

**INCENDIARY WARS:**  
The Transformation of United States Air Force Bombing Policy  
in the WWII Pacific Theater

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## **Note to the Reader:**

For the purposes of this essay, I have tried to adhere to a few conventions to make the reading easier. When referring specifically to a country's aerial military organization, I capitalize the name Air Force. Otherwise, when simply discussing the concept in the abstract, I write it as the lower case air force. In accordance with military standards, I also capitalize the entire name of all code names for operations (OPERATION MATTERHORN or MATTERHORN). Air Force's names are written out (Twentieth Air Force), the bomber commands are written in Roman numerals (XX Bomber Command, or simply XX), while combat groups are given Arabic numerals (305<sup>th</sup> Bomber Group). As the story shifts to the Mariana Islands, Twentieth Air Force and XXI Bomber Command are used interchangeably. Throughout, the acronyms USAAF and AAF are used to refer to the United States Army Air Force, while the abbreviation of Air Force as "AF" is used only in relation to a numbered Air Force (e.g. Eighth AF).

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## **Introduction**

Curtis LeMay sat awake with his trademark cigar hanging loosely from his pursed ever-scowling lips (a symptom of his Bell's Palsy, not his demeanor), with two things on his mind. Undoubtedly, he wished that he could find some good tobacco so that he could begin smoking his pipe again. But pipe tobacco could not withstand the muggy weather in the Mariana Islands where LeMay had been stationed since taking charge of the Air Force XXI Bomber Command in late January, so he took to the cheap cigars available in the Air Force PX. He promised himself that if all went well that night, he would break protocol and head over to the Navy PX where they had those fine Cuban hand-rolled cigars – after all, it was 1945, and there was no Castro to raise the ire of American politicians. While the loss of his beloved pipe surely weighed on the gruff LeMay, this was not what kept him awake on this night of March 9<sup>th</sup>. Rather, it was the knowledge that over 300 of his B-29 Superfortress bombers were headed under the cover of darkness and radio silence to undertake the largest, most daring, dangerous, and controversial United States aerial attack of the entire Second World War. And LeMay could not do or hear a thing about it until his planes completed their 3,000-mile round trip mission. LeMay intended to stay up until they returned to base. But he feared that many or all of them would not.

This was not the first time that LeMay sent planes over enemy territory. He had built up an impressive resume as both a flyer and commander, leading sorties in the European theater and directing the XX Bomber Command out their bases in China. The night's mission against Tokyo's urban center was unique for a number of reasons. First was the aforementioned target – Tokyo's urban center – far removed from any of the

major industrial or infrastructure installations that had theretofore defined acceptable quarry for United States Army Air Force (USAAF) raids. Second was the unorthodox method of attack, involving a night-time radar-guided attack from altitudes between five- and nine-thousand feet, well below the 25,000 foot floor above which the B-29 with its four powerful Pratt and Whitney engines was built to dominate, and diametrically opposed to the well publicized USAAF doctrine of daylight raids with visual targeting.

As if that was not enough, LeMay sent these planes – to the horror of the flyers, aircraft designers, and military strategists at home – with only one of their thirteen guns attached, to allow for increased payload. It was this payload which was perhaps the most significant aspect of the entire raid. Buried within the holds of each of the 325 bombers were 6 tons of incendiary bombs – mostly the 6.2 pound Mark 69 (M-69) Napalm tail-ejection bomb, of which over half a million would be dropped during this one raid. While the M-69 had been used earlier in the war – sparingly by the Eighth Air Force in the European theater, more by the Fifth in the South West Pacific theater (New Zealand and Guinea), and increasingly by the XX and XXI Bomber Commands against Japan – this was the first major AAF raid to primarily employ the M-69 in a targeted assault on an urban area, with the goal of burning civilian dwellings to the ground.

According to most historians of the Second World War and of the AAF, this attack – on the night of March 9-10, 1945 - was the essential turning point in the war in the Far East and a seminal moment in the history of American aerial bombardment policy. It would redefine the Army Air Force, and would lead to the nuclear attack of a few months later, to the devastating air assaults against Vietnam and Cambodia in the 1960s, and to the complete domination of the skies over Kosovo in the 1990s. This

American adoption of “area” or “morale” bombing, which accepts and even relies upon inflicting widespread civilian casualties and devastating damage to urban communities, to thereby indirectly impede the State’s war making abilities and the people’s will to continue fighting, is often credited (detrimentally) to this singular decision by General LeMay on that one fateful night. Scholarship in the past few decades has gone a long way in historicizing his decision, recasting it as “the final link” in a long chain of theories of air-war and military planning. These ideas dated back to the inception of air forces in the 1920s and to larger-than-life personalities of the Italian Giulio Douhet and the American airman William “Billy” Mitchell – the “prophets” of destruction from the air – and to the myriad planning and operations research committees which decided on targeting agendas for the Air Force during the war.

