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Letter from the Editors

In support of West Point's Academic Year 2025-2026 theme, **"Projecting Lethality: Addressing the Multidimensional Challenges in the Indo-Pacific,"** this year's edition of the *REPORT* examines the foundations of military power beyond the battlefield. The theme asks cadets and faculty to think seriously about deterrence, alliances, and power projection in one of the world's most important strategic regions. This edition contributes to that conversation by turning to the past. Its essays show that military effectiveness depends not only on weapons but also on the systems and ideas that enable states to build and sustain their forces.

The 2026 *REPORT* features four works; each selected for its distinct approach to military history. Together, these essays study the relationship between strategy and execution. They move from the railroads of the American Civil War to revolutionary China, Cold War Korea, and the early nuclear age. At West Point, the study of history supports the Academy's broader mission of preparing cadets for thoughtful and responsible leadership. Such preparation requires cadets to examine both achievement and failure across time. These four works offer insight into the demands of command, the limits of technology, and the difficulty of translating power into lasting advantage.

Claire Russell's essay on Herman Haupt and the Gettysburg Campaign examines the decisive role of railroads and telegraphs in Union victory. She argues that Haupt's management of military rail operations sustained the Army of the Potomac before, during, and after the battle. Her work reveals that logistics did not merely support battlefield success but rather made continued operations possible.

Elizabeth Fetter analyzes Mao Zedong's use of the

Yan'an Rectification Movement to consolidate power within the Chinese Communist Party. Her essay shows that Mao Zedong strengthened his position by reshaping party doctrine and distancing Chinese communism from Soviet models. Through ideology, Mao turned political influence into institutional control.

Angus MacKellar examines South Korea's pursuit of self-reliant national defense under Park Chung-hee. He argues that Chung-hee's leadership and militarized economic policy drove South Korea's strategic catch-up against North Korea. His essay offers a timely study of defense industrialization and alliance dependence on the Korean Peninsula.

Jacob Battle explores the reality behind America's early nuclear monopoly after World War II. He argues that the United States possessed atomic weapons before it had fully developed the doctrine, intelligence, and delivery systems needed to use them effectively. His essay challenges the assumption that technological superiority automatically creates strategic advantage.

This edition of the *REPORT* highlights the difficult work behind military power and reminds us that lethality depends on logistics, political authority, industrial capacity, and sound strategy— not just advanced weaponry. Through these essays, we invite readers to think more deeply about military history and the strategic problems that continue to shape national defense.

We hope you enjoy this year's edition.

Sapientia Valet, "Wisdom Prevails!"

Thomas Chute
CDT Thomas Chute,
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Mao Zedong And the Yan'an Rectification Movement

Elizabeth Fetter, The United States Military Academy

In 1938, the Chinese Communist Party (CCP) convened the Sixth Plenum, a meeting that marked a decisive shift in the party's strategic orientation.[1] At this meeting, representatives from Moscow and the Comintern, the international communist coalition, withdrew their support for CCP leader Wang Ming following his military losses to the Japanese.[2] This decision enabled Mao Zedong and his political faction to expand their power and influence within the party. Mao emerged from the 1938 Sixth Plenum in a strong position of power within the CCP, aided by the support of international communists, particularly the Soviets. Yet four years later, in early 1942, Mao delivered a speech criticizing the CCP's reliance on Soviet communist ideology —marking the beginning of the Yan'an Rectification Movement.[3] This movement was Mao's means of indoctrinating the CCP with his own version of communism to consolidate and solidify his position within the party. Mao initiated this campaign because he understood that a leader without a monopoly on ideology could easily lose political standing and control. Therefore, the Yan'an Rectification Movement represented an innovative political strategy, as Mao transformed a

1 Thomas Kampen, *Mao Zedong, Zhou Enlai and the Evolution of the Chinese Communist Leadership* (United Kingdom: 2000), 99.

2 Kampen, *Mao Zedong, Zhou Enlai and the Evolution of the Chinese Communist Leadership*, 88, 96.

3 Frederick Teiwes, "The Origins of Rectification: Inner-Party Purges and Education before Liberation," *The China Quarterly*, no. 65 (1976): 25; Gao Hua, Stacy Mosher, and Guo Jian, *How the Red Sun Rose: The Origins and Development of the Yan'an Rectification Movement, 1930–1945*, (Hong Kong: 2018), 319: "At the opening ceremony of Yan'an's Central Party School on February 1, 1942, Mao delivered a speech mobilizing the entire Party in a campaign to 'Rectify the Styles of Our Party, Study, and Writing' (with the title in Selected Works of Mao Zedong as 'Rectify the Party's Style of Work')."

contingent position within the CCP into an ideologically entrenched one, thereby institutionalizing his power and authority.

Since its formation in the 1920s, the CCP based its ideology on the Soviet model of communism which emphasized strict adherence to classical Marxist-Leninist texts and prioritized the urban proletariat as the primary revolutionary force.[4] Mao's experiences growing up in rural Hunan shaped his intellectual and political development, and during the late 1920s he began to question whether the Soviet focus on industrial workers could be effectively applied to China's population, which primarily consisted of rural peasants.[5] Thus, he developed a modified communist ideology, one that tailored original Marxist theory to Chinese circumstances.[6] This new framework, "Mao Zedong Thought," reoriented revolutionary strategy around the peasantry and emphasized the importance of having one central figurehead to lead revolutionary movements.[7] Additionally, the new doctrine merged communist ideas with traditional Confucian values, aiming to increase general acceptance among the masses.[8] Instead of promoting this unique way of thinking upon its inception, Mao exercised strategic patience during the 1930s, accumulating more authority and prestige within the party before introducing his new doctrine more deliberately.[9]

Mao built his authority and prestige in the CCP primarily with military success, beginning in the early 1930s.[10] During

4 Flora Sapio, "The United Front Principle: Expansion and Adaptation," *European Journal of East Asian Studies* 18, no. 2 (2019): 134, 139; Teiwes, "The Origins of Rectification," 23, 24.

5 Brantly Womack, *The Foundations of Mao Zedong's Political Thought, 1917–1935* (Hawaii: 1982), 2, 3, 6.

6 Sapio, "The United Front Principle," 139.

7 Mao Tse-Tung, *Selected Works of Mao Tse-Tung* (Peking: Foreign Language Press, 1967), https://michael-harrison.org.uk/wp-content/uploads/2016/11/Mao-Tse-Tung-SW1.pdf, 71. Mao wrote that the "Chinese revolution was a people's democratic dictatorship of the anti-imperialist, anti-feudal, new-democratic revolution led by the proletariat, which was different from the proletarian dictatorship in the Soviet Union."; Hua, *How the Red Sun Rose*, 1, 2; Teiwes, "The Origins of Rectification," 21.

8 Teiwes, "The Origins of Rectification," 21. Womack, *The Foundations of Mao Zedong's Political Thought*, 197. "It was rather his concern for effectiveness and his willingness to learn from the masses that minted the revolution in his image."

9 Womack, *The Foundations of Mao Zedong's Political Thought*, 1, 9, 17, 18

10 Hua, *How the Red Sun Rose*, 2.

this period, he shifted tactics to a mix of guerrilla and regular methods to fight the Kuomintang Nationalist Party (KMT) in the Chinese Civil War.[11] While many in the CCP initially rejected these approaches in favor of using a more conventional warfare, CCP members eventually turned to Mao and his mixed tactics for military direction when the more conventionally organized Red Army lost against the KMT in the encirclement and suppression campaigns in the early 1930s.[12] In 1935, Mao led the Red Army on a strategic retreat through rural China during the Long March.[13] This journey served as another step in his increasing military influence because it enabled Mao to gain the trust of the Red Army, expanding his network through the CCP fighting forces. At the 1935 Zunyi conference, crucial members at the upper levels of the CCP fell from favor in the party, and Mao's influence in military affairs increased.[14]

Over the next three years, advocates of conventional warfare, like Wang Ming, saw their influence decline. Wang's career illustrated how military control without ideological control, coupled with military failures, could quickly lead to a fall from favor in the party. Although Wang held prominent positions within the international communist movement and exercised substantial influence over the CCP's military policy, Wang's dependence on Moscow meant the Comintern could replace him.[15] Wang operated under nominally international

11 Mao Tse-Tung, *Selected Military Writings of Mao Tse-Tung* (Peking: Foreign Language Press, 1968), 29, 30. In terms of training, Mao emphasized tactics based on a mix of guerrilla and regular warfare. Ideologically, Mao emphasized political indoctrination. For example, new soldiers received political education to become "class-conscious, learn the essentials of distributing land, setting up political power, arming the workers and peasants." According to Mao, by emphasizing indoctrination, the soldiers know "they are fighting for themselves, for the working class and peasantry" and can thus "struggle without complaint." In other words, they will become dedicated to the communist cause and thus better soldiers; Kampen, *Mao Zedong, Zhou Enlai and the Evolution of the Chinese Communist Leadership*, 76.

12 Kampen, *Mao Zedong, Zhou Enlai and the Evolution of the Chinese Communist Leadership*, 68, 69; Mao, *Selected Military Writings of Mao Tse-Tung*, 95, 112, 123. Mao thought the Red Army was small and weak compared to the large and powerful KMT forces and understood that conventional warfare was not an option.

13 Kampen, *Mao Zedong, Zhou Enlai and the Evolution of the Chinese Communist Leadership*, 66; Mao, *Selected Works of Mao Tse-Tung*, 193. Mao writes that the "error" of military losses was "corrected at the enlarged meeting of the Political Bureau of the Central Committee at Tsunyi in January 1935."

14 Kampen, *Mao Zedong, Zhou Enlai and the Evolution of the Chinese Communist Leadership*, 76.

15 Kampen, *Mao Zedong, Zhou Enlai and the Evolution of the Chinese Communist Leadership*, 12, 13.

advisors who were effectively Soviet, and adhered to orthodox Marxist-Leninist interpretations of communism to drive policy direction in China. When Wang Ming failed militarily during the Encirclement and Suppression Campaigns, the Soviets and Comintern withdrew their support, leading to his fall from power. To fill Wang's place, the Comintern endorsed Mao, whose authority and legitimacy rested on demonstrated military success and growing internal networks, as the CCP leader.[16]

The endorsement by international communists further legitimized Mao's position as military leader, both within the CCP and internationally, solidifying his importance in the party. However, this support did not grant him ideological control over the party. Instead, the very nature of Soviet support and Comintern backing meant that Soviet Marxist-Leninist doctrine – with its focus on dogma and the working class – still structured the CCP's approach to organizing its cadre, running its meetings, and spreading its message.[17] Mao recognized that if he continued to operate under external Soviet philosophies, he would be a replaceable figure in the CCP, like Wang before him. However, Mao concluded that if he could install his own unique ideology – Mao Zedong Thought – at all levels of the party, he would gain ideological control, decoupling his legitimacy and position of power in the CCP from Soviet leadership. Doing so would allow him to secure a more durable foundation of power, making him irreplaceable. This realization underscored to Mao that he had to act to secure his position by implementing his own ideology within the party itself to reduce political vulnerabilities.

Between 1939 and1941, Mao began pursuing this new objective. Seeking greater control over the CCP's ideological mechanisms, he worked to shape meeting agendas and imple-

16 Kampen, *Mao Zedong, Zhou Enlai and the Evolution of the Chinese Communist Leadership*, 76, 94; Hua, *How the Red Sun Rose*, 279.

17 Teiwes, "The Origins of Rectification," 29, 50.

ment "study movements" to shift the CCP's doctrinal discourse and structural basis away from Soviet models and towards his own philosophies.[18] Nonetheless, in 1942, he continued to operate within a party structure largely influenced by the Soviet ideological system. Thus, on the eve of the rectification movement, Mao did not have full ideological control as he did not fully command either the CCP's ideological basis or its organizational agenda.

In early 1942, Mao perceived an opportunity to launch a rectification movement in Yan'an to gain a monopoly over party ideology and thus shore up his leadership position by injecting his philosophy into the CCP. Mao decided to act at this point because he believed he had cultivated a critical mass of support among key party leaders, providing him with the means to successfully propagate his ideas in Yan'an. Furthermore, Mao believed that the conditions were favorable for a mass movement because he knew the party would not face external threats from the Soviets, the KMT, or the Japanese during this time as these actors were engaged in conflicts elsewhere.

