong jingguan xueyuan Zhengfa xuekan*, Vol. 4 (2006), p. 4; Yixin Xiong, *Zhili guanlixue* (Zhongguo renmin gongan daxue chubanshe, 2007), pp. 511-529; Junhe Lu, *Xinxihua tiaojian xia wujingbudu ichuzhi quntixing shijian jizhi yanjiu* (Guofang kexue jishu daxue, 2009), p. 66.

hierarchical dynamics between the central and local governments. When consensus has been reached among the differing interests, the coercive strategy is continued. As shown in Figure 3, the overall responsive mechanism towards mass incidents has been clearly outlined.

<Figure 3> Responsive Mechanism towards Collective Resistance



Source: Data collection and analysis by the author

As illustrated above, suppression is the initial response towards any mass incident. Collective efforts involving lower working-class citizens, especially, promote the continuous use of armed forces as the local authorities, in an attempt to deepen their relationship with business leaders, side with large enterprises. Maintaining close relations with local enterprises is of utmost importance not only because of any potential influence on Gross Domestic Product that is used to measure the local leaders' accomplishment (zhengji) but also because doing so attracts both domestic and foreign investors who provide strong financial drive to the region. Consequently, the local authorities are strongly predisposed to standing with the corporate owners and taking a coercive stance towards the protestors who are usually members of lower working classes.<sup>57)</sup> Upon successful suppressive attempts, mass incidents are immediately dissolved. On the other hand, the local

governments may seek to bargain with the protestors at the site if any suppressive means fails. When the demands of the protestors are satisfied, the local authorities choose the concessive path, and the mass incident is soon quelled. However, when consensus is not reached, the incident enters its proliferation phase. A high potential of pan-national spread provides a legitimate excuse for the central government to intervene with the local authorities. As clearly outlined above, the central government makes the decision whether to continue coercion or change to concession as it gauges the potential threat the incident poses to social stability.

It is a general rule that the local authorities initially respond to mass incidents with coercive suppressive methods. Upon any failed attempt to bring the incident under control, the concessive approach allows the local governments to bargain with the protestors. If demands of the protestors are not satisfied, the potential proliferation of the protest will significantly increase. In the situation of the high probability of spread, there are three possible solutions to deal with mass incidents. The first is the continuation of coercion by the local governments prior to any intervention from the central government, when protests were transformed into regime-threatening popular resistance.<sup>57)</sup> Another option is for the local authorities to meet the demands of the protestors by assuming a concessive attitude prior to forceful intervention from the central government. The third solution is the central's forceful intervention that strongly urges the local authorities to take a concessive approach towards mass incidents.

Accordingly, based on the level of threat and size of the collective resistance effort, the central and local government of China can establish: 1) a national emergency commanding unit, 2) a province-level emergency unit consisting of highly ranked officials, and 3) a local-epicenter-located commanding body. The national commanding unit manages the national-level social disturbances whereas, if exceeding the provincial administrative district, it is handled within the scope of authority. Party committees and local governments are responsible for any social uprisings and are able to install a Small Leading Group (*lingdaoxiaozu*) consisting of public security, prosecutors, the courts, the judiciary, and the police. The province-level emergency unit handles all large-scale collective resistance efforts in the same class of administration under the unified command system of the provincial government. Local-epicenter-located commanding bodies organize party committees, public security, ministry of state security, armed police, people's government, and the local elites take charge of all the incidents of local

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57) Yang Su & Xin He, "Street as courtroom: State accommodation of labor protest in South China," *Law & Society Review*, Vol 44, Issue 1 (March, 2010), p. 162.

58) Collective protests can be transformed into political demonstrations under certain conditions. For example, the problem of late payment of laborers' wages may lead to the collective petition, and the authorities would treat it as a political issue. See Weijian Tang, *Quntixing jiu fen susong jie jue jizhilun* (Beijing University Press, 2008), p. 9.

and lower-level government.<sup>59)</sup>

As it has been observed in collective resistance efforts occurring since 1993, the people's police, armed police, and People's Liberation Army have served as suppressive tools towards collective resistance efforts. The members of the police department are dispatched to the site at the initial breakout of a mass incident. However, any proliferation of protests calls for the use of armed forces. The military units, although deployed to the site, do not interfere with suppressive actions as they are bound to martial law; instead, they are only present at the site to minimize further social disturbances.

The political leaders in China have thoroughly revised the constitution, criminal law, any law articles pertaining to collective resistance, security management regulations, response measures to any unforeseen social disturbances, and public security policies related to mass incidents (in order to facilitate its legitimacy in suppressing any occurrence of collective resistance efforts). The policies regarding popular protests are mostly prohibitive and involve many regulations.<sup>60)</sup> Moreover, the written lawful articles are abstracted by unclear principles and instructions as a specific written manual for collective resistance does not exist. Although the central government desperately attempts to construct and standardize anti-protest strategy, the preexisting response design has proven inadequate to successfully suppress the rapidly changing, frequently occurring popular resistance efforts. In the highly decentralized political environment, the local authorities must improvise and determine the next course of action as the main decision-maker. However, there are numerous real-life elements that require constant adjustments. Furthermore, how the local governments handle protests depends heavily on whether the decision-making personnel grasps the gravity of a given circumstance—as the level of situational comprehension serves as a direct determinant of consequences of any suppressive attempts. In other words, the criteria of anti-protest policies must remain flexible and adjustable as all popular resistance efforts are not identical.

## Conclusion

In sum, the clash between the central political elites—whose objective is to strengthen its authority and legitimacy by interfering in such a highly decentralized political setting—and the local governments—whose intention is to maintain and protect their autonomy—is a drama unique to the post-political reformation era in China. The central authorities have cleverly manipulated the frequently occurring popular resistance efforts as a potent medium for interference

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59) Lu, *Xinxihua tiaojian xia wujingbudu ichuzhi quntixing shijian jizhi yanjiu*, p. 66.

60) Yan & Lin, *Yufang yu chuzhi quntixing shijian dangzhengganbu duben*, p. 128.

as the local governments desperately attempt to avoid political intrusion. The conflicting interests have created the unique dynamics in China's political environment, and such a political implication has further been enhanced as the central government officially institutionalized an anti-corruption plan in 2000. This particular structural change has successfully supported the central's stronger hold on the local governments and the legitimacy of the regime, while the attempt from the local authorities to protect their autonomy enhances the inertia of the current political dynamics between the central and local. The conflict of the differing interests has convinced local authorities of the value of adopting the concession strategy. However, the local governments do not expropriate demands from the protestors upon an occurrence; rather, they are more likely to express concessive attitudes when political interference from the central government is highly likely—especially when faced with the limitations of the initial use of suppression or when there is room for intervention by upper-level governments. It is quite evident that the concession strategy serves as a convenient political escape conduit for the local governments to avoid assuming any responsibilities.

On the one hand, the decentralized political setting has naturally endowed the local governments with the official rights and authorities to suppress any popular protests. That is, any failed attempt to dissolve a rioting incident directly reflects the assumption of the heavy responsibility that local leaders must assume. Therefore, the local authorities interchangeably manipulate the use of coercion and concession—as necessary—to eliminate any possibility of pan-national proliferation of collective resistance.

Conclusively, the pan-national proliferation of Chinese collective protests is highly unlikely as long as the central and local leaders cunningly implement the two politically powerful tools—coercion and concession—when suppressing any occurrence of collective resistance. The ultimate goal of this article was to examine why the pan-national proliferation of China's highly frequent collective protests is seemingly inconceivable. The examination revealed that protest proliferation is hindered by the combinational use of coercion and concession strategies in the highly decentralized, central-local political environment.

This research into the current political and social trends in China may direct any alternative hypothesis toward a new perspective that the authoritarian regime of China must be capable of withstanding any bottom-up collective efforts, as opposed to the conventionally pessimistic opinion regarding the Chinese authorities' ability to maintain stability.<sup>61)</sup> As thoroughly analyzed and determined

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61) Edward Friedman, "A Comparative Politics of Democratization in China," *Journal of Contemporary China*, Vol. 12, Issue 34 (2003) pp. 103-123; Suisheng Zhao, "Political Liberalization without Democratization: Pan Wei's proposal for political reform," *Journal of Contemporary China*, Vol 12, Issue 35 (Aug 2003), pp. 333-355; Henry S. Rowen, "When will the Chinese people be free?" *Journal of Democracy*, Vol. 18, No, 3 (July 2007), pp. 38-52;

above, as long as the Chinese governing figures cleverly use the coercion and concession strategies when suppressing any events of collective resistance, the Chinese authoritarian regime is likely to remain politically and socially stable despite the presence of frequent collective protests.

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# South Korea's space program and its implications

Su-Mi Lee

## Abstract

*This paper seeks to highlight the ramifications of South Korea's recent space endeavors concerning the ROK-US alliance and its relations with China. To do so, first, it will review the history of South Korea's space program and discuss factors that helped advance or slow down the development of South Korea's space program. Then, it will take a close look at the changing nature of the ROK-US alliance concerning the domain of outer space and the effect of these changes on regional security including South Korea's relations with China.*

**Keywords:** *International Security, Space Program, South Korea, ROK-US Alliance*

Nuri, the Korean Satellite Launch Vehicle II, which was built by the Korea Aerospace Research Institute (KARI) in collaboration with local companies, took off from the Naro Space Center in Goheung on October 21, 2021. The three-stage rocket, which carried a 1.5-ton dummy payload, reached space 434 miles above the Earth but failed to put the dummy satellite into orbit.<sup>1)</sup> Had Nuri successfully put the dummy satellite in orbit, South Korea would have been the seventh country with the technology to build a space launch vehicle that could carry a satellite weighing more than 1 ton after Russia, the United States, France, China, Japan, and India.<sup>2)</sup> It would have given the country more confidence in achieving other ambitious goals such as building 6G networks and spy satellites and beginning lunar adventures.<sup>3)</sup>

This is not the first time South Korea's rocket launch has failed. Its carrier rocket, which used engines developed by Russia, failed to reach orbit in 2009 and 2010, although its third attempt in 2013 successfully had a two-stage Naro space vehicle place STSAT-2C into low Earth orbit.<sup>4)</sup> In the history of space launch programs, failures on the first try are common. In the 1950s when the United States strived to keep up with the Soviet Union that just successfully launched its first satellite, Sputnik 1, it experienced many failures before successfully sending Explorer 1 to space.<sup>5)</sup> The Nuri carrier rocket failed to send a dummy satellite into orbit. However, it should be noted that all three stages of the liquid-fueled rocket worked, although the third stage of the rocket "burned out sooner than planned" and thus did not give "the test satellite enough speed to stabilize and stay in orbit."<sup>6)</sup> Nonetheless, the October 21 rocket launch is a remarkable step forward for South Korea as a spacefaring country; it signifies the grand entry of South Korea into the exclusive Space Club.

