

ARCHIVE COPY

NATIONAL DEFENSE UNIVERSITY
NATIONAL WAR COLLEGE

2

95-E-36

C.1

ARCHIVAL COPY

**When Two Centers of Gravity Don't Collide: The Divergence of
Clausewitz's Theory and Air Power's Reality in the Strategic
Bombing Campaign of World War II**

Core Course 2 Essay

Lt Col Ronald P. Richardson/Class of 95
Core Course 2
Seminar K
Dr. Tom Keaney
Advisor: Col Mike Dziedzic

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE 1995		2. REPORT TYPE		3. DATES COVERED 00-00-1995 to 00-00-1995	
4. TITLE AND SUBTITLE When Two Centers of Gravity Don't Collide: The Divergence of Clausewitz's Theory and Air Power's Reality in the Strategic Bombing Campaign of World War II				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National War College, 300 5th Avenue, Fort Lesley J. McNair, Washington, DC, 20319-6000				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT see report					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES 12	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

ARCHIVE COPY

NATIONAL DEFENSE UNIVERSITY
NATIONAL WAR COLLEGE

2

95-E-36

C.1

ARCHIVAL COPY

**When Two Centers of Gravity Don't Collide: The Divergence of
Clausewitz's Theory and Air Power's Reality in the Strategic
Bombing Campaign of World War II**

Core Course 2 Essay

Lt Col Ronald P. Richardson/Class of 95
Core Course 2
Seminar K
Dr. Tom Keaney
Advisor: Col Mike Dziedzic

In the Old Testament, the might and power of the Israeli nation revolved around an object which embodied an idea. the ark of the covenant As long as the Jews possessed and believed in the ark, their army went undefeated. However, when an enemy was able to capture the ark, or to somehow alienate the Jews from the covenant relationship embodied by the ark, they suffered disastrous losses and feared for their national survival For Clausewitz, this would have been one of the most vivid historical examples of a warrior-nation's center of gravity, "the hub of all power and movement, on which everything depends." (595) Since the dawn of warfare, military leaders have sought an opponent's center of gravity, hoping to end a war in one climactic confrontation.

Military thinkers have also searched on the theoretical battlefield for a center of gravity which, if successfully attacked, would lead to a decisive end to war A trio of air power theorists—Giulio Douhet, Hugh Trenchard, and Billy Mitchell—inspired strategic bombing as a means to achieve Clausewitzian decisive victory because it could be brought to bear on an opponent's center of gravity in a way land or sea attack could not duplicate They looked at the conduct of war in Clausewitzian terms, with what this essay will later explain as a linear analytical framework. But the world of the 1940s was vastly different from the world Clausewitz knew. His concept of decisive center of gravity was theoretically insightful, and provided Douhet, Trenchard, and Mitchell a powerful paradigm for explaining strategic bombing But their linear analytical framework had lost its currency, and the theoretical foundation of strategic bombing's decisiveness in the sense Clausewitz explained it was bankrupt.

This essay proposes that the strategic bombing campaign in World War II failed to be decisive because its theoretical and doctrinal foundation—firmly rooted in the Clausewitzian concept of center of gravity—was based on a dated view of power relationships in the world I will not focus on the issues others have in explaining the operational and tactical successes and failures of Allied bombers Like Clausewitz, I'm not concerned about the individual military instrument in battle—cavalry versus foot soldier or tank versus artillery The central issue in this

essay is theory, with the Combined Bomber Offensive in WW II as a case study. After outlining Clausewitz's concept of center of gravity and briefly summarizing the theoretical foundation of strategic bombing, I'll explore how and why the center of gravity theory and reality of the air campaign diverged. Finally, I'll comment on the relevance of Clausewitz's center of gravity in formulating national security strategy in the future.

CLAUSEWITZ AND CENTER OF GRAVITY

In On War, Clausewitz addresses the concept of center of gravity in three chapters of two separate books. In all cases, he offers a theoretical description in the context of ideal war, sort of a description of "perfect" center of gravity. A nation's armed forces have "a certain unity and therefore some cohesion" which accord them the character of "center of gravity" analogous to the Newtonian center of gravity at the core of a body of matter. In armed forces, "centers of gravity will be found wherever the forces are most concentrated," and in combat "the effect produced on a center of gravity is determined and limited by the cohesion of the parts."