By 1942, Mao understood he had the support of critical leaders in the CCP because he had spent the decade leading up to 1942 cultivating relationships with key leaders.[19] Liu Shaoqi, secretariat of the CCP during the Rectification, and Kang Sheng, who directed political efforts during the Rectification, exemplify Mao's influence.[20] In 1938, Wang Ming criticized Liu for failing

18 Teiwes, "The Origins of Rectification," 20, 21.

19 Hua, *How the Red Sun Rose*, 235, 239, 246-249. "On the one hand, Mao wanted to use inner-Party struggle to wipe out his political rivals, while, on the other hand, he wanted to create a new Party tradition built around his personal philosophy, organically combining these two outcomes to consolidate his leadership status. This formidable mission could not be accomplished merely through a handful of people, such as Liu Shaoqi, Kang Sheng, Chen Boda, and Hu Qiaomu. Mao required the assistance of other cadres and operational organs as well. They needed to wield the power of certain organizations to resolutely carry out Mao's intentions, create a system, and to train new people to support and cooperate with Mao's actions. In the early 1940s, Ren Bishi, Chen Yun, Li Fuchun, and the Secretariat and the Organization Department of the Central Committee under their command, effectively played the role of Mao's 'stewards.'"

20 Hua, *How the Red Sun Rose*, 238. "Mao supported Liu for his own political purposes, and Liu repaid him by increasing his criticism of Wang Ming. Mao and Liu were a perfect team, with Liu becoming the 'cannon' in Mao's chess game to 'capture' Wang Ming's pawn."

to align with his position, creating an opportunity for Mao, who also opposed Wang, to gain Liu as an ally.[21] This alliance meant that Mao appointed Liu to positions of power in the CCP in exchange for Liu's unwavering support at party meetings.[22] Like Liu, Kang Sheng also became a Mao supporter. Kang shaped his beliefs to align with what he believed would give him the most power. In the early 1930s, he supported Wang Ming, believing him to be the core of power in the party.[23] However, Kang witnessed Mao's rise to power after coming to Yan'an in the late 1930s and shifted his support from Wang to Mao, speaking out against Wang during CCP meetings and supporting Mao's ideas as the correct solution to party decisions.[24] Mao immediately rewarded this support. One month after Kang spoke out in favor of Mao at a CCP meeting, Mao appointed him to be the manager of the CCP Central Security Commission.[25] This reciprocal relationship continued, and by the rectification movement, Kang directed various political networks in Yan'an.[26] At critical moments, Liu or Kang chose to side with Mao, and in exchange, he elevated them to positions of power in the party. This enabled Mao and his network to rise together in the party while leaving Liu and Kang's authority contingent on Mao's support.[27] If Mao fell from power, then so too would his supporters, giving them a vested interest in supporting his leadership. Mao certainly understood the nature of this relationship and felt the dynamics would continue during the rectification movement. Thus, in

21 Hua, *How the Red Sun Rose*, 235.

22 Hua, *How the Red Sun Rose*, 235, 236. For example, "Mao appointed Liu to the position of secretary to the North China Bureau and Central Plains bureau. In this position Liu cultivated a loyal group of subordinates to push Mao's political agenda in North and Central China. In 1941, on the eve of rectification, Mao brought Liu to Yan'an to help him lead the rectification movement. Mao assigned Liu to secretariat of the Central Committee, the CCPs main decision-making body in the area. Mao and Liu developed their mutual trust by nature of a shared enemy, Wang Ming. Liu supported Mao in party meetings by denouncing Wang and lauding Mao. In exchange, Mao elevated Liu in the party, increasing Liu's power, while also ensuing that Mao had loyal supporters in key positions."

23 Hua, *How the Red Sun Rose*, 241, 244.

24 Hua, *How the Red Sun Rose*, 244, 245.

25 Hua, *How the Red Sun Rose*, 244, 245.

26 Hua, *How the Red Sun Rose*, 245.

27 Hua, *How the Red Sun Rose*, 246.

1942, he initiated the movement because he felt reassured that his loyal network would help him succeed.

Next, Mao knew that he had the means to propagate his philosophical ideas in Yan'an because he had loyal allies within the party leadership, and evidence suggests he also commanded an extensive, loyal cadre network in Yan'an as well. After the KMT's 1935 victory, the Red Army marched to Yan'an and established a base area by building schools and hospitals and by implementing land reform and changing tax structures.[28] The veterans from the Long March led the CCP's organization and education in Yan'an.[29] Then, starting in 1941, the CCP began moving cadre from around Chinese rural areas to Yan'an to lead the rectification.[30] CCP organs like the Organizational Department sorted through incoming cadre, placing them in different jobs in Yan'an based on their skillset.[31] Oftentimes, the CCP also sent incoming cadre to schools in the area for further education. Lastly, if the CCP identified a newcomer with ideological beliefs that did not fully align with the CCP's school of thought (i.e., overly sympathetic to the KMT), the CCP sent them away from Yan'an towards KMT areas to push communist thought there. Through CCP organs such as the Organizational Department, Mao ensured he had a cadre more loyal and receptive to his way of thinking who would be able to educate the population of Yan'an on Mao's philosophy when the time came.

In addition to having a loyal cadre, Mao understood that Yan'an had an extensive information exchange network. Besides operating the CCP organs like the Organizational Department, the CCP ran schools.[32] Mao likely knew he could use these schools to educate cadre and others on his new philosoph-

28 Hua, *How the Red Sun Rose*, 260, 261.
29 Hua, *How the Red Sun Rose*, 221.
30 Hua, *How the Red Sun Rose*, 224.
31 Hua, *How the Red Sun Rose*, 254.
32 Hua, *How the Red Sun Rose*, 222.

ical thought. Furthermore, the CCP printed numerous newspapers and distributed them around Yan'an.[33] Additionally, the Liberation Publishing House, run by the CCP, printed numerous books on Marx and Engels as well as general political propaganda.[34] The printing capacity in Yan'an ensured that Mao could have the means to print and publish essays outlining his philosophy. The written word was more powerful and permanent than verbal discourse, enabling Mao to outline his philosophy. Opera houses, clubs, and ballrooms opened in numerous locations throughout Yan'an, providing space for verbal informal conversation as well.[35] This informal network supplemented the formal distribution of Mao's ideas, which occurred in the education and printing spheres. The extensive information network, coupled with a loyal cadre, meant that when Mao initiated his rectification campaign, he knew he and his cadre could use it to disseminate Maoist Thought to the population in Yan'an.

Part of the reason Mao knew he could use this network to spread his ideology was that he understood Yan'an had a large population receptive to his ideas. The CCP had just experienced an influx of new members who were especially receptive to Maoist Thought. The CCP estimated that the party had increased nearly twenty times since 1937, from around 40,000 to over 800,000 members.[36] The new members consisted mostly of illiterate peasants who were often uneducated in traditional Soviet thought.[37] Mao recognized that this audience would be more receptive to Maoist thinking than those already indoctrinated in Soviet ideology. The illiterate peasantry was likely receptive to

33 Hua, *How the Red Sun Rose*, 224; *Liberation Daily* (解放日报延安版), People's Republic of China, Yan'an, 1941. https://archive.org/details/jfrb-1941.05.17 .

34 Hua, *How the Red Sun Rose*, 224.

35 Hua, *How the Red Sun Rose*, 224. "Yan'an, including New China Daily (expanded in 1941 to become Liberation Daily), Liberation Weekly, The Communist, Eighth Route Army Military and Political Affairs Magazine, Chinese Youth, Chinese Women, The Chinese Worker, Chinese Culture, and so forth. Yan'an's largest publication unit, Liberation Publishing House, also produced a Marx-Engels series of books."

36 Teiwes, "The Origins of Rectification," 21.

37 Teiwes, "The Origins of Rectification," 22.

Maoist Thought because they had no contradictory knowledge with which to refute it. Essentially, the new population was a blank slate for Mao. Thus, Mao likely knew he could use the loyal cadre to leverage the information network in Yan'an to indoctrinate new, more receptive communist members in Maoist Thought.

Mao felt secure in using his cadre and information network to spread his mode of thinking because he believed he would not face external threats to these efforts. Mao and the CCP had three main enemies: the Soviets, the KMT, and the Japanese. Mao perceived he would not face Soviet backlash because the Germans had just launched Operation Barbarossa, their invasion of the USSR, in June of 1941.[38] Next, Mao understood that the KMT would not meddle in internal CCP affairs. Mao had a spy network that could alert him of any KMT action against the CCP.[39] The same network gave Mao the information to understand that the KMT also struggled with internal affairs, namely consolidating urban centers and fighting the Japanese.[40] Mao, using his spy network and knowledge of international relations, knew that the KMT would keep to themselves, giving him the space to alter internal CCP ideology. Mao knew that the Japanese could not intervene in his rectification. The main Japanese force was located geographically distant from Yan'an, focused on defeating the KMT forces.[41] Furthermore, the U.S. had recently placed economic embargos on the island chain, and the Japanese were preparing their response.[42] Mao likely felt that the Japanese would shift their focus to the larger Pacific region as opposed to destroying the communist threat. The absence of external opposition in Yan'an in 1942 gave Mao the opportunity

38 Hua, *How the Red Sun Rose*, 232, 234, 235.
39 Hua, *How the Red Sun Rose*, 227, 228.
40 Teiwes, "The Origins of Rectification," 52.
41 Hua, *How the Red Sun Rose*, 224, 227.
42 Hua, *How the Red Sun Rose*, 224, 227.

to take ideological control of the party without distractions.

Mao decided to begin the Rectification Movement in Yan'an in 1942 because he knew he did not yet possess ideological control of the party, despite his military and political power at the time. In 1942, the Soviet method of thinking and operating still dominated the CCP. Mao's experience of seeing other party leaders fall from power convinced him that, to secure his position in the party, he needed to advance his philosophical thought through all levels of the CCP before attempting to take power. Mao had the means to promote his thought in Yan'an because he possessed a loyal cadre network that could use an extensive information machine to indoctrinate thousands of new communist members. Mao felt reassured that he could undertake this internal indoctrination and break from Soviet thought without facing external consequences, from the Soviets, the KMT, or the Japanese, because each was occupied in other conflicts. Thus, Mao decided to launch the rectification campaign in Yan'an in 1942. Here, he disseminated Maoist ideology throughout all levels of the party. This ideological shift consolidated Mao's power and ensured his position as party leader for decades to come.

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In Pursuit of "Self-Reliant National Defense:" South Korea's Strategic Catch-up Under Park Chung-hee, 1962-1979

Angus MacKellar, University of Toronto

Throughout his tenure (1962–1979), South Korean President Park Chung-hee rallied the country with his intuitive slogan of "rich nation, strong army."[1] If the Republic of Korea (ROK) today meets both criteria, in 1953 it had neither; Seoul began the Korean War with a calamitous display of military inferiority in the summer of 1950 and emerged from the war in worse economic shape than North Korea, a condition that persisted throughout the decade.[2] Assuming the presidency in 1962, Park overturned this disparity in spectacular fashion, establishing what has become South Korea's enduring conventional superiority over the North.[3] This paper seeks to understand the driving forces behind South Korea's strategic catch-up, investigating the nature of ROK economic and military growth under Park Chung-hee and ascertaining how important the policies and leadership of the Park regime were in that process.

First, this paper will define strategic catch-up and demonstrate its applicability to the Korean Peninsula, setting the boundaries for this paper and justifying its core realist assumptions. Secondly, it will analyze the militarized economic policies of the Park regime, understanding "rich nation, strong army"

1 Peter Banseok Kwon, Cornerstone of the Nation: the Defense Industry and the Building of Modern Korea Under Park Chung Hee, (Cambridge and London: Harvard University Asia Center, 2024), 61-62.

2 Yong-Pyo Hong, "North Korea in the 1950s: The Post Korean War Policies and Their Implications," The Korean Journal of International Relations 44, no. 5 (2004): 222-224, PDF, https://www.kjis.org/journal/download_pdf.php?spage=215&volume=2&number=1; William C. Martel, Victory in War: Foundations of Modern Strategy, 2nd ed, (Cambridge: Cambridge University Press, 2011), 158-159, https://librarysearch.library.utoronto.ca/permalink/01UTORONTO_INST/14bjeso/alma991106886834506196.

3 The justification for this claim will be outlined in the first two sections of this paper. The first section will outline the economic aspect of ROK superiority, and the second section will describe the Military Industrial Complex that accompanied these economic gains. In the first section, moreover, the concept of strategic catch-up will be defined to make the relative strategic positions of North and South Korea clear.

as a formula for "self-reliant national defense" and highlighting the extensive personal agency of Park himself to reveal the endogenous roots of ROK strategic catch-up. Lastly, this paper will address a key alternative explanation for South Korea's strategic catch-up, the US-ROK relationship during the Vietnam War, dismissing the notion that Seoul's relative strategic gains against Pyongyang were exogenously driven. Ultimately, this paper finds that Park himself was the principal driver of South Korea's growing strategic capabilities, relative to the North, and that exogenous factors do not refute this claim.