The October 21 launch is among a series of recent developments that indicates South Korea's growing interest in and determination on expanding its space

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1) Sang-hun Choe, "South Korea's First Homemade Rocket Lifts Off but Is 'One Step Short,'" *New York Times*, October 21, 2021, available at <https://www.nytimes.com/2021/10/21/world/asia/south-korea-rocket.html>; Yoonjung Seo, Gawon Bae, and Jessie Yeung, "South Korea fails to put dummy satellite into orbit," *CNN*, October 21, 2021, available at <https://www.cnn.com/2021/10/21/asia/south-korea-nuri-rocket-launch-intl-hnk-scn/index.html>

2) Seo, Bae, and Yeung, "South Korea fails to put dummy satellite into orbit."

3) Josh Smith, "From spy satellites to mobile networks, S.Korea pins space hopes on new rocket," *Reuters*, October 14, 2021, available at <https://www.reuters.com/world/asia-pacific/spy-satellites-mobile-networks-skorea-hopes-new-rocket-gets-space-programme-off-2021-10-15/>

4) Seo, Bae, and Yeung, "South Korea fails to put dummy satellite into orbit"; Bloomberg, "South Korea seeks to move up its spot in global space race," *Bloomberg*, July 15, 2021, available at <https://www.bloomberg.com/news/articles/2021-07-14/south-korea-seeks-to-move-up-its-spot-in-global-space-race>

5) James Clay Moltz, "The KSLV I Launch and South Korea's Space Strategy," Council on Foreign Relations, October 17, 2012, available at <https://www.cfr.org/report/kslv-i-launch-and-south-koreas-space-strategy>

6) Choe, "South Korea's First Homemade Rocket Lifts Off but Is 'One Step Short.'"

program. In the late February of 2021, the Republic of Korea (ROK) government allocated about \$553.1M to space programs that would involve 16 government bodies. Several weeks later, South Korean President Moon Jae-in announced that the country planned to send its own moon lander with its own launch vehicle by 2030. Moon's May visit to Washington concluded with the termination of the bilateral missile guidelines that had restricted ROK's missile capability. A few days after the Biden-Moon meeting, by signing the Artemis Accords on stewardship of the moon, South Korea became the tenth member of NASA's moon-exploration coalition, the Artemis program.

This paper seeks to highlight the ramifications of South Korea's recent space endeavors concerning the ROK-US alliance and its relations with China. To do so, first, it will review the history of South Korea's space program and identify factors that helped advance or slow down the development of the country's space program. Then, it will take a close look at the changing nature of the ROK-US alliance concerning the area of outer space and the effect of these changes on regional security including South Korea's relations with China.

## South Korea's Space Program

Since its first satellite in 1992, KITSat-1 (Korean Institute of Technology Satellite), which was launched from Guiana, South Korea has launched 37 satellites into orbit.<sup>7)</sup> In 2013, it was able to launch its first carrier rocket to space with an engine developed by Russian. Although the "wholly Korean-made launch rocket" Nuri failed to send its dummy satellite into orbit,<sup>8)</sup> given how late South Korea's space program began and under what restrictions it had operated, its progress is commendable.

It was only about thirty years ago in 1989 when South Korea established the KARI that has played a pivotal role in leading the country's space program to where it is now. At the outset, collaborating mainly with Britain and the United States, KARI focused its efforts on developing satellites, hoping to acquire technology to develop its own spacecraft in near future.<sup>9)</sup> While making progress on building satellites, in the 1990s, KARI became interested in rockets and developed solid-fueled boosters that reached the 180-kilometer altitude; however, due to the missile guidelines that were agreed on between Seoul and Washington in 1979, KARI's efforts to build carrier rockets came to a halt.<sup>10)</sup>

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7) Hyoung Joon An, "South Korea's Space Program: Activities and Ambitions," *Asia Policy*, Vol. 15, No. 2, (2020) p. 34.

8) Ibid.

9) Moltz, "The KSLV I Launch and South Korea's Space Strategy."

In an effort to acquire technology to build a booster, South Korea signed up to be a member of the Missile Technology Control Regime (MTCR) in 2001. Yet, failure of negotiation with the United States turned South Korea to Russia as a provider of a booster in 2004. Although the first two attempts to send a satellite into orbit in 2009 and 2010 were not successful, South Korea's collaboration with Russia resulted in its first satellite STSAT-2C, a 100-kilogram research satellite, placed by its own launch vehicle (2013) and its first Korean astronaut into space in 2008.<sup>11)</sup>

Another milestone was made on March 26, 2015, when South Korea launched the KOMPSAT-3A (Arirang-3A) from the Yasny launch base in Russia. Arirang-3A, which would monitor the Korean peninsula regardless of the weather condition, was the first satellite developed by private sectors that KARI shared its technology with.<sup>12)</sup> South Korea's first military communications satellite was carried by a Falcon 9 rocket of SpaceX and launched from the Kennedy Space Center in Florida, U.S.A., in July 2020.<sup>13)</sup> On May 26, 2021, by signing the Artemis Accords, South Korea became the tenth country that joined the NASA-led Artemis lunar exploration program.<sup>14)</sup> The recent removal of the 42-year-old missile guidelines that had restricted the distance, payload size, and fuel type of South Korea's ballistic missiles will only accelerate the expansion of South Korea's space programs<sup>15)</sup> and encourage the private sector's involvement in space projects.<sup>16)</sup>

## Proactive governmental policies

All these signs of progress would not have been possible had there not been the South Korean government's proactive space policies. Behind remarkable progress in South Korea's space programs was a series of governmental policies that

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10) Ibid.

11) Moltz, "The KSLV I Launch and South Korea's Space Strategy"; Bloomberg, "South Korea seeks to move up its spot in global space race."

12) Tae-jun Kang, "South Korea's Quest to Be a Major Space Power," *The Diplomat*, March 27, 2015, available at <https://thediplomat.com/2015/03/south-koreas-quest-to-be-a-major-space-power/>

13) (Smith, "From spy satellites to mobile networks, S.Korea pins space hopes on new rocket"; Ankit Panda, "Solid Ambitions: The U.S.–South Korea Missile Guidelines and Space Launchers," Carnegie Endowment for International Peace, August 25, 2020, available at <https://carnegieendowment.org/2020/08/25/solid-ambitions-u.s.-south-korea-missile-guidelines-and-space-launchers-pub-82557>

14) Si-soo Park, "With Artemis Accords on the table, South Korea, U.S. to widen cooperation in space exploration, security," *Spacenews*, May 25, 2021c, available at <https://spacenews.com/with-artemis-accords-a-done-deal-south-korea-u-s-to-widen-cooperation-in-space-exploration-security/>

15) Troy Stangarone, "South Korea Moves Closer to Launching Its First Lunar Orbiter." *The Diplomat*, September 4, 2021, available at <https://thediplomat.com/2021/09/south-korea-moves-closer-to-launching-its-first-lunar-orbiter/>

16) Bloomberg, "South Korea seeks to move up its spot in global space race."

facilitated space programs. In the 1970s, the government recognized the potential economic and security benefits of the space program, but it was not until the 1980s when it released the 1985 “Long-Term Plan for the Development of Science and Technology toward the 2000s”; passed the Aerospace Industry Development and Promotion Act of 1987, which allocated a significant amount of budget to space programs and provided legal frameworks for the KARI; and finally established KARI in 1989.<sup>17)</sup> In 1996, Seoul announced the “National Space Development Plan” that proposed the sequential steps the country would need to take to acquire independent space capability and join the Space Club.<sup>18)</sup> The National Space Development plan identified two main areas South Korea should focus on the development of satellites and indigenous launch capability.<sup>19)</sup> This plan was revised in the subsequent years with minor changes to extend the goals and elaborate on the programs. The “First Basic Plan on Mid-to-Long-Term National Space Development” of 1996 aimed to place South Korea among the top ten spacefaring countries and launch KSLV-1 carrying an indigenously developed satellite.<sup>20)</sup> The Space Development Promotion Act, which was passed in 2005, required the government to devise a basic program every five years that would promote space development and manage space objects.<sup>21)</sup> The 2007 Basic Space Development Promotion Plan extended the development goals of the National Space Development until 2016.<sup>22)</sup> In February 2018, South Korea announced the “Third Basic Plan for 2018-2022” that sought to execute space development that would improve public safety and quality of life.<sup>23)</sup>

Since space projects cost significantly more than any other government project, all these government plans and initiatives came with a hefty price tag. The recent Nuri launch cost around US\$1.8B. Since 1996 when the National Space Development Plan was released, the budget allocated to the space program has increased gradually from US\$58M to US\$593M (2017), a 922% increase in real terms.<sup>24)</sup> A huge jump observed in the 2006 budget, from US\$186M to US\$331M,

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17) An, “South Korea’s Space Program: Activities and Ambitions,” pp. 34-35.

18) Stephanie Wan, “U.S. – South Korean Space Cooperation: A background on South Korea’s space program, America’s geopolitical influences, and future areas for strategic collaboration,” The Secure World Foundation, September 2010, p. 4, available at [https://swfound.org/media/205872/us-korean\\_space\\_cooperation\\_final\\_sept\\_2010.pdf](https://swfound.org/media/205872/us-korean_space_cooperation_final_sept_2010.pdf)

19) Ibid.

20) An, “South Korea’s Space Program: Activities and Ambitions,” p. 35.

21) Wan, “U.S. – South Korean Space Cooperation: A background on South Korea’s space program, America’s geopolitical influences, and future areas for strategic collaboration,” p. 4.

22) Ibid.

23) An, “South Korea’s Space Program: Activities and Ambitions,” p. 35.