Clausewitz urges the ideal warrior to understand that "a theater of war, be it large or small, and the forces stationed there, no matter what their size, represent the sort of unity in which a *single* center of gravity can be identified." (485-487)

Could there be a center of gravity other than an opponent's armed forces? Clausewitz's study of history reveals at least two other candidates: an opponent's capital, or an opponent's more powerful alliance partner. (Our case study, however, does not fall under either of these alternative rubrics.) Clausewitz addresses the central issue and, coincidentally, the Allied military objective during WW II by stating: "Still, no matter what the central feature of the enemy's power may be - the point on which your efforts must converge - the defeat and destruction of his fighting force remains the best way to begin." (596) The early air power theorists embraced this belief and advanced the strategic bomber as a decisive platform for delivering this defeat and destruction.

Key air power theorists like Douhet, Trenchard, and Mitchell made their personal contributions to the air power debate in the late 1920s and 1930s. It is unfair to group them indiscriminately; each had an individual message and all three did not agree on every tenet of evolving air doctrine. But they did agree on the Clausewitzian effectiveness of the strategic bomber. At the British RAF Staff and Imperial Staff College, and at the American U.S. Army Air Corps Tactical School, similar bomber employment doctrines took root and gained advocacy. At the risk of oversimplifying the agreement among them, the shared principle initially offered by Douhet—and very Clausewitzian in nature—was that overwhelming bombing of an enemy's industrial, government, and population centers would undercut the will of the people enough to force their government to end the war. (MacIsaac 630) Many American and British military leaders accepted this as gospel. Empirical research at the Air Corps Tactical School showed that damage to key industries like electricity, ball bearings, transportation, and munitions would have a cascading negative effect on the armed forces' capability to fight. (Greer 224) In something of a leap of faith, air power theorists induced that industrial destruction and shattered armed forces, and direct civilian attacks, would so demoralize the population that the nation's will to fight would evaporate, forcing the government to sue for peace.

There was very little practical experience from WW I to support this Clausewitzian theory of the decisiveness of strategic bombing. This did not dampen the enthusiasm of Allied political and military leaders for it after WW II started. The grand test case for strategic bombing as a decisive, war-winning strategy emerged at the Casablanca Conference of 1943, when the Combined Bomber Offensive codenamed POINTBLANK took center stage.

Air war planners for POINTBLANK defined strategic bombing as "the massive and systematic bombing of the enemy's war economy and of the enemy population's will to resist." (Greenfield 88) At the operational level, American Eighth Air Force bombers largely took on the first task, while British Bomber Command aircraft took on the second. Systematic analyses

of the German industrial fabric yielded key target sets which were subjected to extensive and repeated attack. Large German cities were carpeted with incendiary and terrorizing delayed-fuze bombs to strike fear in the general population. POINTBLANK was, in planning and execution, everything the air theorists claimed would be decisive in strategic bombing. Were they right?

THEORY AND REALITY DIVERGE

The simple and qualified answer is "no." Few experts disagree with the empirical outcomes of the Combined Bomber Offensive, whether measured by the U.S. Strategic Bombing Survey or the British Bombing Survey Unit or from historical records of German industry. Strategic bombing was locally decisive in crippling specific industries in a short period of time, like nitrogen or rubber production in the summer of 1944, but was not decisive in the Clausewitzian sense in ending the war. One analyst described the divergence between theory and reality this way:

The theorists of strategic bombardment of the 1920s and 1930s had established certain precepts that the experience of World War II qualified but did not completely overturn ... It had been in overstating these precepts that the air power enthusiasts had been in error. The bomber could not always get through and civil populations were more resilient in the face of bombardment than the professional warriors had supposed. Air power was a devastating instrument of attrition, but not necessarily of decisive shock, and thus was incapable of bringing about victory on its own accord. (Freedman 736)

Why did the air theorists get it wrong? It was not because they misunderstood what they believed to be the Clausewitzian nature of the strategic bomber. Douhet's development of air power theory reflects a strong Clausewitz influence. Even though Clausewitz was not widely translated and studied in the U.S. in the 1920s, an English translation of The Command of the Air was available at the Air Corps Tactical School as early as 1923 (MacIsaac 8). The American authors of AWPD-1 and AWPD-42 who later provided the vision for the Combined Bomber Offensive, even if they had not read Clausewitz, still attributed decisive character to the

offensive capability represented in the strategic bomber

It is fair to ask if the Combined Bomber Offensive is a valid case study for their theory. Does it rate as the decisive engagement which Clausewitz declares vital in the concept of attacking the center of gravity? In crafting a plan of war, Clausewitz advises acting with "two basic principles that underlie all strategic planning and serve to guide all other considerations." "utmost concentration and speed." (617) This presupposes that "the ultimate substance of enemy strength [is] traced back to the fewest possible sources, and ideally to one." (617) The "best way to begin" is to locate the enemy's armed forces, determine where they are concentrated and attack that point with all the mass and speed available.