Defining and Applying Strategic Catch-up in Realist Perspective

One can reasonably contest the concept of strategic catch-up, both in theory and in its application to the balance of power between Seoul and Pyongyang, as there is no standardized metric for measuring relative strategic capabilities in Korea or elsewhere. It is therefore necessary to define this term before employing it as the basis of this paper's analysis. For the purposes of this essay, strategic catch-up is a phenomenon by which a state reduces or reverses an initial position of strategic inferiority in relation to another state (or states).

While strategic catch-up is conceptually derived from economic catch-up, it is a more nebulous concept that cannot be truly tested except in the event of war between the concerned parties. Nevertheless, metrics of economic catch-up, such as Gross Domestic Product (GDP), remain of key importance when assessing strategic capabilities. General measures of economic health, like GDP, denote an economy's ability to produce goods and services; more specific measurements of a country's industrial composition reveal the applicability of this economic power to military production. Subsequent sections of this paper will discuss the qualitative characteristics of industrialization

under Park. These qualitative considerations distinguish strategic catch-up from its economic counterpart, as similar economic resources may be employed differently and thus yield divergent strategic outcomes. In this case, strategy supersedes capability.

Following the 1953 armistice, North Korea pulled ahead on both accounts. Pyongyang pursued what appears to have been a more effective economic strategy than Seoul and, as a result, looked most capable of independently maintaining a modern army. By 1959, North Korea's GDP per capita was estimated to be approximately 73 percent higher than South Korea's, with this growth concentrated in heavy industrial output.[4] Whereas South Korean President Syngman Rhee focused on numerical superiority (in active personnel) over the North in the short term, North Korean leader Kim Il-sung prioritized economic investment over military spending until 1960.[5] While both Rhee and Kim's strategies were funded by foreign aid, Pyongyang's strategy was one of nurturing greater self-reliance, fostering one-to-one economic and strategic superiority over South Korea.[6] A resumption of the Korean War may have vindicated Rhee's strategy, as Kim foresaw, US opposition to a ROK offensive instead maintained an uneasy truce.[7]

Scholarly comparisons of the two Korean economies are therefore centered on when, not if, South Korea reversed an initial disadvantage vis-à-vis the North. While North Korean historical statistics range from unreliable to nonexistent, conser-

4 Hong, "Post Korean War Policies," 222-224.

5 Hong,"Post Korean War Policies," 225-226, 231.

6 Under President Rhee (1948-1960), over half of the ROK's military expenditure and as much as 40 percent of Seoul's total budget was directly bankrolled by Washington. Peter Banseok Kwon, "Defender of the Nation, Champion of Science: The Agency for Defense Development as a Nexus for the Technological Transformation of South Korea," *Journal of Korean Studies* 28, no. 1 (2023): 62, https://doi.org/10.1215/07311613-10213182; Scott A. Snyder, *South Korea at the Crossroads: Autonomy and Alliance in an Era of Rival Powers*, (Columbia University Press, 2018), 24, https://books-scholarsportal-info.myaccess.library.utoronto.ca/uri/ebooks/ebooks6/degruyter6/2021-09-08/5/9780231546188; Duol Kim, "The Great Divergence on the Korean Peninsula (1910–2020)," *Australian Economic History Review* 61, no. 3 (September 28, 2021): 329, https://doi.org/10.1111/aehr.12225; Hong, "Post Korean War Policies," 222.

7 Hong, "Post Korean War Policies," 218.

vative economic estimates indicate that South Korea narrowed the gap by the 1970s and reversed it from the 1980s onwards.[8] In order to prove that *strategic* catch-up occurred in the Korean Peninsula, very simple criteria must be met. Firstly, (in this case) South Korea must have been strategically inferior to the North. Secondly, at some point in the future, this disadvantage must have been reduced, if not overturned. The first criterion was satisfied at the start of the Korean War and seems to have endured for at least a decade. This paper's analysis of the strategic implications of Park Chung-hee's presidency will complement the academic consensus on comparative North and South Korean macroeconomics, ultimately satisfying the second criterion.

Lastly, for this section, it is necessary to acknowledge and justify this paper's realist assumptions. The one-to-one comparison of Seoul and Pyongyang's strategic positions implicitly ignores direct intervention from allies on either side, in keeping with realist assumptions that states are purely egoistic and that only self-ensured security is reliable.[9] Firstly, this perspective is analytically useful and prevents the overextension of this paper's scope. A comprehensive analysis of prospective American, Chinese, United Nations, and Soviet intervention would be mired in the internal politics of these actors and global geopolitics, beyond this paper's scope. Secondly, Park's explicit realist perspective was appropriately rooted in contemporary reality. In 1969, for example, President Nixon agreed with Park's call for "self-reliant national defense" when he instructed Washington's Asian allies to take responsibility for their own

8 See, for example, Myung-soo Cha et al., *Historical Statistics of Korea*, (Singapore: Springer, 2022), https://doi.org/10.1007/978-981-15-3874-2; Kim, "The Great Divergence," 325, 329-330; See also, for example, Byung-Yeon Kim et al., "Assessing the economic performance of North Korea, 1954-1989: estimates and growth accounting analysis," *Journal of Comparative Economics* 35, no. 3 (2007): 564–582; Eui-gak Hwang, *The Korean economies: A Comparison of North and South*, (Oxford: Clarendon Press, 1993).

9 John J. Mearsheimer, *The Great Delusion: Liberal Dreams and International Realities*, (New Haven: Yale University Press, 2018), 133-134, https://ebookcentral-proquest-com.scpo.idm.oclc.org/lib/sciences-po/reader.action?docID=5508355&ppg=149.

protection.[10] The subsequent withdrawal of 20,000 US troops from South Korea in 1971 and President Carter's aborted total withdrawal in 1977 clearly vindicate Park's reasoning.[11] The realist lens adopted by this paper, therefore, is both analytically and empirically appropriate.

"Rich Nation, Strong Army" as a Formula for Strategic Catch-up

Faced with the need for "self-reliant national defense," Park adopted a series of policies under his overarching strategy of "rich nation, strong army."[12] As explained in the previous section, the impact of economic strength on strategic capability is intuitively positive. One reading of Park's slogan may interpret "strong army" as being contingent on the independent variable, "rich nation." Analysis of Park's policies, however, demonstrates that this formula was not a purely quantitative matter of cause and effect. Instead, the core of the "rich nation, strong army" idea lies in the *qualitative* characteristics of ROK economic expansion, as directed by Park himself, thereby revealing the fundamentally endogenous nature of South Korea's strategic catch-up. To this effect, Park ensured that the specificities of ROK economic growth would directly augment Seoul's military capabilities, orchestrating the creation of an economic system that inextricably linked the ideas of "rich nation, strong army" into a single strategic goal.

To best understand the characteristics of Park's national economy, and thus their qualitative importance, one must first

10 Office of the Historian, 29. Telegram From the Embassy in Korea to the Department of State, Foreign Relations of the United States, 1964–1968, Volume XXIX, Part 1, Korea: Document 29, Seoul, December 21, 1964. https://history.state.gov/historicaldocuments/frus1964-68v29p1/d29; Snyder, Korea at the Crossroads, 21.

11 Richard F. Doner, The Politics of Uneven Development: Thailand's Economic Growth in Comparative Perspective, (Cambridge: Cambridge University Press, 2009), 272, https://librarysearch.library.utoronto.ca/permalink/01UTORONTO_INST/14bjeso/alma991106288156406196; Joo-Hong Nam, America's Commitment to South Korea: The First Decade of the Nixon Doctrine, LSE Monographs in International Studies, (Cambridge: Cambridge University Press, 1986), 78, 101, 148, 159, https://librarysearch.library.utoronto.ca/permalink/01UTORONTO_INST/14bjeso/alma991106632992606196.

12 Kwon, *Cornerstone of the Nation*, 61-63.

understand the man himself. A high achiever in the Manchurian and Japanese military academies and a veteran of the Manchukuo Army, Park's personal ideology was highly militaristic.[13] Appointing his former classmates to cabinet positions, Park and his regime wholly embraced totalitarian Imperial Japanese ideologies as they crafted Seoul's policies, leveraging Korea's colonial and wartime experiences to garner support from a society now deeply conditioned by war.[14] From an economic standpoint, this resulted in a peacetime system reminiscent of a 1940s war footing, engendering a militaristic sense of civic duty in the South Korean workforce as Park became the self-styled field marshal of the national economy.[15] According to Park's vision, the ROK's strategic catch-up was therefore characterized by aggressive economic militarism.

With militarized economic growth forming the core of Park's catch-up strategy, the first order of business was to achieve total control over his workforce. Over the 1960s, Park maintained a positive relationship with the national workforce and organized labor while at the same time restructuring labor laws to weaken unions and legalize greater state control of their activities.[16] This authority was tested in 1969, when labor action in Busan posed a serious threat to Park's growing privatization agenda, which aimed to augment the president's control over the national economy by concentrating power in the hands of a small number of industrialists with whom Park would closely

13 Carter J. Eckert, *Park Chung Hee and Modern Korea: The Roots of Militarism 1866-1945*, (Cambridge, MA: The Belknap Press of Harvard University Press, 2016), 66-67, 81, https://librarysearch.library.utoronto.ca/permalink/01UTORONTO_INST/14bjeso/alma991105918195606196; Kwon, *Cornerstone of the Nation*, 48-49.

14 Eckert, *Park Chung Hee and Modern Korea*, 59, 65, 77, 83, 180-181; Kwon, *Cornerstone of the Nation*, 14-15, 23-24, 48-49.

15 Kwon, *Cornerstone of the Nation*, 14-15, 23-24. The description of Park as a "self-styled field marshal of the national economy" will be justified throughout this section.

16 Hwasook Nam, *Building Ships, Building a Nation: Korea's Democratic Unionism Under Park Chung Hee*, (Seattle, WA: University of Washington Press, 2009), 136-138, 155-159, 177, 184, https://librarysearch.library.utoronto.ca/permalink/01UTORONTO_INST/14bjeso/alma991107433301806196.

collaborate.[17] Despite widespread public sympathy for the strikers, Park's popularity amongst workers and union leaders allowed him to unilaterally suspend the strike and later dismantle South Korea's democratic labor laws with ease.[18] This popularity ultimately empowered the total erasure of South Korea's democracy in 1972, when Park's legal powers became decidedly authoritarian under the Yushin Constitution.[19]

Park aimed to command not only the national workforce but also its industrialists, with his privatization agenda setting the stage for a highly centralized system in which he mobilized state resources and coercion to personally orchestrate the militarized development of the national economy. Between 1968 and 1972, for example, state directives enforced a two-to-one consumer-to-military output ratio for key manufacturers as well as total wartime convertibility.[20] Alongside this aggressive dual-use development program, Park employed carrot-and-stick tactics to enlist South Korea's most powerful private actors, the *chaebol*, in support of key initiatives such as his Heavy-Chemical Industry Drive (HCI).[21] Seoul offered tax breaks and preferential loans for *chaebol* involved in South Korea's nascent Military Industrial Complex (MIC) and HCI, generating strong incentives for public-private coordination.[22] Conversely, Park leveraged corruption charges and presidential pardons to coerce compliance from the likes of Samsung founder Lee Byung-chul.[23]

By consolidating domestic economic resources and ben-

17 Nam, *Building a Nation*, 170-172, 177.

18 Nam, *Building a Nation*, 177-178, 184.

19 Nam, *Building a Nation*, 184; Hyug Baeg Im, "The Origins of the Yushin Regime: Machiavelli Unveiled" in *The Park Chung Hee Era: The Transformation of South Korea,* edited by Byung-Kook Kim and Ezra F. Vogel, 233-262, (Cambridge, MA and London: Harvard University Press, 2013), 233-234, https://doi-org.myaccess.library.utoronto.ca/10.4159/harvard.9780674061064.c8.

20 Kwon, *Cornerstone of the Nation*, 65-66, 78-79.

21 The *chaebol* are large South Korean conglomerates, characterized by extensive market shares and horizontal business models. Many *chaebols* expand across a large number of sectors. Kwon, *Cornerstone of the Nation*, 118.