24) Sandra Erwin, “Pentagon report: China amassing arsenal of anti-satellite weapons,” *Spacenews*, September 1, 2020, available at <https://spacenews.com/pentagon-report-china-amassing-arsenal-of-anti-satellite-weapons/>

could be explained by the 2005 Space Development Promotion Act. In 2021, South Korea announced it would spend US\$553.1M on space programs<sup>25)</sup> and pledged US\$1.4B to space activities over the next 10 years.<sup>26)</sup> Although these figures appear significant, they are not so when compared to Japan's budget of US\$4.14B in the fiscal year 2021, which increased by 23.1% from the fiscal year 2020,<sup>27)</sup> and India's budget of US\$17.5B in the fiscal year 2020.<sup>28)</sup> Put it differently, South Korea's space budget as a share of GDP in 2017 was 0.039% while India's and China's were 0.062% and 0.08%, respectively. To be competitive with other Asian spacefaring countries, South Korea will need to allocate more resources to space projects and programs.<sup>29)</sup>

## The 1979 Bilateral Missile Guidelines

South Korea is in a position to play catch-up due to a security concern that has plagued the peninsula. Inherently, space launch technologies are dual-use;<sup>30)</sup> it means space objects that are placed in space for economic purposes could be also used for military purposes. More importantly, in the case of South Korea, in the name of preventing a potential arms race with North Korea, the 1979 bilateral agreement between Seoul and Washington was signed to limit South Korea's missile development,<sup>31)</sup> although South Korea needs to expand its military capability due to North Korea's unceasing threats.<sup>32)</sup> The 1979 missile guidelines limited a ballistic missile's payload size to 500 kilograms and its range to 300 kilometers and allowed

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25) Si-soo Park, "South Korea to spend \$553 million on space projects in 2021," *Spacenews*, February 25, 2021a, available at <https://spacenews.com/south-korea-to-spend-553-million-on-space-projects-in-2021/>

26) Josh Smith and Sangmi Cha, "S.Korea's launch of space rocket boosts its homegrown contractors," *Reuters*, October 20, 2021, available at <https://www.reuters.com/world/asia-pacific/skoreas-launch-space-rocket-boosts-its-homegrown-contractors-2021-10-21/>

27) Si-soo Park, "Japan budgets a record \$4.14 billion for space activities," *Spacenews*, March 9, 2021b, available at <https://spacenews.com/japan-budgets-a-record-4-14-billion-for-space-activities/>

28) Si-soo Park, "US, South Korea agree to enhance security cooperation in outer space," *Spacenews*, August 30, 2021d, available at <https://spacenews.com/us-south-korea-agree-to-enhance-security-cooperation-in-outer-space/>

29) Moltz, "The KSLV I Launch and South Korea's Space Strategy."

30) Smith, "From spy satellites to mobile networks, S.Korea pins space hopes on new rocket"; Kelsey Davenport, "South Korea to Pursue Military Satellites," *Arms Control Today*, September, 2020, available at [armscontrol.org/act/2020-09/news/south-korea-pursue-military-satellites](https://armscontrol.org/act/2020-09/news/south-korea-pursue-military-satellites)

31) Wan, "U.S. – South Korean Space Cooperation: A background on South Korea's space program, America's geopolitical influences, and future areas for strategic collaboration," p. 13.

32) Sarah Jeong, "South Korea's Defense Capabilities and Acquisition Programs," Wilson Center, August 31, 2021, available at <https://www.wilsoncenter.org/blog-post/south-koreas-defense-capabilities-and-acquisition-programs>

the country to use liquid fuels only for a missile. A 2012 revision to the original agreement changed the range of a ballistic missile to 800 kilometers and the limit on the payload was eliminated in 2017.<sup>33)</sup> In 2020, the two countries agreed to allow South Korea to build solid-fueled rockets for space activities.<sup>34)</sup> Finally, the bilateral missile guidelines were terminated in May 2021. To South Korea's space industry, termination of the missile guidelines meant unrestricted development of space carriers; that is, they are allowed to develop carrier rockets with any range and payload size and any type of fuel that would work best for their space activities. On May 21, 2021, Chung Sye-Kyun, Prime Minister of South Korea, declared on Twitter that with the removal of the missile guidelines, South Korea has achieved "secure complete missile sovereignty [for the first time] in 42 years."<sup>35)</sup> On June 9, 2021, Lim Hye-sook, Science and ICT (Information and Communication Technology) Minister, announced that South Korea would launch and place 110 dual-use satellites including reconnaissance (military purposes), communication satellites (6G broadband internet), and observation satellites (weather conditions).<sup>36)</sup>

## The ROK-US Alliance

The ROK-US alliance was formed in October 1953 as one of the Cold War tools to help achieve regional security. For South Korea, North Korea posed a threat to its survival while the United States regarded the spread of Communism as a threat to the existing world order.<sup>37)</sup> The end of the Cold War changed the strategic importance of the alliance. Although a constant threat from North Korea continued for South Korea, the grave threat the United States once considered during the Cold War no longer existed. Washington had other security concerns that its alliance partners were not interested in being dragged into as they did not consider them an immediate threat to their security.<sup>38)</sup> Both Washington and its alliance partners felt the need to redefine the nature of its alliances and saw the benefits of expanding its alliance to the domains such as "counterterrorism, maritime security, space, pandemics, post-conflict stabilization and reconstruction,

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33) Davenport, "South Korea to Pursue Military Satellites."

34) Choe, "South Korea's First Homemade Rocket Lifts Off but Is 'One Step Short.'"

35) Sang-Min Kim, "U.S. Lifts Missile Limits on South Korea," *Arms Control Association*, June 2021, available at <https://www.armscontrol.org/act/2021-06/news/us-lifts-missile-limits-south-korea>

36) Brian Kim, "With restrictions lifted, South Korea launches \$13B space power scheme," *Defense news*, September 6, 2021, available at <https://www.defensenews.com/space/2021/09/06/with-restrictions-lifted-south-korea-launches-13b-space-power-scheme/>

37) Scott Snyder, *The US-South Korea Alliance: Meeting New Security Challenges* (Boulder, CO: Lynne Rienner Publishers, 2012).

38) Ibid.

peacekeeping, overseas development assistance, nonproliferation, and climate change.”<sup>39)</sup> In the case of the ROK-US alliance, its scope could be expanded to encompass issues such as nontraditional and global security challenges. Among a number of issues, this paper will focus on space cooperation between South Korea and the United States as an extension of the ROK-US alliance and discuss what it entails.

Space programs and achievements signify military capability, economic security, and national prestige.<sup>40)</sup> South Korea was primarily motivated to acquire space technology and develop space programs by its need for national security and self-defense among others. However, the bilateral missile agreement of 1979 had put restrictions on the types of missiles that South Korea could develop. Throughout the years, Washington expressed its concerns even about South Korea's civilian space projects that such technology could be used to build military missiles.<sup>41)</sup> The still-classified bilateral missile agreement has been revised for the missile range (from 180km to 300km in 2001; from 300km to 800km in 2012), the payload (up to 500kg in 2012; elimination of the payload limit in 2017), and the type of fuel (solid-fueled motors allowed in 2020).<sup>42)</sup> Termination of the 1979 missile guidelines was significant not only symbolically (“missile sovereignty”) but also practically because it allowed South Korea to develop its own launch vehicle with confidential payloads, which means the purpose of space objects could be kept confidential.<sup>43)</sup> It also facilitated constructive space cooperation between South Korea and the United States.

Seoul and Washington established a Space Policy Dialogue in 2015 to discuss civil space issues.<sup>44)</sup> More recently, in the August 27 agreement of 2021, South Korea's Air Force and the U.S. Space Force agreed to form a consultative body that would facilitate cooperation between the two countries on space policy and missile defense and to host joint military drills led by the U.S. Space Force to “bolster U.S. defense capabilities in outer space.”<sup>45)</sup> The agreement indicates not only both countries' desire to strengthen their cooperation in the domain of outer space but also their determination to maintain peace and stability in outer space

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39) Ibid.

40) An, “South Korea's Space Program: Activities and Ambitions,” p. 41.

41) Tae-Hyung Kim, “South Korea's space policy and its national security implications.” *The Korean Journal of Defense Analysis*, Vol. 22, No. 4 (2010), p. 521.

42) Panda, “Solid Ambitions: The U.S.–South Korea Missile Guidelines and Space Launchers”; Kim, “U.S. Lifts Missile Limits on South Korea.”

43) Seo, Bae, and Yeung, “South Korea fails to put dummy satellite into orbit.”

44) Stangarone, “South Korea Moves Closer to Launching Its First Lunar Orbiter.”

45) Panda, “Solid Ambitions: The U.S.–South Korea Missile Guidelines and Space Launchers”; Park, “We go together’: US Space Force chief seeks deeper space cooperation with South Korea.”; Stangarone, “South Korea Moves Closer to Launching Its First Lunar Orbiter.”

that has been increasingly contested in recent years.<sup>46)</sup> In his video message on October 18, at the 22nd International Aerospace Symposium hosted by the ROK Air Force, Chief of U.S. Space Force General John W. “Jay” Raymond expressed “hope for deepening cooperation with South Korea military.”<sup>47)</sup>

These developments confirm that South Korea takes its space cooperation as a matter of national security. South Korea’s Air Force Chief of Staff General Park In-ho said “Space is no longer a mere area of curiosity; rather, it has now become a key domain for our national security, and only rigorous preparation will ensure our survival in the future space environment.”<sup>48)</sup> Lee Chang-yoon, head officer of the Space, Nuclear and Big Science Policy Bureau at the Ministry of Science and ICT, shared such a sentiment by expressing that “Space is something we should approach with a national strategy because it’s not something only about science and technology.”<sup>49)</sup> The ROK’s Air Force has been divided into two combat units: an air and space combat research group; this reorganization helps coordinate between ROK’s Air Force and the U.S. Space Force.<sup>50)</sup>

To the United States, not cooperating with South Korea was risky. Not only does South Korea play a vital role in East Asian security but also not cooperating with South Korea may turn South Korea to Russia and enhance its political and economic relations with Russia as it happened in the 2000s when Russia helped South Korea launch its first satellite placed by its own launch vehicle. Thus, Washington was well aware that if it did not cooperate with South Korea in the space program, the latter’s ties to Russia would be strengthened and its influence in the East Asian region would be minimized.<sup>51)</sup> Put it differently, if the scope of the ROK-US alliance was not expanded to encompass the space domain, Washington understood that the ROK-US alliance would only be weakened. Thus, space cooperation served as an opportunity to strengthen the ROK-US alliance particularly as tensions between the regional powers and the United States grew. In the fourth ROK-US Space Policy Dialogue that was held in Washington, D.C., on August 10, 2021, the two countries pledged to strengthen their space cooperation at all levels - civil, governmental, and military; take joint action against emerging threats in space; construct multilateral norms, rules, and

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46) Park, “We go together’: US Space Force chief seeks deeper space cooperation with South Korea.”

47) Ibid.

48) Ibid.

49) Park, “With Artemis Accords on the table, South Korea, U.S. to widen cooperation in space exploration, security.”