These twin issues of mass and operations tempo are theoretically contentious. Clausewitz stresses delaying the decisive engagement until overwhelming military might is ready. But he also places tremendous faith in the commander's genius and coup d'oeil in making that determination. The POINTBLANK commanders—Spaatz, Eaker, and Harris—possessed the coup d'oeil to critically assess the strategic bombing concentration necessary to win the war decisively. They assembled some of the most concentrated bomber formations technically possible. Launched in February 1944, Operation ARGUMENT, more commonly referred to as "Big Week," represented the kind of Clausewitzian concentration on military-industrial centers of gravity necessary to test the air theorists' belief in the war-winning punch of strategic bombers. (McFarland et al 189) Yet, this level of intensity and mass did not decisively win the peace.

This puts us back to the original question. why did the air theorists get it wrong? They got it wrong because their theoretical framework on how to conduct war had not evolved in the same way as the interdependent nature of national power sources had. The following analogy helps explain this. In a linear analytical framework, cause and effect in a power relationship is equivalent to a row of dominoes lined up to fall one against the other once the first is toppled. In an interdependent analytical framework, cause and effect is more like a balloon filled with water

Pressing in on one point does not cause the balloon to burst or even to bulge diametrically opposite the point of impact. It changes shape to compensate, but the change may be subtle rather than obvious, non-linear rather than linear. Only by hitting or squeezing the balloon at many points simultaneously will an explosion result.

Clausewitz's observations reflect a pre-1830s analytical framework, looking at the "set-piece" land battles of armies constrained by pre-Industrial Revolution technology. Farmers and craftsmen provided material and armaments to armies which, in turn, fought the classic battles of Gustavus Adolphus, Frederick the Great, and Napoleon. There was a linear, one-way flow in the resources of military and non-military power. Whether residing in the church or the monarchy, power was hierarchical and structured, rarely diffused or tangled.

In the post-Industrial Revolution world, the one that air theorists thought they understood, linear power linkages still existed. From the industrial sector rubber was processed then transformed into tires which were installed on aircraft which could drop bombs or shoot down other aircraft. Destroy rubber processing and air power should suffer. And it did. Similar reasoning was applied to attacks on petroleum, transportation, and ball bearings, as well as to carpet bombing major cities. But neither individually nor collectively did these Clausewitzian attacks decisively end the war.

In the strategic, Clausewitz-center-of-gravity perspective, strategic bombing was not decisive because there was no single or "dominoes-in-a-row" center of gravity relevance in the conduct of the war. Every time the Allied airmen stuck a finger at a lead domino, they actually were sticking it into a squishy balloon. Ball bearing production was so widely dispersed and hardened that interrupting its supply was rarely successful. Petroleum reserves and significant civilian sacrifice made up for shortages. Hostage labor compensated for native losses and accomplished herculean tasks in short order. The many human and material components of the ground transportation system had a remarkable resiliency. Albert Speer detailed these and other activities of interdependence in the industrial sector in Inside the Third Reich. Allied air

theorists did not recognize this interdependency in national military-industrial systems before the war, and so they could not comprehend why strategic bombing could enjoy such localized success and yet not decisively bring Germany to her knees.

The near global disposition of the Allied and Axis armed forces, the revolutionary impact of the submarine, and the emerging, post-Industrial Revolution interdependent relationships between production and distribution activities all supplanted Clausewitz's notion that a decisive center of gravity exists in modern war. Today, as in WW II, the interdependence of a nation's pivotal socio-economic infrastructures precludes the relevance of any single center of gravity against some criterion of decisive victory. Additionally, the relationships between today's leading edge military instruments--satellites and anti-satellites, stealth, and infosynthesis and disassembly--require a new analytical framework for determining centrality and cruciality in any meaningful way.