22 Doner, *Politics of Uneven Development*, 267, 271; Kim, *The Great Divergence*, 326-327; Kwon, *Cornerstone of the Nation*, 103, 117-118, 121.

23 Kwon, *Cornerstone of the Nation*, 119.

efiting from state intervention, the *chaebol* were well positioned to compete internationally. From a strategic standpoint, this led to the accumulation of defense-specific human capital by South Korean scientists, engineers, and businessmen through US-subsidized projects across the Asia-Pacific.[24] Hyundai, for example, gained extensive technical expertise through a highly unprofitable venture in Thailand, the losses from which were partly offset by US, ROK, and World Bank funding.[25] This accumulation of MIC expertise by South Korean firms was no coincidence, nor was it charity from Washington; from 1965 to 1966, Park and top ROK officials leveraged the Vietnam War and normalization with Japan to overturn initial US refusals to grant South Korean firms preferential overseas procurement contracts.[26] Supporting the *chaebol* was, evidently, an explicit and effective policy of the Seoul government.

While the accumulation of MIC human capital was government policy, its application was Park's alone. Empowering the *chaebol* extended Park's personal control over HCI and MIC development beyond the letter of the law, with key initiatives being conducted on a president-to-CEO basis.[27] The undemocratic nature of Park's strategy (predating the 1972 reforms) is best characterized by the activities of the Agency for Defense Development (ADD), which managed the indigenization of Seoul's research and development (R&D) program from 1970 onwards.[28] The ADD was both state-funded and privately in-

24 im Glassman and Young-Jin Choi, "The Chaebol and the US Military-Industrial Complex: Cold War Geopolitical Economy and South Korean Industrialization," *Environment and Planning A: Economy and Space* 46, no. 5 (May 1, 2014): 1164, 1168-1171, doi:10.1068/a130025p.

25 Glassman and Choi, "Chaebol and the US," 1168-1169.

26 A comprehensive citation would occupy excessive space: see documents 29, 42, 43, 48, 57, and 59 in the primary source section of the bibliography. Document 59 (the Brown Memorandum) stands out as the culmination of ROK efforts and will thus be cited in full. Office of the Historian, *59. Memorandum From the Assistant Director of the United States Operations Mission to Korea (Brown) to the Director of the United States Operations Mission to Korea of the Agency for International Development (Bernstein)*, Foreign Relations of the United States, 1964–1968, Volume XXIX, Part 1, Korea: Document 59, Seoul, September 23, 1965, https://history.state.gov/historicaldocuments/frus1964-68v29p1/d59.

27 Kwon, Cornerstone of the Nation, 67, 155.

28 Kwon, "Defender of the Nation," 63.

corporated, phasing out its US-funded precursor and answering directly to Park without parliamentary oversight.[29] By reverse engineering borrowed or stolen foreign equipment, the ADD successfully developed modern arms without access to US technology transfers.[30] The mass production of these weapons would, of course, be the eagerly accepted responsibility of the *chaebol*. The symbiotic relationship between Park and these firms therefore extended to his illegal R&D activities, with, in one example, Kia's CEO personally smuggling equipment from Fiat's armored vehicle factory back to South Korea in 1976.[31] Park had thus formed an elite *personal* network of trusted officials and private actors that orchestrated South Korea's strategic catch-up outside of the legal boundaries of the state and, therefore, on an entirely endogenous basis. Because Park's strategy was both informal and personal, it was also separate from foreign actors exercising influence over the South Korean military and government.

Park's personal involvement was clearly significant in employing his "rich nation, strong army" formula. Conditioned by his military education, Park used his popularity to expand his control over both labor and enterprise. Exercising these new powers, he privatized and militarized the national economy, empowering key firms to dominate it and enlisting them as allies not only of Seoul but also of himself. The goal of "self-reliant national defence," which took priority over the law, was simultaneously pursued through institutional, state-to-state, and covert means. In collaboration with the *chaebol*, South Korea's MIC, and strategic capabilities developed under Park Chung-hee's personal authority and ideology, this evidence strongly supports

29 Kwon, "Defender of the Nation," 63-66, 68.

30 Kwon, "Defender of the Nation," 69, 73; Kwon, *Cornerstone of the Nation*, 76-77, 80. Ultimately, following the ADD's impressive showing, some US technology transfers were lifted. This was, therefore, due to the ROK's self-earned credibility as a reliable defense and R&D partner rather than a US charity.

31 Kwon, *Cornerstone of the Nation*, 155.

the argument that South Korea's strategic catch-up should be chiefly credited to Park himself.

From Seoul or Saigon? The Exogenous Argument for ROK Strategic Catch-up

A strong counterargument for the ROK's strategic catch-up centers on Washington's increased support for Seoul during the Vietnam War.[32] In exchange for sending300,000 troops over the course of the war, South Korea received financial, technological, and strategic compensation that was not granted to non-combatant US allies like Japan and the Philippines.[33] During the war, over five billion dollars flowed from the United States and South Vietnam to South Korea in the form of preferential procurement contracts granted to *chaebol*, remittances from US-salaried ROK servicemen, US-funded military modernization projects, and both civilian and military development aid.[34] For all of Park's qualitative orchestration of South Korea's strategic catch-up, the quantitative impact of US aid is undeniable. At the end of the 1960s, for example, approximately half of all new fixed capital in the South Korean economy came directly from US military programs.[35]

Further evidence, however, suggests that this aid was less important to ROK strategic catch-up than endogenous factors under the Park regime. While US aid to South Korea was significant, so too was Soviet and Chinese aid to North

32 Arguments surrounding Washington's key role in ROK development are present across the literature, for example in Glassman and Choi, "Chaebol and the US," 1176; Glenn Baek, "A Perspective on Korea's Participation in the Vietnam War," *Asan Institute for Policy Studies*, Issue Brief no. 53 (2013): 2-5, http://www.jstor.org/stable/resrep08116; Doner, *Politics of Uneven Development*, 272.

33 Snyder, *Korea at the Crossroads*, 21; Glassman and Choi, "Chaebol and the US," 1166-1168, 1176.

34 1973 US dollars, in cash and kind. Baek, "Korea's Participation in Vietnam." 2, 4; Jun-Kyung Kim and K.S. Kim, *2011 Modularization of Korea's Development Experience: Impact of Foreign Aid on Korea's Development*, Seoul: Ministry of Strategy and Finance, Republic of Korea, 2011, 38, PDF, link omitted due to length (see bibliography); Doner, *Politics of Uneven Development*, 272; Office of the Historian, *76. Telegram From the Department of State to the Embassy in Korea*, Foreign Relations of the United States, 1964–1968, Volume XXIX, Part 1, Korea: Document 76, Washington, January 27, 1966, https://history.state.gov/historicaldocuments/frus1964-68v29p1/d76; Office of the Historian, *48. Memorandum of Conversation*, Foreign Relations of the United States, 1964–1968, Volume XXIX, Part 1, Korea: Document 48, Washington, May 17, 1965, https://history.state.gov/historicaldocuments/frus1964-68v29p1/d48.

35 Glassman and Choi, "Chaebol and the US," 1175.

Korea. From the end of the Second World War until 1970, both Korean states received an approximately equal level of foreign aid.[36] Moreover, the US *did not* increase its total aid to South Korea during the Vietnam War, though the proportion of this aid earmarked for military purposes increased.[37] By definition, strategic catch-up must occur in relative terms. Because the above evidence suggests that US aid to South Korea cannot be conclusively regarded as quantitatively superior to the foreign aid contemporaneously received by North Korea, it represents an absolute, not a relative gain for Seoul. Just as Kim Il-sung gained an edge over Syngman Rhee by effectively employing similar quantities of aid, it appears that Park Chung-hee bested Kim with an endogenous strategy more than external support.

In parallel normalization negotiations with Tokyo, however, Park's domestic political strength played a key role in allaying domestic opposition.[38] It is also important to note Park's highly positive view of Japan, which is not a prevailing characteristic in South Korean politics; having even adopted a Japanese name in his youth, Park was certainly a unique actor in normalization discussions.[39] On all accounts, therefore, Park's personal agency on this occasion is credibly discernible from that of South Korea's national impetus. Signed in June 1966, Japan and South Korea's normalization treaty secured approximately ten billion dollars in reparations for Seoul.[40] Amortized over a decade, the annual revenues this treaty provided to Seoul

36 Kim, "The Great Divergence," 329.

37 Kim and Kim, *Korea's Development Experience*, 38.

38 US officials, for example, noted serious domestic opposition in the ROK to the normalization agreement as well as Park's personal role in allaying public and parliamentary unrest. This may be considered flattery, but considering Park's extensive political control, the nature of his previous suppression of popular labour movements, and the ultimate achievement of the normalization treaty, indicates the fairness and honesty of this assessment. See primary source documents 43, 48, 53, and 57, which are not cited here for brevity.

39 Eckert, *Park Chung Hee and Modern Korea*, 91.

40 "Agreement on the Settlement of Problems Concerning Property and Claims and on Economic Co-operation between Japan and the Republic of Korea," signed June 22, 1965, *United Nations Treaty Series* 583, no. 8473 (1966): 218-300, article 1 section 1, article 1 section 2, accessible at: https://treaties.un.org/Pages/showDetails.aspx?objid=080000028012a2bc&clang=_en; Kazuhiko Togo, *Japan's Foreign Policy, 1945-2009*, (Leiden: Brill Academic Publishers, 2010), 163, https://doi-org.myaccess.library.utoronto.ca/10.1163/ej.9789004185012.i-484.

were approximately equal to those gained through US civilian aid.[41] Therefore, at the same time that ROK benefits from US aid can be better understood as rewards from a sternly negotiated trade, Park's negotiations with Japan are representative of both his personal agency and the non-exclusivity of the US-ROK aid relationship. For these reasons, as well as the fact that the impact of US aid on ROK strategic catch-up was primarily driven by Park's used of it, the role of US aid to South Korea during the Vietnam War does not refute the endogenous roots of ROK strategic catch-up.

Conclusion

During Park Chung-hee's presidency, South Korea's strategic position vis-à-vis the North improved significantly. From 1962 onwards, South Korea's relative strategic gains against North Korea were principally the result of President Park's personal agency rather than external factors. Defining strategic catch-up provides a clear analytical framework to compare endogenous and exogenous contributors to Seoul's strategic growth relative to Pyongyang. The realist and circumstantial assumptions underpinning this framework are representative of Korea's strategic environment and thus do not oversimplify empirical reality. Park Chung-hee's extensive personal role in translating South Korea's growing economic strength into military might demonstrates the endogenous roots of the ROK's strategic catch-up. Instrumentalizing economic actors and operating outside of the law where he saw fit, Park successfully enacted a total mobilization of the South Korean economy in pursuit of "self-reliant national defense" and, ultimately, relative strategic gains. Finally, while exogenous factors are highly relevant, they

41 US military aid was significant, but the comparability of US and Japanese civilian aid to the ROK is demonstrative of the non-exclusivity of the US-ROK aid relationship. Kim and Kim, *Korea's Development Experience*, 38; "Agreement on the Settlement of Problems Concerning Property and Claims and on Economic Co-operation between Japan and the Republic of Korea," article 1 section 1, article 1 section 2; Togo, *Japan's Foreign Policy*, 163.

do not supersede the importance of endogenous factors in South Korea and the Park regime. Whereas the *relative* gains derived from the quantity of US aid (much of which was hard-earned by Seoul) are ambiguous, Park's personal role in effectively employing these funds and securing additional revenues from Japan is clearer.

Overall, this paper reveals the internal agency that South Korea retains despite its persistently challenging geopolitical environment. Nonetheless, almost half a century onwards from Park's 1979 assassination, questions of "self-reliant national defense" have not been put to rest, not least of all due to the issue of nuclear weapons, underscoring a key limitation of this paper. At the same time, President Yoon Suk-yeol's 2024 coup attempt indicates that democracy, too, is yet to fully settle in South Korea. In 2025, then, Seoul's now-democratic policymakers must confront an uncomfortable reality: beyond lingering insecurity, what do they share with Park Chung-hee? Faced with existential military threats, uncertain allies, and a stubbornly deteriorating demographic situation, it is yet to be seen how far the Republic of Korea is willing to go in the name of national defense.