50) Sukjoon Yoon, “Like It or Not, the South Korea-US Alliance is Changing,” *The Diplomat*, August 27, 2021c, available at <https://thediplomat.com/2021/08/like-it-or-not-the-south-korea-us-alliance-is-changing/>

51) Wan, “U.S. – South Korean Space Cooperation: A background on South Korea’s space program, America’s geopolitical influences, and future areas for strategic collaboration,” p. 15.

principles; and collaborate in the field of Space Situational Awareness (SSA).<sup>52)</sup>

In the May summit of 2021 between Biden and Moon, while emphasizing their shared common democratic values and their long-lived alliance, both parties agreed to deepen cooperation in other domains in an interconnected world.<sup>53)</sup> One of the highlighted agendas was space-based technological cooperation that aimed to prepare both countries to confront emerging threats.<sup>54)</sup> Two days after the Moon-Biden summit, U.S. Space Command's commander, General James Dickinson (US Army), met with South Korea's Defense Minister Suh Wook to reaffirm their commitment to take joint actions against security threats in space.<sup>55)</sup> They also reaffirmed that both countries were committed to "ensure a safe space environment and to advance the [South Korea-U.S.] alliance."<sup>56)</sup>

From the U.S. point of view, trilateral cooperation between the United States, South Korea, and Japan on space activities would be beneficial to establish norms and principles of responsible behavior in outer space and consolidate its space leadership against emerging threats.<sup>57)</sup> If one considers that Japan and South Korea were the two first countries whose leaders were invited to the White House since Biden's presidency began, it appears that Washington hoped to form trilateral cooperation with Japan and South Korea and mobilize the countries in the Indo-Pacific region to contain China.<sup>58)</sup> The NASA-led Artemis program that included Seoul and Tokyo seemed to be developed as a way for Washington to reclaim the U.S. leadership position in outer space against China whose presence has been growing rapidly in recent years. It may be possible that Washington agreed to terminate the 1979 bilateral missile agreement in order to facilitate South Korea's space technology development that could contribute to U.S. command of

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52) Ministry of Foreign Affairs of the Republic of Korea, "4th ROK-US Space policy Dialogue held in Washington, D.C. on August 10, 2021," August 12, 2021, available at [https://www.mofa.go.kr/eng/brd/m\\_5676/view.do?seq=321800](https://www.mofa.go.kr/eng/brd/m_5676/view.do?seq=321800)

53) The White House, "FACT SHEET: United States – Republic of Korea Partnership," The White House, May 21, 2021b, available at <https://www.whitehouse.gov/briefing-room/statements-releases/2021/05/21/fact-sheet-united-states-republic-of-korea-partnership/>

54) The White House, "U.S.-ROK Leaders' Joint Statement," The White House, May 21, 2021a, available at <https://www.whitehouse.gov/briefing-room/statements-releases/2021/05/21/u-s-rok-leaders-joint-statement/>; Sukjoon Yoon, "As the Dust Settles, How Healthy is the ROK-US Alliance?" 38North, June 11, 2021b, available at <https://www.38north.org/2021/06/as-the-dust-settles-how-healthy-is-the-rok-us-alliance/>

55) Park, "With Artemis Accords on the table, South Korea, U.S. to widen cooperation in space exploration, security."

56) Ibid.

57) Wan, "U.S. – South Korean Space Cooperation: A background on South Korea's space program, America's geopolitical influences, and future areas for strategic collaboration," pp. 17-18.

58) Sukjoon Yoon, "How the Biden-Moon Summit Reset the South Korea-US Alliance," *The Diplomat*, May 28, 2021a, available at <https://thediplomat.com/2021/05/how-the-biden-moon-summit-reset-the-south-korea-us-alliance/>

space.

However, it is not likely that South Korea will turn back on China. Seoul attended the May summit of 2021 in the hope that it would resolve the differences with Washington in their approach to the North Korea issues; yet Washington's focus appeared to be on developing a network that would effectively contain China.<sup>59)</sup> Although South Korea joined Japan and nine other countries in the Artemis Accords, it is very unlikely that South Korea would agree to form trilateral security cooperation with Japan and the United States in the area of outer space.<sup>60)</sup> For the past four years, the Moon administration has carefully resisted the U.S. proposals that would isolate China including forming trilateral relations with the United States and Japan and the Quadrilateral Security Dialogue (QUAD) with the United States, Japan, India, and Australia.<sup>61)</sup> Considering China's influence over North Korea, South Korea is unlikely to take the side of the United States against China, as long as North Korea poses a threat to the country.<sup>62)</sup> These suggestions were implicitly or explicitly discussed during the May summit in conjunction with space programs, yet it is doubtful that South Korea would succumb to the U.S. proposals.

## Space Race between China and the United States

South Korea's space cooperation with the United States may cause friction with China as there appears to be a fierce space race between the United States and China. China possesses the second largest number of satellites in orbit, which add to its comprehensive space capabilities along with "direct ascent kinetic kill vehicles (KKVs), directed energy, electronic warfare, cyber, and co-orbital satellite systems."<sup>63)</sup> Space programs and activities are considered crucial elements to China's political, economic, and military power.<sup>64)</sup> The Chinese Communist Party (CCP) considers its space program as one of the enforcers that help the country become rich, strong, and proud.<sup>65)</sup> Nonetheless, China's space program is primarily motivated by its focus on

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59) Yoon, "As the Dust Settles, How Healthy is the ROK-US Alliance?"

60) Yoon, "Like It or Not, the South Korea-US Alliance Is Changing."

61) Yoon, "As the Dust Settles, How Healthy is the ROK-US Alliance?"

62) Ibid.

63) Kevin Pollpeter, Timothy Ditter, Anthony Miller, and Brian Waidelich, *China's Space Narrative: Examining The Portrayal Of The Us-China Space Relationship In Chinese Sources And Its Implications For The United States* (Montgomery, AL: The China Aerospace Studies Institute, 2020), p. 7.

64) Ibid.

65) Pollpeter, Ditter, Miller, and Waidelich, *China's Space Narrative: Examining The Portrayal Of The Us-China Space Relationship In Chinese Sources And Its Implications For The United States*, p. 8.

national security, which will remain as the primary motivation behind its space policies.<sup>66)</sup> China learned of the vital utility of space capabilities during the Gulf War, which was dubbed the First Space War, where positioning and accurate surveillance from satellites in outer space assisted the U.S. military operations and ultimately contributed to its victory.<sup>67)</sup> Space technologies were also effectively used in the wars in Afghanistan and Iraq.<sup>68)</sup> Thus, since then, China has invested a considerable amount of its resources in developing military space technology.<sup>69)</sup> According to the U.S. Department of Defense report on September 1, 2020, China continued to improve its ASAT (Anti-Satellite Weapons) technology that could destroy space objects in low and high orbits.<sup>70)</sup> Since the United States relies heavily on space technology for its military operations, China's ASAT could be detrimental to the U.S. military capability in its future military operations.<sup>71)</sup> Beijing's technology such as "kinetic and non-kinetic counterspace capabilities" will certainly threaten U.S. space assets and military efficacy by denying its access to space.<sup>72)</sup> Should Washington fail to maintain its dominance in its space technology and capabilities, its military capabilities and efficacy on Earth would also be significantly undermined.<sup>73)</sup> Moreover, Beijing's expanding space program seems to pose a strategic threat to Washington's effort to maintain its operation in the Indo-Pacific region.<sup>74)</sup>

To Washington, the space domain has always been directly related to national security. The Basic Aerospace Doctrine of the United States Air Forces that was published in 1982 emphasized maintaining the U.S. dominance in outer space and the current U.S. military joint doctrine stresses that "space capabilities have proven to be a significant force multiplier for the U.S. military's joint operations. Therefore, current U.S. military operations always integrate and count on space power as both an enabler and a force multiplier."<sup>75)</sup> On the civilian side, the 1999 report written by Secretary of Defense William Cohen stressed that the United States should be able to

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66) Pollpeter, Ditter, Miller, and Waidelich, *China's Space Narrative: Examining The Portrayal Of The Us-China Space Relationship In Chinese Sources And Its Implications For The United States*, p. 8.

67) Kim, "South Korea's space policy and its national security implications," p. 516.

68) Ibid.

69) Kim, "South Korea's space policy and its national security implications," p. 517.

70) Erwin, "Pentagon report: China amassing arsenal of anti-satellite weapons."

71) Kim, "South Korea's space policy and its national security implications," p. 518.

72) Mark Stokes, Gabriel Alvarado, Emily Weinstein, and Ian Easton, "China's Space and Counterspace Capabilities and Activities," Project 2049 Institute, March 30, 2020, p. 3, available at [https://www.uscc.gov/sites/default/files/2020-05/China\\_Space\\_and\\_Counterspace\\_Activities.pdf](https://www.uscc.gov/sites/default/files/2020-05/China_Space_and_Counterspace_Activities.pdf)

73) Ibid.

74) Stokes, Alvarado, Weinstein, and Easton. 2020. "China's Space and Counterspace Capabilities and Activities," p. 3.

75) (T. Kim 2010, 517)

access outer space freely and limit the adversary's access to it if necessary.<sup>76)</sup> Washington withdrew from the Anti-Ballistic Missile treaty in 2001 to pursue space-based weapon systems including anti-ballistic missile defense and anti-satellite systems.<sup>77)</sup> The 2006 U.S. National Space Policy reaffirmed the United States' desire to enjoy unlimited access to space with no restrictions and maintain its control over outer space.<sup>78)</sup> In recent years, former U.S. Vice President Mike Pence stated that "the United States and China are in a new space race 'with even higher stakes' than the space race between the United States and the Soviet Union, and that China has an 'ambition to seize the lunar strategic high ground and become the world's preeminent spacefaring nation.'" <sup>79)</sup>

Both China and the United States accuse the other party of growing their ability to deny the other's access to space while pointing at the establishment of the other's specialized forces, the U.S. Space Force and the Strategic Force.<sup>80)</sup> These perceptions both parties have of the other party's intention and behavior create a security dilemma in space between them, accelerating arms races and tensions and ultimately leading to instability, which may present an advantage of striking first/preemption.<sup>81)</sup> From China's point of view, a first strike would catch the United States by surprise and thus overcome its inferiority by "delaying its entry and keeping it away from the conflict zone" while by striking first, the United States would be able to disable China's ability to "locate, track, and target U.S. bases and naval ships" in order to operate its force around the conflict zone.<sup>82)</sup>

In the domain of diplomacy, through its space program and cooperation, China will seek to establish and consolidate its standing as a benevolent hegemon that serves developing countries.<sup>83)</sup> Such an effort was already displayed when Beijing announced in March 2021 that it would build the International Lunar Research Station with Russia for all other countries to use. It may also lead an initiative of establishing international space governance with support from developing countries with which it would share its space technology, closely working with the United

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76) Ibid.

77) Ibid.

78) Ibid.

79) Pollpeter, Ditter, Miller, and Waidelich, *China's Space Narrative: Examining The Portrayal Of The Us-China Space Relationship In Chinese Sources And Its Implications For The United States*, p. 7.

80) Pollpeter, Ditter, Miller, and Waidelich, *China's Space Narrative: Examining The Portrayal Of The Us-China Space Relationship In Chinese Sources And Its Implications For The United States*, p. 74)

81) Ibid.

82) Ibid.

83) Pollpeter, Ditter, Miller, and Waidelich, *China's Space Narrative: Examining The Portrayal Of The Us-China Space Relationship In Chinese Sources And Its Implications For The United States*, p. 71.