USAF Colonel Phil Meilinger from the Air Force School of Advanced Airpower Studies has suggested an analogy of a living organism composed of many nodes, any one of which can compensate in some manner if another node is eliminated or degraded. And the "webbing" which ties the nodes together is also a part of the organism, likened to the environment in which the organism flourishes. This kind of analogy describes what was a rudimentary, interdependent system of power relationships in Germany during WW II, more accurately than a linear framework like that of Clausewitz or the early air theorists. The idea that a war-winning center of gravity exists is no longer relevant when "the hub of all power and movement" is more like a spongy organism than a tangible object like an armed force.

However, the general concept of center of gravity retains utility at the tactical level, where immediate cause and effect linkages are readily apparent. Current Army doctrine recognizes this. There is some utility at the operational and strategic levels in defining, say, an opponent's leadership as a center of gravity, because the term has a widely accepted connotation. But to attribute any measure of war-winning decisiveness to it in today's world is hazardous. Crippling

an opponent's senior leadership may or may not prove decisive in the Clausewitzian sense. One persistent characteristic of this interdependent, 20th century world is the sort of summary impact of Clausewitz's fog, friction, and chance. Returning again to the organism analogy, it is even more difficult to comprehend which nodes are affected in what way because the power relationships are often shrouded in a haze of fog, friction, and chance. One only has to look at America's recent experience in Somalia in the early 1990s to see this dynamic in action.

What does this suggest for future national security strategy? In the context of Dr. Terry Deibel's framework, it suggests increasing difficulty in accurately assessing the means-ends linkages. Consider the new military instrument represented by infosynthesis and disassembly. It is a revolutionary tool of non-lethal warfare. The military is only one of a number of instruments of power which can play a critical role in employing this tool. Multinational companies, data management firms, government agencies, and computer hackers are other power "players" who purposefully or inadvertently can play a role. These interdependencies represent a challenge to the national security decisionmaker who must assess the risks and intentions of a system in conflict. Defining the ends sought, and divining the means available or necessary to achieve those ends will present the same kind of "leap of faith" challenges to future leaders that Douhet, Trenchard, and Mitchell faced half a century ago.

This essay explored the theoretical foundations of those three great air theorists in light of the overarching perspective of Carl von Clausewitz. The Prussian strategist looked at the record of history through the worldview of his contemporary society and proposed a theory of decisive war involving a pivotal center of gravity. Nearly one hundred years later, air pioneers translated that theoretical construct in very practical terms, with a new airborne military instrument called the strategic bomber. My analysis has proposed that, while they had the right idea in some sense, the theoretical foundation upon which the idea rested was dated. Strategic bombing could have strategic impact, but not in the decisive manner that Clausewitz suggested. The assumption that some "hub of all power and movement" could be

identified and attacked with sufficient mass and intensity was no longer relevant, but the air practitioners of the Combined Bomber Offensive did not know that. A new paradigm is required to understand how the components of national power are related so that military power may be effectively disposed against it in war. Global interdependency will challenge future national security decisionmakers to devise strategies with clear ends and means linkages.

WORKS CITED

Clausewitz, Carl von. On War. Trans. and ed by Michael Howard and Peter Paret. Princeton. Princeton University Press, 1984

Freedman, Lawrence. "The First Two Generations of Nuclear Strategists." in Makers of Modern Strategy From Machiavelli to the Nuclear Age. Ed. by Peter Paret. Princeton: Princeton University Press, 1986

Greenfield, Kent R. American Strategy in World War II. A Reconsideration. Malabar. Krieger Publishing Company, 1963.

Greer, Thomas. "The Development of Air Doctrine in the Army Air Arm, 1917-1941." An article prepared for the Air War College Associate Program, Air University, Maxwell AFB AL, vol I, 4th edition, 1993.

Liddell Hart, Basil H. Strategy. New York: Penguin Books, 1991.

MacIsaac, David. "Voices From the Central Blue. The Air Power Theorists." in Makers of Modern Strategy From Machiavelli to the Nuclear Age. Ed. by Peter Paret. Princeton: Princeton University Press, 1986.

MacIsaac, David. Strategic Bombing in World War II: The Story of the United States Strategic Bombing Survey. New York: Garland Publishing Inc., 1976.

McFarland, Stephen L., and Wesley P. Newton. To Command the Sky: The Battle for Air Superiority Over Germany, 1942-1944. Washington: Smithsonian Institution Press, 1991.