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Atomic Cowboys:
The Reality of Truman's Nuclear Monopoly

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The success of the Manhattan Project at the Trinity Test utterly transformed the post-war battlefield overnight. While the United States (US) emerged with a monopoly on nuclear weapons in 1945, challenges at the organizational, logistical, and doctrinal levels ensured that the monopoly was short-lived. Prior to the drafting of NSC-68 and the initiation of the US intervention in Korea in 1950, America's atomic capabilities existed largely as a paper tiger, with little means to utilize the nuclear advantage it possessed.[1] The Strategic Air Command (SAC), established in 1946, carried the burden of delivering nuclear weapons and struggled to develop a clear doctrine on how the few available nuclear weapons would be used in a hypothetical war with the Soviet Union. While leaders such as President Harry Truman and Secretary of Defense James Forrestal continued to grapple with the role and utility of nuclear weapons in a postwar world, they faced the even more difficult question of how to manage an arms race that was quickly escalating with the Soviet Union's successful detonation of an atomic bomb in 1949.[2] This essay argues that there was a clear disconnect between the expectations of policy makers and war planners over the realities that the US nuclear program could bring to the table.

The conclusion of the Second World War found the

1 NSC-68 was an influential policy paper that was presented to and approved by President Truman in April of 1950. It urged Truman to increase military spending to counter the growing threat of communism abroad. See Henry Kissinger, "National Security Council Report 68 (NSC-68) U.S. Objectives and Programs for National Security," *Public Intelligence* (Washington, April 14, 1950): 9.

2 Gordon P. Saville, "America's Air Defense: Radar Will Play an Important Part in Spotting Any Aggressor Aircraft," *National Defense Industrial Association* 34, no. 177 (1949): 174.

European continent reduced to ruins. The United Kingdom (UK) was on the verge of a financial crisis, and the Soviet Union was grappling with a massive reconstruction effort. This left the US as the undisputed world power of the period, which had not only emerged from the war relatively unscathed, but now possessed a weapon no one else did—the atomic bomb. US leadership was eager to show the world that it had something special. In the postwar environment, it quickly became clear that Truman's relationship with Stalin would involve far greater skepticism than Roosevelt's. In September 1945, during a meeting of foreign ministers from the US, the Soviet Union, and the UK, Secretary of State James F. Byrnes reportedly told Soviet Foreign Minister Vyacheslav M. Molotov, "[i]f you don't cut all this stalling and let us get down to work, I am going to pull an atomic bomb out of my hip pocket and let you have it."[3] Seemingly bold—if not outright dangerous—statements like this were not out of the ordinary and dutifully represented the 'wild west' mentality that many in the Truman administration possessed at the time.[4]

The invention of the atomic bomb and growing tension with the Soviet Union signaled to the Army Air Forces that maintaining a peacetime strategic bombing force was necessary for national survival.[5] In response, the US formed the Strategic Air Command in March 1946 with the purpose of providing a dedicated command for long-range bombing missions. General George C. Kenney, who served as an air commander in the South Pacific during the Second World War, was chosen to lead the new air command, and equipment, personnel, and bases from the now defunct Continental Air Forces were trans-

3 "Manhattan Project: Nuclear Proliferation, 1949-Present," Osti.gov, 2001, https://www.osti.gov/opennet/manhattan-project-history/Events/events.htm.

4 See John Lewis Gaddis, "The insecurities of victory: the United States and the perception of the Soviet threat after World War II," In Michael James Lacey ed., *The Truman Presidency* (New York: Cambridge University Press; 1989), 235-272.

5 Carl Spaatz, "Evolution of Air Power: Our Urgent Need for an Air Force Second to None," *Military Affairs* 11, no. 1 (1947): 15.

ferred to SAC's control.[6] In the early years, SAC struggled to transition into a peacetime deterrent posture, and its uncoordinated nature reflected poorly upon Kenney. By 1947, postwar demobilization had left SAC at half strength in manpower with only twenty-two atomic capable B-29s available.[7] Furthermore, SAC had no access to atomic weapons or their assembly, both of which the Atomic Energy Commission kept closely guarded. Air Force leadership, unsatisfied with the poor state of SAC and its lack of readiness, quickly replaced Kenny in October 1948 with General Curtis LeMay.[8] General Hoyt S. Vandenberg, the Air Force Chief of Staff, specifically requested LeMay for this role.[9] LeMay's mission was to transform SAC into a force that could fight the day that war broke out. He began by firing all the high-level officers in SAC, citing that "[w]e don't have time to distinguish between the unfortunate and the incompetent."[10] These officers were replaced primarily by combat veterans who had worked alongside LeMay in the South Pacific. While LeMay's assumption of command was instrumental in SAC's success as an organization, it would take several years to reach the level of proficiency for which it became known.

As the US entered the atomic age, the question of how to realistically counter the Soviet threat was becoming more difficult to answer. Demobilization heavily impacted every level of US's combat capabilities. By 1947, the new US Air Force had been reduced from 230 groups to a mere 55, with only two of those groups labeled as operationally effective.[11] As the military experienced massive downsizing, Truman introduced a series of

6 Herman S. Wolk, "The Genius of George Kenney," *Air Force Magazine* 85, no. 4 (April 2002): 71.

7 Phillip S. Meilinger, *The Formation and Early Years of the Strategic Air Command, 1946–1957: Why the SAC Was Formed* (Lewiston, NY: Edwin Mellen Press, 2013), 339-341.

8 The Army Air Forces became the U.S. Air Force with the National Security Act of 1947.

9 Samuel F. Wells, "Curtis Lemay Builds the Strategic Air Command," In *Fearing the Worst: How Korea Transformed the Cold War*, Columbia University Press, 2020, 331.

10 Quoted in Wells, "Curtis Lemay Builds the Strategic Air Command," 331.

11 John M. Curatola, *Bigger Bombs for a Brighter Tomorrow: The Strategic Air Command and American War Plans at the Dawn of the Atomic Age, 1945-1950* (North Carolina: McFarland & Company, 2016). 13.

budget cuts alongside it. The planned military budget for 1946 dropped from $70 billion to $49 billion, with plans to reduce the following year's budget to a mere $15 billion.[12] Increasingly expensive weapon systems worsened the budget restrictions. The Air Force suffered the worst, as some post-war jet bombers cost more than ten times as much as their wartime counterparts. Fighter aircraft costs soared as well. While the P-51 Mustang had cost only $54,000 per unit, its replacement—the F-89 Scorpion—carried a hefty price tag of $855,000.[13]

In May 1948, planning for FY50's (Fiscal Year 50) budget began with President Truman announcing a unified military budget that would not exceed $15 billion.[14] Truman's even distribution of funds between the different branches of the military frustrated the Air Force's leadership. As Army and Navy leaders criticized the newly founded Air Force as a resource vacuum, Secretary of the Air Force Stuart Symington complained that additional funds were wasted on other branches and viewed the strategic bombing fleet as the most worth of the limited resources available. In July 1948, he stated that "the only consideration which could keep the Soviet Union from making this attempt [to attack] is the fear of a retaliatory atomic attack by the Air Force against the Soviet Union."[15] Secretary Forrestal, alongside many others in the administration, argued that existing tensions with the USSR required an increase in defense spending. However, Truman was determined to prepare for peace, and the disconnect between fiscal policy and atomic strategy widened.

At President Truman's orders in mid-July 1948, Secretary Forrestal directed the armed forces to determine their respec-

12 Curatola, *Bigger Bombs for a Brighter Tomorrow*, 26.

13 Steven Reardon, *The Formative Years: History of the Secretary of Defense Volume 1* (Washington, D.C.: Historical Office of the Secretary of Defense, 1984), 310.

14 Fiscal year 50 refers to the year 1950, and a unified budget means that the $15 billion figure would be divided somewhat evenly among every branch of the military. Samuel Williamson and Steven Reardon, *The Origins of U.S. Nuclear Strategy, 1945-1953* (New York: Palgrave, 1993), 312.

15 Memorandum from Stuart Symington to Louis Johnson, September 8, 1949, B File, President's Secretary's File, Truman Presidential Library.

tive budgets by the end of the month. Pressed for time and still with no unanimous atomic warfare policy, the services submitted their proposals to the president, which reached a combined total of $29 billion, nearly twice what Truman had allotted.[16] In August, Forrestal appointed a Budgetary Advisory Committee (BAC) in an attempt to reduce the military's budget proposal.[17] While the services worked together to determine their costs, they found that $23.6 billion was required just to maintain their existing capabilities with inflation.[18]

In October 1948, the BAC met again to reduce the $23.6 billion figure further. However, this opened the door to interservice rivalries, with the Army and Air Force both protesting the Navy's aircraft carrier requirements. Chief of Naval Operations (CNO) Admiral Louis Denfeld responded to the attack by stating that "the unpleasant fact remains that the Navy has honest and sincere misgivings as to the ability of the Air Force [to] successfully deliver the [atomic] weapon by means of unescorted missions flown by present day bombers deep into enemy territory in the face of strong Soviet air defenses, and drop it on targets whose locations are not accurately known." While seemingly harsh, this statement was not far from the truth regarding the Air Force's strategic bombing capabilities.[19]

On October 5, 1948, Forrestal briefed Truman on the problems that the BAC was facing. Despite aggressive Soviet action across the Eastern Bloc, Truman was unwilling to increase the FY50 budget, as he feared the appearance of rearmament would provoke the Soviets into war.[20] On January 10, 1949, Truman submitted his figure to Congress with a defense budget

16 Curatola, *Bigger Bombs for a Brighter Tomorrow*, 30-31.
17 Curatola, *Bigger Bombs for a Brighter Tomorrow*, 32.
18 Reardon, *The Formative Years*, 343.
19 Quoted in Ibid., 344.
20 Curatola, *Bigger Bombs for a Brighter Tomorrow*, 33.

of $14.24 billion.[21] Luckily for the Air Force, however, Congress saw things differently than Truman, and by April 1949, changes to the budget expanded the Air Force from 48 groups to 58.[22] While this was still far below the seventy-group figure requested, it showed that the atomic air wing had some congressional support.

During the debate over FY50, Secretary Forrestal had requested that the State Department outline its security goals and objectives to establish a basis for the proposed budget.[23] On November 23, 1948, the National Security Council did just that, publishing NSC 20/4, which identified the Soviet Union as the primary threat to the US and insisted that the Soviet Union's ultimate goal was global domination and the expansion of communism. Additionally, it was estimated that by 1955, the Soviet military would have full nuclear, biological, and chemical capabilities that could match those of the Western world. However, NSC 20/4 also proposed that the Soviet Union was not actively seeking conflict and that, if war were to occur, it would likely result from a miscalculation. The authors of NSC 20/4 warned against overexpansion of the federal budget, which did little to support Forrestal in his budgetary battle with Truman.[24]

As post-war budgetary constraints remained a significant issue until the approval of NSC-68, US leadership struggled throughout the late 1940s to develop a coherent national strategy for the use of atomic weapons. Many postwar planners envisioned using atomic bombs in a similar fashion to the strategic bombing campaigns in the Second World War. However, these plans were nearly impossible to execute given the weakened state of the now demobilized armed forces. The plans raised

21 Kenneth Condit, *The Joint Chiefs of Staff and National Policy Vol. II 1947*-1949 (Washington, D.C.: Office of Joint History, 1996), 135.

22 Curatola, *Bigger Bombs for a Brighter Tomorrow*, 35.

23 Ibid., 93.

24 "U.S. Nuclear Objectives with Respect to the USSR to Counter Soviet Threats to U.S. Security," NSC 20/4, November 23, 1948, in Etzold and Gaddis, *Containment*, 210-211.

more questions than answers about how to conduct the nuclear weapons program going forward, and they left the planners divided on its use. The US was eager to show its dominance on the postwar global stage but was hard-pressed to realistically deploy its limited atomic arsenal.[25]

One of the first major attempts to determine nuclear doctrine was the establishment of the Spaatz Board in July 1946. Founded by Commanding General of the U.S. Army Air Forces Carl A. Spaatz, the board worked alongside the newly established Atomic Energy Commission (AEC) to determine how atomic weapons could be integrated into Air Force capabilities. Spaatz Board members argued that atomic weapons did not alter the nature of strategic air power but simply provided additional weapons to be used similarly to conventional bombs.[26] Board members were resistant to any change of Air Force doctrine and initially failed to appreciate the unique capabilities of their atomic weapons.[27] However, they did accurately predict that long-range strategic bombers would continue to play an important role in future conflicts. By 1947, the Air Force began developing comprehensive lists of industrial targets and suggested that they could hypothetically "kill a nation" by conducting decisive conventional and nuclear strikes on key points throughout an opposing country.[28] This included targeting governmental controls, which would, in the eyes of the Air Force, prevent mobilization and win a potential war in a matter of days.[29]

By 1946, Army Air Forces leaders had already begun drawing up elaborate target maps and compiling lists of bombing sites, dubbing the latter the "Bombing Encyclopedia

25 Williamson and Reardon, *Origins*, 32.

26 Edward Kaplan, *To Kill Nations: American Strategy in the Air-Atomic Age and the Rise of Mutually Assured Destruction* (Cornell University Press, 2015), 15.