Nations.<sup>84)</sup> Thus, China's space program should not concern only international economy or security, but the world order. China's space activities for military, commercial, and diplomatic purposes will continue to be expanded and China will seek to help establish new norms and principles in space and consolidate international space governance, ultimately reshaping the world order.<sup>85)</sup> In other words, using its space program, China may demonstrate leadership and modify and establish the norms and principles that will ultimately shape a new world order.<sup>86)</sup> Thus, it is understandable that Washington views Beijing "as a revisionist power that is antithetical to U.S. values and interests."<sup>87)</sup>

### South Korea navigating between China and the United States

China's rise in many domains including economy, military, and space has become a destabilizing factor in the region as well as the world. The US-China relations that were once considered cooperative are now described as competitive that Washington considers Beijing as a revisionist power opposing Washington's values and interests.<sup>88)</sup> Tensions between them have been palpably displayed over the issues such as "territorial disputes in the South and East China Seas; Chinese cyberwarfare to destabilize the US and other liberal democracies; authoritarian attempts to crack down on dissent in Hong Kong or to brutally repress the ethnic and religious identities of local communities in Xinjiang and Tibet; and competition for dominance in the high technology sector and in space exploration."<sup>89)</sup> As the competitive nature of US-China relations continues, Washington's status as a hegemon has been challenged and undermined, which prompted it to mobilize its allies against Beijing by expanding and redefining the scope of its alliance with its partners.<sup>90)</sup> South Korea, which needs to maintain its mutually beneficial economic

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84) Ibid.

85) Pollpeter, Ditter, Miller, and Waidelich, *China's Space Narrative: Examining The Portrayal Of The Us-China Space Relationship In Chinese Sources And Its Implications For The United States*, p. 8, p. 71.

86) Nilsson-Wright, John, and Yu Jie, *South Korean Foreign Policy Innovation amid Sino-US Rivalry: Strategic Partnerships and Managed Ambiguity*, Asia-Pacific Programme (London, UK: Chatham House: 2021), p. 3.

87) Pollpeter, Ditter, Miller, and Waidelich, *China's Space Narrative: Examining The Portrayal Of The Us-China Space Relationship In Chinese Sources And Its Implications For The United States*, p. 7.

88) Ibid.

89) Peter Martin, "Biden's Asia Czar Says Era of Engagement with China Is Over," *Bloomberg*, May 26, 2021, available at <https://www.bloomberg.com/news/articles/2021-05-26/biden-s-asia-czar-says-era-of-engagement-with-xi-s-china-is-over?sref=EWvlgcvl>; Nilsson-Wright and Jie. *South Korean Foreign Policy Innovation amid Sino-US Rivalry: Strategic Partnerships and Managed Ambiguity*, p. 3.

and security relationships with China and the United States, respectively,<sup>91)</sup> finds itself in a situation at times where it has to choose one side over the other. Nowadays, its foreign policy's main concern appears to be to carefully navigate between China and the United States without provoking either party.<sup>92)</sup> The Moon administration's recent New Southern Policy Dialogue demonstrates Seoul's effort to support Washington's Free and Open Indo-Pacific Strategy while avoiding any further security cooperation in order to deepen its dialogue with Beijing to promote peace with Pyongyang.<sup>93)</sup> Other examples of such efforts include "the issue of ballistic missile defense and Terminal High Altitude Area Defense (THAAD) deployment; engagement with the DPRK and facilitating diplomatic dialogue between Washington and Pyongyang; and the development of Seoul's New Southern Policy and closer ties with the Association of Southeast Asian Nations (ASEAN) as a means of avoiding explicit involvement in Washington's Free and Open Indo-Pacific strategy."<sup>94)</sup> However, growing tensions between the United States and China in outer space would force South Korea to walk a tightrope between the two space powers.

## Conclusion

Some experts expressed that a race in space weaponization between the United States and China had already begun.<sup>95)</sup> In March 2019, U.S. former Vice President Mike Pence stressed that the space race with China carries "even higher stakes" than the one between the United States and the Soviet Union during the Cold War. Alienated from the Artemis program, in March 2021, China and Russia announced that they would collaborate on their first space project that would be to build a lunar research station, the International Lunar Research Station, on the surface and/or orbit of the Moon. They also added that the research station would be available for other countries to use,<sup>96)</sup> which could boost their status as dominant players in space. In

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90) Martin, "Biden's Asia Czar Says Era of Engagement with China Is Over."

91) Nilsson-Wright and Jie. *South Korean Foreign Policy Innovation amid Sino-US Rivalry: Strategic Partnerships and Managed Ambiguity*, p. 3.

92) Nilsson-Wright and Jie. *South Korean Foreign Policy Innovation amid Sino-US Rivalry: Strategic Partnerships and Managed Ambiguity*, p. 15; Yoon, "Like It or Not, the South Korea-US Alliance is Changing."

93) Nilsson-Wright and Jie. *South Korean Foreign Policy Innovation amid Sino-US Rivalry: Strategic Partnerships and Managed Ambiguity*, p. 2, p. 27.

94) Nilsson-Wright and Jie. *South Korean Foreign Policy Innovation amid Sino-US Rivalry: Strategic Partnerships and Managed Ambiguity*, p. 5.

95) Kim, "South Korea's space policy and its national security implications," p. 518.

96) Scott Neuman, "China, Russia Announce Plan to Build Moon Research Station," *NPR*, March 10, 2021, available at <https://www.npr.org/2021/03/10/975579975/china-russia-announce-plan->

May 2021, South Korea signed into the Artemis Accords, joining nine other countries in the program and having the ROK military cooperate with the U.S. Space Force in outer space.<sup>97)</sup>

In the new space era, South Korea's most challenging task seems to be navigating between China and the United States.<sup>98)</sup> Although former U.S. Secretary of Defense Mark Esper firmly proposed that Australia, Japan, and South Korea should host the U.S. hypersonic weapons to deter China's threats,<sup>99)</sup> South Korea is unlikely to approve any more installation of Washington's THAAD (Terminal High Altitude Area Defense) systems or any other missiles on its soil and participate in the U.S. missile Defense Agency's (MDA) regional missile defense system, which would create friction with China. However, it remains to be seen how South Korea's close cooperation with the United States in the domain of outer space that has become increasingly militarized would affect the nature of its relations with China. The Moon-Biden summit helped expand the scope of the ROK-US alliance not only to encompass outer space but also to involve South Korea in "the U.S. Indo-Pacific Strategy, a thinly-veiled project to contain China."<sup>100)</sup> The statement released right after the summit indicates that South Korea stands with the United States in dealing with the issues over the South China Sea and Taiwan Strait.<sup>101)</sup> Likewise, it remains to be seen how South Korea could avoid a situation pertaining to outer space where it is forced to take a strong stand over issues that are sensitive to China. To diffuse the situation where South Korea needs to walk a tightrope between China and the United States, South Korea could extend its networks of space cooperation to include Southeast Asian countries such as India. By bringing more stakeholders to its space programs, Seoul could not only avoid a situation where it has to choose between China and the United States but also would be presented with more opportunities to acquire space technology and grow its space programs.

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97) Yoon, "Like It or Not, the South Korea-US Alliance is Changing."

98) Ibid.

99) Ibid.

100) Ibid.

101) Ibid.

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# A Study on the Space Development Race between South and North Korea and suggestions for South Korea's space policy

Geunho Song

## Abstract

*This paper analyzed the competition between the two Koreas in space development and presented suggestions on the direction of South Korea's space power development. The Korean Peninsula is in a competition with major countries with most advanced space technology such as the United States, China, Russia, and Japan. Amid intensifying competition between the United States and China over space supremacy, South Korea, a party to the Korean Peninsula, should be prepared for space competition and improve its space capabilities. In particular, it is necessary to present the direction of South Korea's space power development by analyzing the space development competition between the two Koreas and studying North Korea's space threats. Since 1990, the two Koreas have carried out space development in earnest. North Korea's space development has focused on space launch vehicle development while South Korea's has centered on satellite development due to the South Korea-U.S. missile guidelines.*

*Unlike South Korea's peaceful space development, North Korea's space development poses a threat to South Korea's security; the better North Korea's capability to launch intercontinental ballistic missiles has become, the greater threat it has posed to South Korea's security. This study is meaningful in that it analyzes the space development process and threats between the two Koreas and studies ways to develop Korea's space power. Although South Korea's space technology is far behind that of other major space powers, the successful flight of Nuri, a Korean space launch vehicle, in October 2021 exhibited South Korea's advanced space technology and demonstrated its space capabilities. Through this study, we will hope to highlight the importance of space development and help build a consensus on the development of South Korea's space power.*

**Keywords:** *Space development, Space race, Space cooperation, Space Launch Vehicle, Space power*

## **I. Introduction**

In his New Year's address in 2017, Kim Jong-un announced plans to launch intercontinental ballistic missiles and insisted on completing North Korea's nuclear power after successfully conducting the 6th nuclear test in September 2017 and the Hwasong-15 test in November 2017. However, as military pressure on North Korea increased due to the heightened crisis on the Korean Peninsula, North Korea expressed its intention to participate in the PyeongChang Winter Olympics and shifted its strategy to a dialogue phase by insisting on peaceful coexistence.<sup>1)</sup> The North Korea-U.S. summit was held, but it was futile and North Korea's provocation continued. At the military parade to mark the 75th anniversary of the founding of the North Korean Workers' Party in 2020, North Korea unveiled its newest inter-continental ballistic missile (ICBM), Hwasong-16, which heightened the concerns about North Korea's nuclear capability. In addition, in 2021, competition over weapon development on the Korean Peninsula intensified as evidenced by North Korea developing a North Korean version of KN-23 Iskander and carrying out the hypersonic missile test.

While space in the era of the Fourth Industrial Revolution has become a key area for military operations and security, the United States, China, Russia, and Japan monitor military activities on the Korean Peninsula in advance and continue reconnaissance and diplomatic activities for their own benefit. The United States conducts the most advanced civilian and military activities in space, using advanced science and technology. China carries out space exploration through its satellite, manned spacecraft, and moon exploration projects. Russia resumed space activities under Putin's strong leadership and vision, although it has been somewhat sluggish since the Cold War space race. Japan has secured satellite and its own projectile technology through scientific and technological cooperation with the United States, which now enables Japan to operate image-observing satellites with reconnaissance satellite-class performance. Since recognizing the importance of space development, the two Koreas, the parties to the Korean Peninsula, have engaged in space development. South Korea focuses on the development and operation of satellites under the control of missile and projectile technology due to the South Korea-U.S. missile guidelines while space development of North Korea, which successfully launched satellites twice, centered on space launch vehicles (SLVs).