27 Ibid., 18.

28 Carl Spaatz, "Air Power in the Atomic Age," *Collier's*, 8 December 1945, Speeches and Article File, Box 268, Spaatz Papers.

29 Curatola, *Bigger Bombs for a Brighter Tomorrow*, 17.

of the World."[30] By 1947, this list contained more than 5,000 potential nuclear and conventional targets, with 4,000 being industrial targets in the Soviet Union.[31] However, a severe lack of intelligence available to war planners meant that many of these targets were either no longer worthy of attack, or simply impossible to locate. Bomber crews would be given target folders containing information and photographs on their assigned target. However, until overhead photography was made available, the information in these folders was outdated and often inaccurate, severely limiting the Air Force's ability to strike or even locate its targets.[32]

It was becoming increasingly clear that the success of an American strategic bombing campaign against the Soviet Union would require an intelligence effort on a scale that had never been attempted.[33] The culmination of this was Project Wringer. In 1946, Project Wringer initiated a massive effort to interview former soldiers in Germany, Austria, and Japan who had fought against the Soviet Union in World War Two. While much of the data collected was incomplete or outdated, it would serve as the centerpiece for Air Force and SAC intelligence until the availability of reliable aerial reconnaissance.[34] Until mid-1948, reconnaissance efforts outside of Project Wringer would be conducted on a local basis without a strategic mission, lacking a centralized effort to collect and coordinate intelligence. Furthermore, the US did not have espionage agents inside the Soviet Union before 1949.[35]

The Pincher series was one of the first war plans to utilize

30 Lynn Eden, *Whole World on Fire: Organizations, Knowledge, and Nuclear Weapons Devastation* (Ithaca, NY: Cornell University Press, 2004), 107.

31 Ibid.

32 John Farquhar, *A Need to Know: The Role of Air Force Reconnaissance in War-Planning, 1945-1953* (Maxwell AFB, AL: 2004), 53.

33 Ibid., 58.

34 Curatola, *Bigger Bombs for a Brighter Tomorrow*, 127.

35 Ibid., 97-98.

this information.[36] In October 1946, the Army Air Forces submitted plans designed to halt the Soviet war effort through strategic bombing. This plan primarily revolved around the targeting of oil production, with planners determining that sixty-seven percent of Soviet oil production was concentrated in just seventeen cities.[37] These cities were designated as priority atomic targets, set to be destroyed as soon as possible in a potential war. Pincher was innovative in that it directly addressed the growing threat of a Soviet invasion of Western Europe that US leadership faced. However, the existence of the Pincher plan was not indicative of SAC's ability to execute it, and Air Force General Frank Everest acknowledged that "there would not be enough planes at any time in the near future for operations from all the bases indicated on the charts in the paper."[38] The ongoing intelligence gaps made Pincher even more unrealistic, with genuine concerns arising as to whether or not bomber crews would even be able to locate their targets. The Air Force, recognizing their inadequate intelligence regarding Soviet military targets, stated that the current iteration of Pincher would be provisional until new information was made available.[39]

Target maps and war plans continued to be developed into 1947, with the number of required atomic bombs ranging from eight to fifty.[40] In July, the Air Force introduced a new plan known as Broiler. Broiler proved to be a major step forward in Air Force planning, with the deliberate use of atomic weapons in area bombing being outlined as the main course of the operation.[41] Broiler was far more specific than previous plans; it

36 The Pincher series refers to a set of war plans that would be continually developed throughout the following years. The specific subplan being addressed is "Makefast," which is directed towards the Air Force.

37 David Alan Rosenberg, "American Atomic Strategy and Hydrogen Bomb Decision," *The Journal of American History* 66, no. 1 (June 1979), 64.

38 Kaplan, *To Kill Nations*, 30.

39 Pincher would be updated as intelligence improved, with the Air Force's 'Makefast' plan being replaced with 'Earshot' in February 1947. Curatola, *Bigger Bombs for a Brighter Tomorrow*, 101-102.

40 Walter S. Moody, *Building a Strategic Air Force* (Washington, D.C.: US Air Force History and Museums Program, 1996), 148; Michio Kaku and Daniel Axelrod, *To Win a Nuclear War: The Pentagon's Secret War Plans* (Boston: South End Press, 1987), 34.

41 Previous war plans had only implied the use of atomic weapons.

explicitly called for the bombing of cities and listed the number of atomic bombs that would be used.[42] The plan's target list included thirty-four atomic bombs to be dropped on twenty-four cities, seven of which would hit Moscow. If the first barrage was not enough to halt the Soviet war industry, it was assumed that the US would have enough atomic bombs to simply repeat the same attack pattern as necessary.[43] Many in Air Force leadership expressed moral concerns over using atomic weapons on cities and not exclusively military targets.[44] In response, Spaatz argued that the role of air power was not to destroy cities, but to destroy the source of the enemy's strength. In practice, this would culminate in the bombing of cities containing important industrial targets and other vital resources.[45]

Broiler still suffered many of the same limitations as Pincher. The AEC had been granted all responsibility for nuclear materials, research, and development, and closely guarded these secrets from even high-ranking government officials. Consequently, few military officers had any idea about the capabilities of nuclear weapons, and those tasked with planning the bombing campaign were left in the dark until the end of 1947.[46] With little access to information regarding atomic bomb stores, Broiler's planners anticipated a minimum of 100 bombs to be available. However, by June 1948, the AEC's inventory barely numbered fifty.[47] Overall, atomic bomb production was nowhere close to the needs of war planners. While production would ramp up by the 1950's, early target lists did not reflect the actual number of bombs available. Even though the atomic bomb was viewed as the primary weapon of any future aerial offensive, war planners were forced to grapple with the fact that conventional munitions

42 William Borgiasz, *The Strategic Air Command* (Westport, CT: Praeger Publishing, 1996), 112.
43 Steven Ross, *American War Plans 1945-1950* (London: Frank Cass, 1996), 56.
44 Curatola, *Bigger Bombs for a Brighter Tomorrow,* 106.
45 Ibid.
46 Eden, *Whole World on Fire*, 110.
47 Curatola, *Bigger Bombs for a Brighter Tomorrow*, 107.

would still have to be used in overwhelming numbers to achieve their goals.[48] Broiler was further plagued with severe delivery limitations. The plan was introduced by the Joint Chiefs of Staff in the Fall of 1947, nearly two years before atomic-carrying versions of the B-36 Peacemaker entered service. The new B-50 Superfortress was also not yet available, meaning that the older Superfortress model, the B-29, would be responsible for all deliveries of atomic weapons despite lacking adequate range.[49] Quietly, Air Force leaders acknowledged that for some of Broiler's targets to be hit, B-29 crews would be forced to perform one-way missions.[50]

In March 1948, the Joint Chiefs of Staff drew up a new plan, Halfmoon, to replace Broiler and Pincher in response to the Berlin Crisis. Halfmoon reflected the ongoing US interest in defending Western Europe, proposing absolute cooperation with Canadian and British forces against the Soviet Union. [51] Halfmoon was an emergency plan and thus shared many similarities with Broiler.[52] The United States understood that the Soviet Union—despite post-war downsizing—still maintained a superior ground force to that of Western nations. By 1948, the Soviet Union fielded 175 Red Army divisions alongside 75 Eastern European divisions against less than 20 European and US divisions.[53] As a result, the US would try to avoid major ground combat operations against Soviet forces, instead shifting focus to the strategic bombing of Soviet industry.[54] Expecting a Soviet push into Western Europe, US forces planned to conduct a fighting withdrawal to the Rhine River. From there,

48 Ross, *American War Plans*, 3.

49 The B-50 was a four-engine medium bomber introduced in 1948 to replace the B-29. The B-50 was faster, had a longer range, and could carry more payload than the B-29.

50 Moody, *Building a Strategic Air Force*, 109.

51 Reardon, *The Formative Years*, 465.

52 Ross, *American War Plans*, 90.

53 Matthew A. Evangelista, "Stalin's Postwar Army Reappraised," *International Security* 7, no. 3 (1982): 110.

54 Curatola, *Bigger Bombs for a Brighter Tomorrow*, 100.

SAC would initiate a maximum effort atomic strike against the Soviet war-making industry, flying sorties out of bases in England, Cairo, and Okinawa. Halfmoon's air element planned to hit 210 industrial targets, destroying seventy-two percent of Soviet oil production in the first seventy atomic drops alone. The atomic bombings would be followed by an intense conventional bombing campaign targeting transportation networks and power plants.[55]

Once again, war planners faced the question of how to execute the plans they had designed. Atomic bombs were stored in the US and would have to be disassembled to be safely transported to the intended operating bases. This presented numerous issues as a large portion of the military's cargo fleet was already occupied with the Berlin Airlift.[56] Additionally, in the Cairo-Suez region, there was only a single runway over 7,000 feet suitable for the B-29. Even then, there were questions as to whether that runway would be adequate when the aircraft was fully loaded carrying an MK III atomic bomb. Air bases in the UK suffered similar concerns, with the few 6,000-foot runways available labeled as "inadequate for the B-29 and marginal for the B-50."[57] As attractive as Halfmoon was to war planners, it did not make up for the fact that SAC entirely lacked the capability to hit the numerous targets listed. To put it simply, US leadership was lucky that the Soviets did not force their hand.

As the 1940s ended, American war plans became more realistic regarding the state of the atomic stockpile. In January 1949, the Air Force introduced a new war plan known as Trojan, which called for 147 atomic bombs to be dropped on seventy cities across the USSR, primarily targeting petroleum industries. The primary difference between Trojan and earlier plans such as Broiler is that by 1949, a total of 170 bombs were available

55 Ibid., 111-112.
56 Moody, *Building a Strategic Air Force*, 211.
57 Quoted in Curatola, *Bigger Bombs for a Brighter Tomorrow*, 115.

for deployment, and by June 1950, that stockpile had risen to 292.[58] Additionally, the Harmon Report estimated that current Air Force intelligence was sufficient to strike the thirty most important cities listed in Trojan, and that intelligence on the remaining forty cities could be gathered within the first two weeks of the war's outbreak.[59] Using statistical deviation, the Harmon Report further determined that thirty to forty percent of Soviet industry would be destroyed in the aerial offensive, although this number was deemed to be overly conservative by the Joint Strategic Survey Committee (JCS).[60]

Throughout 1949, a new plan called Offtackle was devised to replace Trojan. Offtackle would work to demolish the Soviet war-making industry by dropping a total of 220 atomic bombs on 104 cities in just the first stage of the conflict. To accomplish this, a fleet of over 600 bombers comprised of B-29s, B-50s, and B-36s would be employed, with B-50s being the most numerous.[61] The opening phase of Offtackle called for around 6,000 sorties to be flown, with nearly all the atomic strikes taking place in the first month of the operation to maximize psychological effect.[62] The growing number of atomic bombs in inventory and the 1948 addition of the long-range B-36 to SAC's bomber fleet meant that Air Force capabilities were beginning to meet the ambitious requirements that planners had set forth. In Offtackle, the B-36s would operate from either continental airbases or from airbases in Alaska, depending on the season. When conducting strikes against the Soviet Union, they would fly over the Arctic, hit their targets in the Soviet Union, and then land on a secondary airfield in Cairo. Using heavily modified B-29s, recently converted into aerial refueling platforms (KB-

58 Rosenberg, "American Atomic Strategy," 26; Robert Laughlin, "Declassified Stockpile Data 1945 to 1994," Stanford.edu, 2025.

59 Kaplan, *To Kill Nations*, 37; Curatola, *Bigger Bombs for a Brighter Tomorrow*, 124.

60 The Harmon Report was a study initiated by the U.S. Government in May 1949 to evaluate the effectiveness of the strategic air offensive. Ibid., 38.

61 Condit, *The Joint Chiefs of Staff*, 163; Kaplan, *To Kill Nations*, 39.

62 Ibid., 161.

29s), medium bombers such as the B-29 and B-50 would be able to reach similar targets to the B-36 as well.[63]

However, by late 1948, Secretary Forrestal was beginning to express doubts about SAC's ability to deliver the atomic bomb.[64] The Air Force's JCS 1952/1—which had evaluated the viability of Halfmoon and Trojan—struggled to admit that the poor intelligence situation would significantly hinder aerial bombing operations.[65] Doubts from Forrestal, combined with increasing pressure from the Navy, led to the establishment of the Weapons System Evaluation Group (WSEG) in December.[66] Forrestal's concerns shifted towards Offtackle, and by January 1950, the plan was being investigated by the WSEG. By February, the team had found that the scale of Offtackle was almost entirely infeasible. SAC could support only one-third of the sorties that Offtackle required, and even that would be possible only if SAC was given airlift priority over other branches.[67]

Additionally, concerns over the number of available B-29 and B-50 airframes existed, with Offtackle assuming that at least 1,800 stored B-29s would be available.[68] However, a severe lack of spare parts had tormented the Air Force into the 1950's, with B-29s in storage being disassembled just to maintain the bombers in active service. During 1949, only forty-four percent of the aircraft in SAC's fleet were combat-ready.[69] Even worse, the situation that plagued Trojan and Broiler had not been resolved, and most of the existing airbases in the UK

63 Curatola, *Bigger Bombs for a Brighter Tomorrow*, 120.

64 Ibid.

65 JCS 1952/1 "Evaluation of the Current Strategic Air Offensive Plans," in *Containment, Documents on American Policy and Strategy 1945-1950*, eds. Thomas H. Etzold and John L. Gaddis (New York: Columbia University Press, 1978), 357-360.

66 Kaplan, *To Kill Nations*, 38, 39.

67 Curatola, *Bigger Bombs for a Brighter Tomorrow*, 121.

68 Briefing Strategic Air Command Commanders Conference, Ramey Air Force Base, April 1950. National Archives and Records Administration, Record Group 341, Headquarters U.S. Air Force, Vice Chief of Staff Executive Service Division, File 1950-1953, Box 1, George Washington University National Security Archive. 15.

69 Ibid., 163-164.

would be unable to support medium bomber missions. These airbases were few and far between, entirely lacking integrated air defense (IAD), making them vulnerable to Soviet strikes that could nullify Offtackle before it began.[70] Despite these severe underlying problems, Offtackle was approved in February 1950, becoming the emergency war plan for the US until mid-1951.

Even if SAC had been able to address the numerous logistical and doctrinal issues that each of its pre-NSC-68 plans faced, the question of penetrating Soviet air defense remained. SAC's information crisis meant that little was known about Soviet air defense capabilities. It was believed that the Soviet Union possessed as many as 15,000 anti-aircraft guns; however, US planners had no way to determine the competence or readiness of their crews.[71] As late as 1950, SAC still had no ability to escort its bombers on long-range missions. The F-84 fighter aircraft was intended to fill this role, but it lacked sufficient fuel tank capacity. While the Offtackle plan was never put into service, the cost of using unsupported bomber formations in the jet age would soon be realized in the Korean War. By the end of 1949, the Soviet Union had produced over 3,600 MiG-15 jet fighters, which could easily fly high enough and fast enough to intercept bombers like the B-29.[72] As historian Mark O'Neill argues, "[t]he appearance of the MiG-15 and the ground control radar that vectored it to its target was nearly as great a surprise as the Soviet atomic bomb had been a year earlier. The cannon-equipped Soviet jet could fly higher and faster than even the F-86 and proved very effective at destroying the lumbering U.S. B-29."[73] In Offtackle's case, the WSEG estimated that SAC would lose half of its bomber force during a daylight raid, or

70 Kaplan, *To Kill Nations*, 39.

71 Curatola, *Bigger Bombs for a Brighter Tomorrow*, 110.

72 Kaplan, *To Kill Nations*, 69.

73 Quoted in Mark O'Neill, "Soviet Involvement in the Korean War: A New View from the Soviet-Era Archives," *OAH Magazine of History* 14, no. 3 (2000): 22.

one-third during a night bombing to Soviet air defense efforts.[74]

The Soviet detonation of their own atomic bomb in August 1949 signaled a significant change in the US position on the world stage. By January 1950, Truman had initiated development of the hydrogen bomb and reexamined its defense policy soon after. This reexamination led to the drafting of NSC-68, paving the way for US rearmament and subsequent increases in military budget.[75] In 1953, the total military budget reached $48 billion, with $21 billion being allocated to the Air Force alone.[76] By 1954, SAC had transformed into a highly capable fighting force, with aircrews constantly engaged in training under the leadership of Curtis LeMay. Throughout the Korean War, the B-36 was produced in increasing numbers, finally replacing the aging B-29s and B-50s. In 1951, SAC received its first jet bomber in the form of the B-47, and by 1952, Convair had received the contract to build the world's first supersonic jet bomber, the B-58 Hustler.[77]

In the immediate post-war years, atomic bomb production was nowhere close to the needs of war planners, and early target lists did not reflect the actual number of bombs available. However, atomic bomb production ramped up by 1949, making plans like Trojan and Offtackle more feasible. As US war planners continuously revised their atomic bombing strategies, they were hampered by intelligence shortfalls, budgetary constraints, and logistical difficulties that made their task virtually impossible. The rapid evolution of nuclear policy and strategy in the late 1940s laid the foundation not only for deterrence theory but also for the US's overall Cold War position. The emergence of NSC-68, along with the lessons learned from the early attempts at nuclear war planning, helped refine the US

74 Ibid., 39.
75 Curatola, *Bigger Bombs for a Brighter Tomorrow*, 176.
76 Moody, *Building a Strategic Air Force*, 446.
77 Ibid., 178.

approach to atomic strategy with respect to Soviet nuclear proliferation.

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The Iron Lifeline:
How Railroads Sustained Mead's Army in the Gettysburg Campaign

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When most people think of the Battle of Gettysburg, they imagine soldiers locked in fierce combat across the ridges and fields of Pennsylvania, or generals making split-second decisions that shaped the course of the Civil War. Yet one of the most influential figures in the Union's success never set foot on the battlefield. Brigadier General Herman Haupt, the man in charge of the Military Railway Department, operated behind the lines to ensure that the Union Army could move, fight, and survive.[1] His job was not to command troops, but to sustain them. Through his control of the rail lines connecting Baltimore and Westminster, Maryland, and the army's forward positions, Haupt created the logistical network that kept General Meade's forces supplied with food, ammunition, and reinforcements.[2] In the days after the battle, his rail operations became even more critical, transporting thousands of wounded soldiers to hospitals and restoring the flow of supplies to a battered but victorious army. Though Herman Haupt never fought at Gettysburg, his management of the United States (U.S.) Military Railroads during the campaign was operationally decisive. By sustaining the Army of the Potomac before, during, and after the battle, Haupt ensured not

1 E.D. Townsend, Special Orders, Adjutant General's Office, Washington, DC, dated June 27, 1862, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 369-370; Reports, "General Reports," in U.S. War Department, *The War of Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 1 (Washington: Government Printing Office, 1889), 5.

2 Steven R. Ditmeyer, "Railroads, Herman Haupt, and the Battle of Gettysburg," Spring-Summer2013, 46 (pdf), accessed November 3, 2025, RR History - RRs, Herman Haupt, and the Battle of Gettysburg.pdf; M. C. Meigs to Ingalls, July 7, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 590-591.

only Union success on the field but also the army's ability to evacuate its wounded, restore its supply system, and maintain pressure on General Lee's retreating forces. His efficient execution of rail and telegraph operations allowed Meade's army to recover rapidly and continue its pursuit toward the Potomac, a continuation of operations that would have been severely constrained without Haupt's initiative. His work demonstrated that control of movement, supply, and communication was not merely supportive, but fundamental to operational success in modern war.

A former civil engineer and railroad superintendent, Haupt had been appointed in 1862 to impose order on a chaotic system of military and civilian rail operations.[3] Before the Civil War, Herman Haupt had already built a reputation as one of the most talented engineers in the country.[4] He had worked as a civil engineer and railroad executive, serving as chief engineer for major lines such as the Pennsylvania Railroad and overseeing major projects like the Hoosac Tunnel in Massachusetts. His experience made him the obvious choice in 1862, when the War Department asked him to take control of the Union's military railroads.[5] His authority extended over construction battalions, bridging companies, and telegraph operators, giving him almost total control over the arteries of movement that sustained the army.[6] These experiences convinced Brigadier General Herman Haupt that efficient rail management could make or break an army.[7]

When General Robert E. Lee's army crossed into Penn-

3 Ditmeyer, "Railroads, Herman Haupt, and the Battle of Gettysburg," 46-47.

4 "Herman Haupt," National Railroad Hall of Fame, accessed November 16, 2025, Herman Haupt | nrrhof. Haupt was born in Philadelphia, educated at West Point, and later became known for designing bridges, managing railroad construction, and writing influential works on engineering.

5 "Herman Haupt," National Railroad Hall of Fame, accessed November 16, 2025, Herman Haupt | nrrhof.

6 Ditmeyer, "Railroads, Herman Haupt, and the Battle of Gettysburg," 47.

7 *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 1 (Washington: Government Printing Office, 1889), 5; Ditmeyer, "Railroads, Herman Haupt, and the Battle of Gettysburg," 46-47.

sylvania in June 1863, the Union Army of the Potomac moved north in haste, leaving its established supply bases eighty miles behind.[8] In 1863, after Confederate forces destroyed nineteen bridges on the Northern Central Railroad, Haupt's construction crews immediately undertook repairs, restoring the vital rail link to Harrisburg and preventing the Union command structure from becoming isolated.[9]

As the Confederate raid on Pennsylvania advanced, Haupt recognized the critical importance of the Baltimore-Westminster route, the main line connecting the Army of the Potomac to Baltimore's depots.[10] His priority was to strengthen and defend this network. On June 29, 1863, Haupt reported that, "acting under Special Orders, NO. 286[…], I repaired to Baltimore, intending to join General Meade at Frederick, and ascertain the condition and requirements of the Army of the Potomac."[11] Yet upon his arrival, he found "communications broken, both by rail and telegraph."[12] Rather than wait for orders, Haupt shifted his operations north toward Harrisburg, coordinating with Governor Andrew Curtin and Colonel L.A. Scott to repair damage and reestablish telegraph contact.[13] His responsiveness, initiative, and ability to adjust within hours to changing conditions kept Meade's army from becoming isolated and allowed him to stay in telegraph contact with Major General Henry Halleck, the Union Army's general-in-chief, as he moved into Pennsylvania.[14]

8 Carol Reardon and Tom Vossler, *The Gettysburg Campaign, June-July 1863,* CMH Pub 75-10 (Washington, D.C: Center of Military History, United States Army, 2013), The Gettysburg Campaign, June-July 1863. The outcome of the campaign depended not only on battlefield engagement but also on whether the army could remain fed, armed, and connected to its depots.

9 Haupt, Report, July 7, 1863, 22.

10 Ditmeyer, "Railroads, Herman Haupt, and the Battle of Gettysburg," 47-49.

11 Brig. Gen. Herman Haupt, "Report of Brig. Gen. Herman Haupt, U.S. Army, in charge of Military Railway Department," July 7, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 1 (Washington: Government Printing Office, 1889), 22.

12 Haupt, Report, July 7, 1863, 22.

13 Haupt, Report, July 7, 1863, 22.

14 Reports, "General Reports," 5; Haupt, Report, July 7, 1863, 22.

Haupt's telegrams and reports reveal constant cooperation with quartermasters, engineers, and telegraph operators. He directed emergency bridge repairs in Littlestown, only 10 miles south of Gettysburg along the Baltimore-Westminster supply line, a critical corridor for moving food, ammunition, and reinforcements.[15] When Haupt realized the Western Maryland Railroad operating from Baltimore to Westminster had no available equipment, particularly sidings (secondary tracks used for passing and loading trains), wood, or water stations, he acted immediately.[16] Within forty-eight hours, "the army was supplied not only with everything required, but with an excess."[17] His understanding of logistics extended beyond simple transportation; as he later observed, "no department of the military service is more important than that which is charged with construction, re-opening, and maintaining communications and forwarding supplies."[18] By the eve of the Battle of Gettysburg, the route from Baltimore through Westminster to the army's front positions was operational, a logistical feat achieved in less than a week.[19] Haupt's work before Gettysburg built not just railroads but resiliencies, the structure that sustained the army through the bloodiest battle of the war.

When fighting erupted at Gettysburg on July 1, Haupt's rail and telegraph operations became the central nervous system of the Union war effort.[20] Though miles from the battlefield, his

15 Herman Haupt to Major-General Halleck, July 4, 1863, , in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 522; Herman Haupt to Major General H. W. Halleck, July 3, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 511; "Distance from Gettysburg, PA to Littlestown, PA," Distance Between Cities, accessed November 16, 2025, Distance between Gettysburg, PA and Littlestown, PA.