It is important to scrutinize and compare the space strategy and space capabilities of the two Koreas and devise ways to develop space power to strengthen Korea's space power development. However, to date, there have been more studies by the ROK Air Force and Korea Aerospace Research Institute on ways to develop and strengthen South Korea's space power solely rather than comparative studies that

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1) Koh Yu-hwan, "The Moon Jae In Government's Peace Priority and Non-Nuclear Peace Process" *North Korean Studies*, Volume 14, No. 2, 2018, p.6.

compare the space development of the two Koreas. Despite the high industrial ripple effect of space technology as space is an operational domain of a new war, there are too few studies that contribute to strengthening South Korea's space power.

As a representative study on South Korea's space capability, Cho Hong-je emphasized the construction of South Korea's space capabilities, explaining North Korea's nuclear missile strategy and the competition between the two Koreas and neighboring countries for space.<sup>2)</sup> Choi Sung-hwan evaluated the space threats posed by neighboring countries in the era of space competition and suggested direction of the construction of the Korean Air Force's space power.<sup>3)</sup> Park Byung-kwang analyzed the trend of space militarization in Northeast Asia and suggested policy measures that would set the direction of space development of the Korean Air Force.<sup>4)</sup> Kim Jong-beom introduced the government-led Korean space development project and discussed the development of Korean Space launch vehicles and satellites. It emphasized the importance of international cooperation to strengthen Korea's space development.<sup>5)</sup> Bae Hak-young proposed a conceptual development and organizational development plan for space operation to realize the direction of space power development of the Navy in the era of space battlefields.<sup>6)</sup>

In this paper, to establish South Korea's space development and space power development plan, we examined North Korea's space development and space

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- 2) Cho Hong-je, "Korea's Space Security Policy Development Study," *Aerospace Power Research*, Vol 6, 2018; Cho Hong-je insisted on building space for strong defense to prepare for threats from North Korea and neighboring countries with missile capabilities, stressing the development of an advanced space security operating system.
  - 3) Choi Sung-hwan, "Evaluation of Space Threats in the Era of Space Competition and the Direction of the Korean Air Force's Space Force Construction," *Aerospace Power Research*, Vol 7, 2017, insisted on building its own space conditions by cooperating with civil and military forces.
  - 4) Park Byung-kwang, "The militarization of space in Northeast Asia and the security of the Korean Peninsula: Implications for the Korean Air Force," *National Defense Research*, Volume 55, No. 2, 2012; Park Byung-kwang argued for the expansion of the Korean Air Force's space command, expanded exchanges with civilian agencies, and operated independent satellites while studying space trends in neighboring countries to cope with space militarization in Northeast Asia.
  - 5) Kim Jong-beom, "The trend of space military power in the international community and Korea's space strategy," *2020 Aerospace Power Seminar*, 2020; Kim Jong-beom argued for the development of Korean space power through strengthening cooperation with advanced space development countries, explaining major space development plans such as independence of space launch technology, satellite utilization services, space exploration and Korean satellite navigation systems.
  - 6) Bae Hak-young, "Direction of Naval Power Development in the Space War Era," *National Defense Research* Volume 64 No. 2, 2021. Bae Hak-young analyzed the current Navy's space operation capabilities by explaining the characteristics of naval power with high dependence on outer space. While suggesting the Navy's leading direction of space power development, it insisted on the need for research on the Navy's space operation at the level of the Ministry of National Defense.

development capabilities and threat analysis.

## II. Space development and understanding of space power

### 1. *Concept of space development and space power*

Space development is all activities related to the use, exploration, and acquisition of space technology by fabricating and launching space launch vehicles and satellites.<sup>7)</sup> Advanced space powers continue to invest in space development and develop advanced science and technology. The space industry is a key national industry that is highly value-added and technological with a very large technology ripple effect on other industries. According to a recent global investment agency Morgan Stanley's space industry report, the global space industry, worth \$447 billion in 2020, will grow about 2.5 times to \$1.1 trillion by 2040.<sup>8)</sup> Interest and investment in space development continue to increase.

Space power enhances national economic power and industrial technology, and through the success of space development, it can increase public pride and provide convenience to people's lives by utilizing satellite information. In addition, space power judges military threats from enemies based on various information collected in space and supports the preparation of military operation plans.<sup>9)</sup>

While explaining space power, Lupton, a space power theorist, emphasized the importance of space technology to achieve national goals, as space technology can be used simultaneously by military and civilian sectors.<sup>10)</sup> Hyatt explained that space power can help achieve national goals through space control and space exploration development.<sup>11)</sup> Jusell defined the ability to develop and control outer space as space power and explained that space is used for political, economic, and security purposes.<sup>12)</sup>

Explaining the military operation of the space force, Lupton argued that space control, which guarantees allies' freedom of space operations and can reject enemy threats, is the core of space strategy and is essential to ensure victory in war. Oberg, a former NASA space scientist, argued that space exists as a distinct area, technological

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7) The Ministry of Science and ICT, *2020 Space Development White Paper* (Sejong: Ministry of Science and ICT, 2020), p.35.

8) Morgan Stanley, *Space: Investing in the final frontier*, July 24, 2020, <https://www.morganstanley.com/ideas/investing-in-space>(accessed on 2021.10.30);

9) Lee Seong-man and Kang Chang-bu, "Aeronautical Space Force Operation, Theory and Practice" (Seoul: Oreum, 2015), pp.397-398.

10) Lt Col David Lupton, *On Space Warfare* (Montgomery: Air University Press, 1988), p.4.

11) Hyatt, III, James L. "SPACE POWER 2010", ACSC, Maxwell AFB, Alabama, 1995, pp.5-6 <https://fas.org/spp/eprint/95-010e.pdf>(accessed on 2021.2.27.)

12) Jusell, Judson J., "SPACE POWER THEORY A RISING STAR", ACSC, Maxwell AFB, Alabama, 1998, pp.7-9. <https://fas.org/spp/eprint/98-144.pdf>(accessed on 2021.2.27.)

competition is essential to become a space power, and space control is the core of national power. It also argued that space dominance should be achieved through real-time space surveillance for space power development.<sup>13)</sup> Dolman, a professor at the U.S. Air University, explained space power from a realistic point of view and insisted on building the ability to block threats from hostile forces to ensure freedom of navigation in space.<sup>14)</sup> In addition, the United States Joint Publication of Space Operations 3-14 defined Space Power as the total strength of a nation that can perform and influence operations from space, through space, and in space to achieve national goals.<sup>15)</sup> Space power is one of the important elements constituting national power, and major space powers recognize strengthening space power as a key element to ensure national security and strive to improve space power, including space technology development.

## ***2. International Space Treaty and Space Development Research Method***

During the Cold War era, it began in the area of detecting and providing information on the enemy's military movements through satellites in space and developed into various areas such as communication, navigation, and weather. From the military point of view, space has made operation of precision-guided arms possible through navigation satellites since the Gulf War, and space operations have become the most important area to guarantee victory in modern wars such as Iraq and Afghanistan. Space operations are so essential to the war that the United States cannot carry out advanced wars without the support of space assets. Major Northeast Asian countries are developing science and technology and building space military capabilities in the space sector to strengthen their space capabilities.

At the outset of space development between the United States and the Soviet Union, the Peaceful Uses of Outer Space and International Law was signed to ensure the peaceful use of space. After the competition between the United States and the Soviet Union for space development, the international community is developing space based on the space treaty. In particular, the Space Treaty prohibits military space activities. Article 4 of the Treaty prohibits the deployment of nuclear weapons or all mass destruction weapons into space orbit, and member states are prohibited from constructing military bases, fortification, and weapon testing on space celestial bodies for peaceful development purposes.<sup>16)</sup> As U.S. space-based activities are very active and space technology plays a

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13) James E. Oberg, "Toward a Theory of Space Power: Defining Principles for U.S. Space Policy" (lecture, Army & Navy Club, Washington DC, 20 May 2003)

14) Everett C. Dolman, *Astropolitik: Classical Geopolitics in the Space Age* (London: Frank Cass, 2002)

15) US JCS, *Joint Pub 3-14*, 2013.

16) UN Office for Outer Space Affairs, *UN Treaties and Principles on Outer Space*, New York, 2008, p.3 ; Ministry of Foreign Affairs, *Non-Proliferation Handbook 2021* (Seoul: Office of Foreign Ministry's Non-Proliferation, 2021), p.257; Jeong Gu-don, *Research on Civil and Military Technology Cooperation Method* (Seoul: Security Management Research Institute, 2016), p.28.

big role in the war, China and the Soviet Union continue to engage in military testing activities, including satellite interception missile tests and satellite operations. A set of assessment factors must be developed to evaluate the country's space development capabilities and threats. Kazuto Suzuki analyzed the nation's space development from an international political point of view based on three factors: hard power (military use of out space); soft power (the pride of success of space development programs); and the establishment of social infrastructure through satellite services.<sup>17)</sup> Using Kazuto Suzuki's perspective on space development as a research method, this study aims to analyze and evaluate the space development and capabilities of the two Koreas and suggest ways to develop space power necessary for Korea. Table 1 shows different research methods on the national space development.

<Table 1> Space development research purpose

Category	Judging space development	Examples
Space Development	Military use of outer space	The ability to build satellites and space projectiles, attacks on foreign satellites and space assets, development of space-based weapons systems. Developing missile technology and spreading it to the outside world.
	Enhancement of nation excellence, status, and develop science and technology	The development of advanced space science and technology. Launch manned spacecraft, raise national status. Promote international exchange.
	Establishing a foundation for social Infrastructure	Communication, navigation, geography. Disaster information service provided

Source: Kazuto Suzuki, Lee Yong-bin translated, *Space Development and International Politics* (Seoul: Hanul Publishing), 2013, pp. 24-34.

17) Kazuto Suzuki, Lee Yong-bin translated, *Space Development and International Politics* (Seoul: Hanul Publishing, 2013), pp. 24-34.

### III. Analysis of Space Development Competition and Threats between South and North Korea

#### *1. North Korea's space development strategy and space power*

South Korea's biggest military threat is North Korea. In general, to have independent space capabilities, countries must own space launch sites and possess the ability to build and launch satellites.<sup>18)</sup> North Korea has space launch sites in Taepo-dong and Dongchang-ri and has manufactured a total of six satellites, of which only two have entered orbit. North Korea's missile and rocket technologies have the ability to put its own satellite into orbit. Through the development of strategic weapons such as nuclear, intercontinental ballistic missiles, and submarine-launched ballistic missiles (SLBMs), North Korea has made every effort to develop space satellites, including reconnaissance, communication, and early warning satellites, to break down North Korea's isolation and strengthen negotiating power.<sup>19)</sup>

After the Middle East War, North Korea introduced Scud B missiles from Egypt in 1976 and began developing missiles for the first time through reverse decomposition research. Eventually, North Korea built an improved version of Scud, Nodong missiles, and Taepo-dong 1 and 2 thanks to missile manufacturing technology and design capabilities acquired through missile-reverse engineering. The Unha-2 and Unha-3, and Kwangmyeongseong long-range rocket to mount satellites using Taepo-dong missiles were developed and used to enter space orbit. Attempts to launch satellite using Taepo-dong 2, Unha-2, and Unha-3 continued to fail, but the launches of the second Unha-3 in 2012 and Kwangmyeongsong in 2016 were successful. However, contrary to North Korea's announcement, the two satellites currently operating in space orbit are believed to have lost satellite function due to limited transmission and operation of satellites.<sup>20)</sup>

Considering that North Korea tends to conduct nuclear tests before and after satellite launches, it is estimated that North Korea's satellite launches will conduct missile test data of ICBM launches and performance tests of major missile components. Russia was once in trouble due to the lack of technology to re-enter the Earth, but it earned international reputation as the world's first satellite launcher that used ICBM projectiles to enter space before the United States did. North Korea's

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18) Tomifumi Kodai, Kim Kyung-min translated, *Space Development in Japan and China* (Seoul: Enbook, 2009), p. 13.