16 Haupt, Report, July 7, 1863, 22-23; "Siding," Cambridge Dictionary, accessed November 4, 2025, SIDING | English meaning - Cambridge Dictionary. These sidings and temporary loading and unloading tracks became critical once the wounded began arriving.

17 Haupt, Report, July 7, 1863, 22-23.

18 Haupt, Report, July 7, 1863, 23.

19 Haupt, Report, July 7, 1863, 22. Herman Haupt accomplished this even though raids had destroyed telegraph lines, damaged bridges, and left the Western Maryland Railroad with almost no usable equipment

20 Reardon and Vossler, The Gettysburg Campaign, June-July 1863, 18.

orders to repair bridges and restore telegraph lines, along with quick improvisations to keep trains moving such as reallocating engines and work crews, directly shaped the army's ability to hold its ground.[21] As the first dispatches of combat reached Washington, Haupt moved his base to Baltimore and began coordinating nonstop with Major General George Meade, Brigadier General Rufus Ingalls, the Army of the Potomac's chief quartermaster, and Major General Henry Halleck to keep the army supplied.[22] From Baltimore, he reported that "Bootees, socks, and other supplies will be sent to Westminster by the Western Maryland Railroad; also a construction train, to lay down sidings and prepare the means of transacting business there."[23] His trains carried ammunition, forage, and reinforcements up to Westminster, the nearest railroad to the battlefield, where they were then taken by wagon or horse to the front line.[24] At the same time, his telegraph operators worked tirelessly to maintain constant contact with Meade's headquarters, relaying information from Harrisburg, Frederick, and Baltimore faster than any courier could ride.

As the three days of the battle unfolded, Haupt's ability to adapt under pressure proved decisive. When telegraph wires went down, and supply trains were delayed by the crush of the movement, he did not wait for formal instructions but issued directives of his own, ordering, "extraordinary efforts should be made by the officers of all railroads over which horses are trans-

21 Haupt to Halleck, July 3, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 511.

22 Ditmeyer, "Railroads, Herman Haupt, and the Battle of Gettysburg," 47-49.

23 M.C. Meigs to Brig. Gen. R. Ingalls, July 1, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 472.

24 Edwon M. Stanton to S. M. Shoemaker, July 4, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 521. Haupt understood that without horses and wagons, Meade's artillery and supply trains could not function.

ported to push them forward without delay, day and night."[25] His coordination with the Secretary of War, Edwin Stanton, ensured that freight cars, once unloaded, were immediately returned to keep the cycle of supply moving.[26] Haupt exercised direct control over details normally left to multiple departments, fuel, rolling stock, bridge timbers, and repair crews, centralizing decisions that would otherwise have required layers of approval, keeping the Union from being paralyzed in the field. On July 3, as the thunder of Pickett's Charge rolled across the ridges, Haupt reported from the Northern Central Railroad that "the track of the Westminster branch is not in as bad condition as its officers representing it," and that trains were ready to carry "the advance of the wounded" eastward. This was a crucial measure that prevented overcrowding of field hospitals near the front and ensured that severely injured soldiers could receive proper medical treatment.[27]

While Meade and his generals fought to hold the line at Cemetery Ridge, Haupt was waging a different kind of battle, against distance, exhaustion, and destruction, to ensure the army at the front could endure. Some historians argue that Gettysburg was won by battlefield leadership and tactical execution rather than by logistics. They point to Meade's strong defensive position along Cemetery Ridge, the determination of Union infantry, and the effective coordination of artillery under Henry Hunt as the true reasons Confederate assaults failed.[28] From that perspective, railroads and supply lines appear secondary, important perhaps,

25 Herman Haupt, "To the President of the Following Railroads," July 6, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 568.

26 Herman Haupt to Edwin Stanton, July 4, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 521-522.

27 Reardon and Vossler, The Gettysburg Campaign, June-July 1863, 50-51; Herman Haupt to Maj. Gen. Henry W. Halleck, July 3, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 511; Haupt to Halleck, July 3, 1863, 512; Haupt to Halleck, July 3, 1863, 512.

28 Reardon and Vossler, The Gettysburg Campaign, June-July 1863, 38-53.

but not decisive. After all, no train stopped Pickett's Charge, and no telegraph wire physically defended Little Round Top. Yet this view overlooks a basic reality of war: armies cannot fight without being sustained. The Union Army's ability to maintain heavy artillery fire on July 2 and July 3 depended on steady ammunition resupply. Its cavalry and artillery remained mobile only because horses and forage continued to arrive. Telegraph communication reduced uncertainty and enabled Meade to maintain control during a chaotic engagement. Had rail lines remained severed or Westminster failed as an efficient railhead, the Army of the Potomac would have faced mounting shortages and disorganization at precisely the moment endurance mattered most. Logistics did not replace battlefield leadership, but it made that leadership effective. Haupt's rail system provided the material foundation that allowed Union commanders to hold their ground long enough to win.[29]

In the immediate aftermath of the battle, Haupt's work became even more vital. The Union victory had come at an immense human cost, and the Army of the Potomac faced the overwhelming task of caring for thousands of wounded soldiers while maintaining its pursuit of Lee's retreating army, a pursuit that was only partially successful because of casualties, exhaustion, and the burden of transporting casualties.[30] Haupt's rail network became the lifeline that kept the army functioning. From his headquarters, Haupt coordinated the rapid transport of supplies, horses, and the wounded with an efficiency that few in the army could match. On July 4, 1863, he telegraphed Quartermaster General Montgomery Meigs that "if no accident occurs, one hundred and fifty cars each way over the road, capable of carrying off from 2,000 to 4,000 wounded," could be moved

29 Reardon and Vossler, The Gettysburg Campaign, June-July 1863, 20-37.
30 Reardon and Vossler, The Gettysburg Campaign, June-July 1863, 57-58.

daily from Westminster toward Baltimore.[31] This capacity transformed the rail system into a moving hospital network, preventing the battlefield from becoming clogged with wounded men and allowing the army to remain operational rather than immobilized by its own casualties.

After the Battle of Gettysburg, Herman Haupt coordinated the movement of troops, supplies, and wounded soldiers, using both rail and horse express to keep the army supplied and the injured evacuated.[32] To get from Gettysburg to Westminster, a horse express carried messages and orders, while Haupt's team laid new sidings at Relay House and Westminster to handle the flood of trains moving the wounded east.[33] By expanding rail capacity at the same time that he evacuated the wounded, Haupt solved two crises at once: humanitarian disaster at the rear and logistical starvation at the front. "All the supplies offered for transportation on the Westminster branch have been sent forward," Haupt reported, assuring Meigs that the "sidings at Relay are clear."[34] His calm, factual tone belied the chaos around him: shattered rail lines, exhausted crews, and bridges repeatedly damaged by rain and overuse. Yet within days of the battle's end, trains were once again running steadily, delivering food, medical stores, and reinforcements to an army still on the move.[35]

Haupt's correspondence during these critical days also shows how deeply integrated his operations had become within

31 Herman Haupt to Edwin M. Stanton, July 3, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 522.

32 S. M. Shoemaker to Hon. E. M. Stanton, July 2, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 494.

33 Edwin M Staton to War Department, July 4, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 521.

34 Haupt to Halleck, July 5, 1863, 522.

35 Haupt to General Halleck, July 4, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 522.

the Union command system. He was in constant communication with General Ingalls, the army's chief quartermaster, ensuring that every car and track section served an immediate tactical purpose. On July 7, Ingalls wrote, "instruct your agents to send cars only on the orders of the quartermaster in charge at the different depots," a directive confirming Haupt's central role in coordinating supply across the army's vast and shifting front.[36] The two men shared a common understanding that logistics is a critical component of operational success. When the rail lines grew congested, Haupt warned that "cars not unloaded […] wounded lying for hours, without ability to carry them off," were crippling operations.[37] He quickly dispatched additional labor crews from Alexandria to Gettysburg and then to Chambersburg, PA, "to repair Hagerstown Road."[38] By July 9, his repairs and new operating rules had restored order. "Everything now works smoothly," one officer reported.[39] "General Haupt has just been in my office, and railroad matters to this point are arranged so that there will be no confusion hereafter."[40]

Haupt's efficiency not only restored communication but also transformed the aftermath of the battle into an organized logistical operation. Under his direction, the Northern Central and Western Maryland Railroads became evacuation corridors, railway arteries pulsing with life as thousands of wounded soldiers were carried away from Gettysburg to a variety of hos-

36 Rufus Ingalls to Herman Haupt, July 7, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 592.

37 Herman Haupt to M. C. Meigs, July 9, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 619.

38 Haupt to M.C Meigs, July 9, 1863, 619.

39 Herman Haupt to Edwin M. Stanton, July 8, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 610.

40 W. G. Rankin to Brig. Gen. Rufus Ingalls, July 9, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 619.

pitals.[41] The War Department itself recognized his indispensable role. On July 4, the Superintendent of Adams Express Company (a major civilian freight and express shipping company used by the army during the war), S. M. Shoemaker, said, "General Haupt is instructed to furnish such transportation [of wounded soldiers] by rail as he can without interfering with the transportation of army supplies."[42] By making this statement, the superintendent recognized that Haupt's authority over rail operations placed him in the unique position of having to balance the competing demands of military supply and medical evacuation. This ability to manage competing priorities ensured that wounded soldiers could be removed from the battlefield without crippling the flow of ammunition and provisions to the front.

By mid-July, as Meade's army pursued Lee toward the Potomac, Haupt turned his attention to reopening the rail line stretching from the Cumberland Valley in the south-central part of Pennsylvania to Hagerstown, located at the southern end of the Valley. Meade noted, "The Cumberland Valley Railroad must be re-opened to Hagerstown as soon as we get possession." [43] Restoring this line allowed Union supplies to move forward more rapidly, but it did not lead to the destruction of Lee's army. Delays caused by exhaustion, damaged infrastructure, and the burden of caring for Union wounded enabled the Confederates to cross the Potomac River and escape into Virginia. Even so, Haupt's work ensured that Union pursuit could continue, preventing logistical breakdown from ending the campaign outright.

41 Haupt to Halleck, July 4, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 523.

42 Edwin M. Stanton to S. M Shoemaker, July 4, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 521; Adams Express Company. The Adams Express Company 150 Years. Accessed November 16, 2025. Spreadsforweb.

43 Reardon and Vossler, *The Gettysburg* Campaign*, June-July 1863,* 58; Herman Haupt to W. W. Wright, July 8, 1863, in U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I, Vol. 27, Pt. 3 (Washington: Government Printing Office, 1889), 608.

Herman Haupt's achievements during the Gettysburg Campaign indicate that the Union's tactical success depended as much on disciplined logistical planning and execution as on the courage of the soldiers at the front. His rail operations transformed how the Union Army fought at Gettysburg, illustrating that control of movement, supply, and communications could be as decisive as tactical leadership on the field. During the Gettysburg Campaign, the Union Army's ability to sustain its fighting strength depended on reliable rail and telegraph connections, an interdependence Haupt managed with unmatched precision. His coordination, efficiency, and foresight kept Meade's army supplied and operational through the bloodiest battle of the war. In his understated July 7 report, Haupt humbly wrote, "I submit herewith a brief report of operations in the Military Railway Department for the last week," a modest description that masked the scale of the effort and its importance for the survival of the Union army.[44]

In the end, Herman Haupt carried more weight in the Civil War than most Americans ever realized, not simply because he supplied armies, but because he imposed order on chaos. His genius lay in his ability to see the Union's railroads, telegraph lines, and repair crews as a single integrated system rather than as separate departments. Instead of waiting for instructions from Washington or responding to problems one at a time, Haupt constantly ranked crises by urgency, shifting engines, labor, and materials to the point of greatest need within hours. He bypassed traditional bureaucratic chains of command, made decisions on the spot, and coordinated civilian railroads with military demands in ways no other officer could.

After the war, Haupt continued to invent and write on engineering and transportation, though many of his business

44 Haupt, Report, July 7, 1863, 22.

ventures failed. His wartime achievements, however, endured. The methods he developed, centralized control of transportation, rapid repair under fire, and the use of telegraph communication to direct supply in real time, became the foundation of modern military logistics. Haupt's influence thus extended far beyond Gettysburg, shaping how armies manage movement, supply, and communication long after the war had ended.[45]

45 "Herman Haupt," National Railroad Hall of Fame, accessed November 16, 2025, Herman Haupt | nrrhof.

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