19) Cho Sung-ryul, *International Politics of Strategic Space* (Seoul: Sogang University Press, 2016), p.80.

20) Kim Gwi-geun, "North Korea attempted to enter satellite orbit six times..." "Two successes". Yonhap News Agency, April 22, 2021, <https://www.yna.co.kr/view/AKR20210422100000504?input=1195m>(accessed on 2021.7.29)

Kwangmyeong 3 satellite in 2012 was surprisingly similar to the appearance of South Korea's first satellite launched in 1992.<sup>21)</sup> Considering that it was similar, it can be evaluated as improving the performance of missile projectiles and obtaining missile launch test data through space projectile tests rather than launching low-performance satellites with a large-scale budget space development.

North Korea's space strategy is very limited to grasp due to the lack of external public information. However, it is estimated that North Korea has established and implemented its national space strategy, considering the characteristics of large-scale national budget and space development under long-term plans.

North Korea is expressing peaceful space development externally in accordance with the UN principles of peaceful space development. The official North Korean space development agency is the National Aerospace Development Administration (NADA). However, the NADA is an official agency organized in 2013 to avoid U.N. sanctions when the North Committee of Space Technology was subject to sanctions for continuing ballistic missile development.

North Korea claimed that it developed satellites in accordance with the first five-year space development plan for five years from 2012 to 2016 and successfully sent Earth observation satellites twice in space orbit. Following the failure of the launch of Kwangmyeongseong 3 in April 2012, Kwangmyeongseong 3-2 was successfully launched in December 2012. Based on the space science and technology used to build the Earth Observation Satellite that was successfully launched, North Korea began developing geostationary satellites, strengthening the satellite control capabilities of the Earth Satellite Control Center, and successfully launched Kwangmyeongseong 4 in 2016.<sup>22)</sup>

It is estimated that the 2nd National Space Development Five-Year Plan has been established and implemented since 2017, but space development-related activities such as long-range rockets and satellite launches have not been detected until December 2021, the last year of the five-year plan after the intercontinental ballistic missile success test in 2017. This explains that North Korea's space activities are likely to develop for military purposes, including the development of intercontinental ballistic missiles and hypersonic missiles.

North Korea's space power can use long-range rocket technology to manufacture space launch vehicles and put satellites into low orbit at an altitude of 500 km. It can be speculated that there are some restrictions on performing a given mission in response to the harsh environment of a satellite in space. North Korea's ability to interfere with or curb the dominant space operation capabilities of the ROK-US

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21) Cowing Keith, "North Korea's Satellite Launch Flops." *MSNBC*, 2012.4.12.  
<http://nasawatch.com/archives/2012/04/google-earth-is.html>(accessed on 2021.6.22)

22) "The National Space Development Plan mentioned by North Korea," Yonhap News Agency, February 8, 2016, <http://www.yonhapnews.co.kr/bulletin/2016/02/07/0200000000AKR20160207050400014.HTML?input=1195m>(accessed on :2021.7.8)

cooperation is still low. However, since the ROK-US combined military operations are supported by the space system, it will try to build the ability to interfere with the operation of space assets, including early-warning satellites for detecting missile and nuclear explosion, GPS satellites for precision-guided weapons, command control, and long-distance communication satellites. North Korea possesses electronic jamming capabilities that can target GPS satellites and South Korea-U.S. communication satellites located in geostationary orbit and continues to develop space technology as an asymmetric space power, which requires countermeasures.

The Defense Intelligence Agency (DIA) has determined North Korea's independent space launch capability and satellite jamming capability pose a threat to U.S. space security by enabling the country to test intercontinental ballistic missiles and attack foreign satellites in the event of a conflict. North Korea is assessed to have electronic jamming capabilities for navigation and communication satellites and that major missile flight data information obtained by launching long-range rockets can be used for intercontinental ballistic missile developments.<sup>23)</sup>

The Center for Strategic and International Studies (CSIS) reported that North Korea's ballistic missile and space launch capabilities provide basic technology that could be used to attack other satellites and detonate non-precise warheads around target satellites in the future, which will cause major damage to satellites. In addition, North Korea recently succeeded in developing a super-strong electromagnetic pulse (EMP) weapon, which could attack South Korea and the U.S. space assets, and attempted an attack on a target satellite near space orbit through a nuclear explosion.<sup>24)</sup> It also noted that North Korea's advanced hacking capability has a very high threat of cyber hacking to major U.S. space ground systems and satellite operation control stations.<sup>25)</sup> North Korea's space capability is very primitive compared to that of Russia and China, but its cyber-attack capability poses a big threat to U.S. space assets.<sup>26)</sup>

## ***2. South Korea's space development strategy and space power***

South Korea continues to develop space programs led by the Ministry of Science and Technology. The Air Force continues to lead manpower investment and space operations in the space sector to advance to the aerospace force. Although South Korea maintains a combined defense posture through surveillance of North Korea's

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23) Defense Intelligence Agency, *Challenges to security in space* (Washington D.C: DIA, 2019), p. 32.

24) Harrison Todd, "Space threat assessment 2020," CSIS Aerospace security project, Mar 2020, pp. 38-40.

25) Gabriel Dominguez, "North Korea, Iran advancing counter-space threats, says USSPACECOM chief", <https://www.janes.com/defence-news/news-detail/north-korea-iran-advancing-counter-space-threats-says-usspacecom-chief>(accessed on 2021.7.29.).

26) Harrison, Todd, Space Threat Assessment 2021, March 2021, p. 25.  
<https://www.csis.org/analysis/space-threat-assessment-2021>(accessed on 2021.4.22)

military movements that utilizes the U.S.-South Korea joint surveillance assets, the operation of independent surveillance assets that do not rely on U.S. intelligence surveillance assets has limitations on improving the South Korean military's space power. Since satellite development and satellite launch vehicle development were carried out under the control of the Ministry of Science and ICT, there are restrictions on the military's independent and leading space development. In 2021, the government announced that it would develop into a world space powerhouse by adopting three major space strategies: promoting space exploration projects through the development of South Korean launches, developing satellites, supporting national services using satellites, and strengthening civilian space development capabilities in the New Space era.<sup>27)</sup> In October 2021, it succeeded in testing the first Korean space launch vehicle (SLV), Nuri.

According to the Ministry of Science and ICT's 3rd Basic Plan for Space Development, the number of satellites in Korea is currently operating and does not have satellites exclusively for the military, but in July 2020, SpaceX, a private space company, launched and operates South Korea's first military-only communication satellite.

The development of satellites began in the 1990s, and optical observation satellites and radar satellites are used for civilian purposes, but their low resolution limits their use in military operations. Korea's national space development budget is \$720 million, which is very low compared to other space powers.<sup>28)</sup> Amid intensifying space competition among neighboring countries surrounding the Korean Peninsula, South Korea has not invest enough in space technology. In the Ministry of National Defense's 2019-2023 mid-term defense plan, the proportion of space power, including reconnaissance and communications satellites, is very low at 2.8% of the total budget for improving defense capabilities.<sup>29)</sup>

South Korea seeks to expand surveillance and reconnaissance assets that depend on the U.S. to transfer wartime operational control, but it relies heavily on the U.S. intelligence capabilities due to the lack of high-resolution sensor technology essential for military satellites and the lack of independent space launch vehicles. As a result of the May 2021 summit between South Korea and the U.S., the ROK-U.S. missile guidelines were lifted, which eliminated restrictions on the range and warhead weight of missile development, and the signing of the Artemis Agreement with the U.S. has increased space development cooperation between South Korea and the U.S. Recently, the test flight of the South Korean SLV Nuri was successful, but the dummy satellite failed to enter the final orbit. However, it has achieved great

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27) The Three Space Strategies Announcement, *Dong-A Science*, 21.3.25.

28) Morgan Stanley, "Space: Investing in the final frontier," July 24, 2020, <https://www.morganstanley.com/ideas/investing-in-space>(accessed on 2021.10.30);

29) Yoon Woongjik, "The trends of space development in neighboring countries and what we need to prepare," *National Defense Foundation*, No. 1785, 2020, p. 7.

results in verifying the performance of Korean space launch vehicles. The Agency for Defense Development (ADD) has succeeded in testing space launch rocket engines using solid fuel and plans to carry out micro-reconnaissance satellite projects, which are expected to actively develop the space capabilities of South Korea in the future.

As security cooperation between South Korea and the U.S. in outer space continues, the Air Force shares space situations on space objects and satellites over the Korean Peninsula with the U.S. Space Command to avoid threats and support safe space activities. However, as it shares U.S. space information, it has limited independent space surveillance activities, lacks the ability to respond to space threat activities in other countries, and has difficulty securing additional space power due to budget use related to aircraft systems such as fighter plane purchases and flight operations.

Recently, the Army has recognized the importance of space operations and pushed for the Pegasus Project, a basic plan for the development of the Army's space power. In the Future War, ground operations plan to lead joint operations by expanding the scope of operations using space and improving the Army's ability to operate space to ensure victory in war, and consensus on the importance of space operations at the Army level is increasing.<sup>30)</sup> The Navy is striving to strengthen its naval power to carry out space operations by adding the doctrine of space operations in naval operations. However, in the defense sector, there are too few space-related experts and no detailed defense space development plan has been established, so space operational capabilities must be strengthened by establishing a defense space development plan and space power plan at the Ministry of National Defense.

### ***3. Analysis and evaluation of competition for space development between the two Koreas***

#### ***(1) Military use of outer space***

When evaluating the military use of North and South Korea's space assets for military operations, North Korea succeeded in entering space orbit twice with its own space launch vehicle. North Korea is trying to obtain intercontinental ballistic missile capabilities through the development of long-range rockets for space development. If North Korea launches a long-range rocket for the purpose of space development, it will develop a satellite with better performance. However, the satellite developed by North Korea was similar to the low-level satellite developed by South Korea in early 1990. Securing space technology through the development of long-range rockets can give North Korea technical confidence in the development of ballistic missiles. During the second five-year space development plan from 2017,

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30) Kim Sang-yoon, "The Army and Space Power Development 'Pegasus Project' promoted," Kookbang Ilbo, July 8, 2021. [https://kookbang.dema.mil.kr/newsWeb/20210709/4/BBSMSTR\\_000000010023/view.do](https://kookbang.dema.mil.kr/newsWeb/20210709/4/BBSMSTR_000000010023/view.do) (accessed on Oct. 24, 2021).

North Korea continued to launch ICBM tests, develop KN-23 North Korean version of Iskander, and the Hwasong-8, hypersonic missile tests, and did not launch satellites. It can be estimated that North Korea's purpose of space development is to calculate major data on missile development through space launch vehicle tests and improve ICBM technology capabilities. South Korea is not able to respond to North Korea's intercontinental ballistic missile development and space threats effectively as its ability to detect missile launches and provide warnings is primitive. South Korean military satellite projects are underway to expand reconnaissance surveillance capabilities for North Korea, but military utilization of the space is at a low level. Recognizing the importance of space operations, it is not easy to invest in the space sector that requires astronomical budgets because a lot of information is supported by the U.S. Currently, North Korea's threats in space include electronic attacks such as jamming on satellites and high-performance EMP bomb attacks, which are the biggest threats to the ROK-US alliance.<sup>31)</sup>

(2) Raise national excellence and status

North Korea uses space development as much as possible to curb public sentiment and maintain internal solidarity as well as its system by securing high-tech science and technology from foreign invasions. The Rodong Newspaper and the Korean Central News Agency promote it as a historical event in which North Korea's excellent science and technology, strengthening its national power, and prosperity are carried out around the world due to the success of launching satellites Kwangmyeongseong-3 and Kwangmyeongseong-4.<sup>32)</sup> North Korea is the ninth country in the world to put satellites into space orbit with its own SLVs. North Korea focuses on space development to emphasize internal control and the achievements of the Kim Jong-un regime and is mobilizing ICBM development by securing long-distance rocket science and technology. In addition, the fact that North Korea can launch nuclear missile attacks on other countries by possessing nuclear and missiles has a great impact on enhancing North Korea's status in the international community and strengthening its external bargaining power in denuclearization negotiations.

Since the 1990s, South Korea has been recognized worldwide for its satellite development and operational capabilities through satellite development and overseas satellite launch. South Korea's practical satellite and meteorological satellite mounting sensors are technically as sophisticated as those of countries with advanced space technology. South Korea's space launch vehicle sector has been restricted from developing vehicles due to the South Korea-U.S. missile guidelines, but cooperation with Russia has enabled South Korea to acquire basic capabilities for

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31) Pry Peter, "North Korea EMP threats," June 6, 2021, <https://emptaskforce.us/wp-content/uploads/2021/06/REPORTemphreatNK21A.pdf>(accessed on July12,2021).

32) *Rodong Simun*, December 13, 2012; *Korean Central News Agency*, Feb 17, 2016.

SLV development and satellite in-orbit delivery through the success of launching Naro in 2013. The Nuri, launched from the Naro Space Launch Site in October 2021, demonstrated South Korea's remarkable space launch vehicle technology by clustering the four 75-ton engines made with its own technology. Although the three-stage rocket failed to deliver the dummy satellite in orbit due to the early end of the combustion, the successful flight of the Korean space launcher successfully verified the space launcher's flight performance. If the three-stage rocket oxidizer tank pressure error is resolved, the likelihood that next launches in 2022 will be successful is higher. South Korea failed to achieve its goal of bringing a payload of more than 1 ton into space orbit, but succeeded in forming a consensus on the people's interest in space development and active national budget support for space research and development. The Nuri test launch was a long-term space development project with a budget of 2 trillion won over 11 years. Space launch vehicle technology is so difficult that it must be acquired and developed through its own space science technology due to the limitation of international technology transfer. The development and launch of the Nuri that involved a total of 500 private companies was a new turning point for South Korean private space companies to lead space development and improve their technology, and South Korea can take pride in becoming a successful country in space development.

(3) Establishment of social production infrastructure.

Through space development, the space nations can provide satellite image production, mapping, national geography, forest, and agricultural development information based on geographic image information taken through optical satellites. Satellite communication satellites enable real-time communication with countries around the world. Navigation satellites can provide real-time navigation information to vehicles and aircraft. Space development can provide convenience to people in real life based on space technology. North Korea announced that it took and use images captured by satellites, but it is difficult to find specific evidence for actual satellite images and data utilization. Since the North Korea's two satellites currently in operation are believed to have lost their capabilities as satellites, the results of social infrastructure construction have not been confirmed through space development obtained by North Korea through satellite and space launch vehicle development. Although they were reported to be used as an observation satellite and a communication satellite, its actual use is limited due to no announcement from North Korea. In contrast, South Korea's optical satellites send geographic information on the Korean Peninsula and South Korea provides actual satellite data, and sells geographic information data at the request of other countries. Satellite communication is located in geostationary orbit, and the public is using satellite communication services. In addition, meteorological satellites are also located in geostationary orbit, providing weather information on the Korean Peninsula to

support pre-alerts and disaster information, providing useful information to the public. The Korea Positioning System, a Korean satellite navigation system project, will be launched to provide accurate navigation, autonomous driving, and IoT services to the public by having its own satellite navigation system from 2022.

#### **IV. Suggestions for Korea's space power development plan**

North Korea's space development and ballistic missile tests pose a direct threat to South Korea. Although space cooperation between South Korea and the U.S. continues, military cooperation in outer space is limited. The reality is that the South Korean military lacks its own ability to respond to North Korea's potential space threats. South Korea's preemptive response to North Korea's space threat is very crucial. Currently, the Korean Air Force is leading the space operation. In recent announcements and academic studies of the Army's Basic Plan for Space Development, space is recognized as the Army's battlefield and calls for military transformation in response to the era of the Fourth Industrial Revolution.<sup>33)</sup> However, there are many shortcomings in the practical space sector. Development needs are emerging in various fields such as training space manpower, budget allocation, and space situational awareness capabilities.

Still, the South Korean military has limited actual power for space-based operations. North Korea's space development and space technology research are deepening military threats to neighboring countries by enhancing the latest ICBM capabilities, developing hypersonic missiles, EMP weapons, and satellite attack weapon systems. It is very important to receive support for Korea's insufficient space capabilities through the ROK-US combined defense posture and to develop the space capabilities of the Korean military. In the face of North Korea's asymmetric space asset operation, to prevent the security crisis on the Korean Peninsula, the South Korea-U.S. alliance should be strengthened. The following is a plan and direction for South Korea's space power development and response to the increase in space threats and the militarization of space by neighboring East Asian countries and North Korea.

First, in the era of New Space, private space companies must increase their space technology and international competitiveness. More than 300 private companies and 500 space science and technology personnel were deployed to develop the Nuri SLV to successfully verify the performance of the rocket test. South Korea should also improve the level of science and technology in space launch vehicles and satellite development and increase competitiveness in the international market by securing

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33) Jung Min-seop, "A Study on the Innovation of the Future Army's Combat Concept: Focusing on Changes in Combat Concepts Following the Fourth Industrial Revolution," *Military Research*, No. 150, 2021.

technology through private-led space development and intensively fostering space development startups. The space industry in the era of the 4th Industrial Revolution is the most likely area to develop and has high industrial ripple and added values, so the national space power should be improved by developing the South Korean space industry through continuous investment in the country.

Second, it is necessary to foster capabilities to manufacture and operate space projectiles through continuous research and development of space launch vehicles in South Korea, improvement of SLVs, and long-term investment support. Since 1990, South Korea has implemented satellite-centered space development in accordance with restrictions on the development of SLVs imposed by the ROK-U.S. missile guidelines and has been recognized for its satellite manufacturing and operational power around the world. With the successful flight of the first stage rocket with four 75-ton engines from the Nuri SLV in 2021, South Korea was expected to become the seventh country in the world to launch more than one-ton payload into space but failed to enter the final orbit with a dummy satellite due to the early end of the combustion of the third stage rocket with a 7-ton rocket. SpaceX, the top space launch company, failed its first launch in 2006, failed three times in a row until 2008, secured space technology through the process of failure, and is now the best space launch company in the world. Although it had difficulty developing space launch vehicles due to restrictions on the transfer of missile technology, research, and rocket production have achieved great results for 11 years. South Korea should strive to improve satellite launcher technology and build reliability so that it can respond to the increasing need for small and medium-sized satellite launches in South Korea and launch satellites for special missions at any time it wants.

Third, it is necessary to improve the space capabilities of the South Korean military through space cooperation with the US military. The South Korean military should build its ability to respond to increasing space threats, including the North Korean military's GPS jamming, low-level satellite attack missile production, EMP weapon development, and cyber-hacking attacks on satellite systems. The South Korean military should improve its space capability by taking advantage of the increased space development and cooperation in the development of South Korea-U.S. space, including the signing of the Lunar exploration Program Artemis Agreement, the lifting of the South Korea-U.S. missile guidelines, and cooperation. The South Korean military should strengthen its space capability by exchanging information on space situational awareness information with the U.S., establishing an electronic optical space monitoring system, participating in space operations in the U.S., and exchanging professional space personnel. Currently, the Korean Air Force is taking the lead in carrying out space operations between Korea and the United States, and since 2020, the Army and Navy have also recognized the importance of space operations and have been conducting research on space organization composition and doctrine. At the level of the Ministry of National

Defense, it is necessary to establish and implement a plan that would help foster Korean military space experts, organizing organizations, and develop space capabilities. Forming and operating separate units on space development in different branches can lead to conflict between the military branches over space operations, so the Ministry of National Defense should take the lead in building space units and presenting blueprints in space operations. Through a cooperative program with the U.S. Space Command, the South Korean military will have to jointly respond to threats in space and maintain military cooperation with the U.S. Space Command to secure the ability to jointly respond to crises on the Korean Peninsula. The establishment of responsiveness to North Korea's advancement of nuclear missiles and potential space threats will guarantee South Korea's peaceful space development by strengthening the South Korean military's space power and taking a space lead over North Korea.

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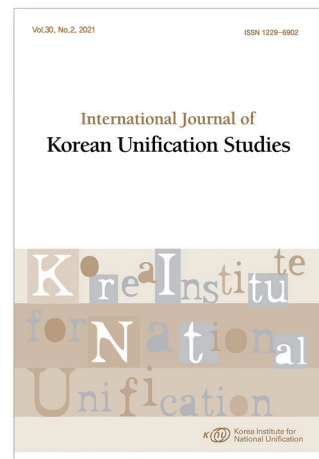
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