While these studies shed a great deal of light on the history of aerial theory and clarify the contradiction between the AAF’s stated policy of “precision” attacks and their continued apparent disregard for the huge civilian toll of their air assaults, they do surprisingly little to explain why LeMay could or would at that singular juncture in time have undertaken this seemingly radical departure from stated procedure. If, as many of these histories indicate, American doctrine was not as opposed to “morale” bombing as it set-out to be, what changed to allow the night of March 9<sup>th</sup>, 1945 to be so radically different than any that preceded it? Why should the U.S. still have adhered to the daylight bombing doctrine even as it partook in the much-maligned assault on Dresden just a month earlier, especially given the nighttime pummeling inflicted by the British Royal Air Force (RAF) on the nights immediately before and after the U.S. attack?

Indeed, the histories all do a fine job of establishing the theoretical basis and contextual grounding for LeMay's decision, but appear to approach the decisions leading to the policy of area bombing in a surprisingly teleological way – describing decisions that were ‘finally’ made as if it were only a matter of time before area bombing became the dominant policy guiding the AAF. And while it may well be true that there was a certain aspect of inevitability in the choice to bomb civilians – a growing callousness to death during a drawn-out conflict, the urge to do anything necessary to shorten the war by even a day – there is no single account of the many contingent aspects that persuaded LeMay to undertake this sort of attack in March of 1945. These include the changing political and popular environment back home, as much a result of the seemingly endless war as of reflections on the new “sub-human” Japanese foe, the newfound capabilities found with the B-29 bomber and proximity of the Mariana Islands, inter-service rivalries, and specific industrial and procurement pressures as influential as any tactical imperative.

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Perhaps unsurprisingly, the vast majority of research conducted on United States Army Air Force bombing and strategic bombing in general during World War II has been dedicated to the campaigns in the European Theater of Operations (ETO). This is because over 75 percent of USAAF munitions used throughout the war were used against Germany and its allies, and the theory of strategic bombing was best illuminated against the backdrop of the British Royal Air Force Bomber Command's indiscriminate and deliberate bombing of civilian centers. The USAAF's – and specifically the specially formed Twentieth Air Force's – own strategic campaign in the Pacific Theater, though

not totally ignored, has been given comparatively short shrift in the literature, mostly because of the overwhelming attention devoted to their use of the atomic bomb. Yet the nuclear attacks on Hiroshima and Nagasaki in early August 1945 were only a tiny fraction – and not even the most destructive – of the 26,401 effective sorties and 148,675 tons of bombs dropped by the Twentieth against their primary targets (though pound-for-pound, the atomic bombs were by far the most destructive). In many senses, the atomic attacks were the culmination of a trend begun half a year earlier in late February and early March 1945. Those months saw the inception of the USAAF policy of firebombing Japanese urban centers, a practice seemingly at odds with the well-publicized USAAF commitment to only engage in precision bombing of military targets. It is the circumstances of this evolution – from precision to area or “morale” bombing – that will be investigated in this study.<sup>1</sup>

Not that this is the first to undertake such an investigation. Nearly all the histories dealing with the Twentieth Air Force’s bombing campaign against Japan have had to grapple in one way or another with the rhetoric of the USAAF versus the sometimes harrowing realities of General Curtis LeMay’s XXI Bomber Command’s incendiary attacks on the Japanese mainland. Not all histories, however, have come at it the same way. The earliest report on the campaign is found within the imposing seven volume official Army history, *The Army Air Force in World War II*, written by Craven and Cate beginning in 1948. The perspective largely mirrors that of the wartime AAF and though the authors were afforded access to the principal actors in the conflict, these opinions are understood to have underpinned their sympathy for ‘official’ Army beliefs. The

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<sup>1</sup> United States Strategic Bombing Survey, *Summary Report European and Pacific War*, 84; Kenneth P. Werrell, *Blankets of Fire: U.S. Bombers over Japan during World War II* (Washington: Smithsonian Institution, 1996), 256.

incendiary campaign is described primarily as a precision attack focused on destroying the home-manufacturing capabilities of the Japanese. This claim was surely believed at the time by the involved actors, but hardly can mask the fact that AAF leaders knew of the untold thousands of innocents who would die in such an inherently indiscriminate “precision.” Still, they rely largely on primary documents that serve as the basis - and counterpoint – for most later studies (including this one) and clearly lay out the facts of the bombing.

Curtis LeMay’s ghostwritten *Ride with LeMay* aims to explain the origins of his decision to switch to incendiary bombing and in general to clear his name from the negativity surrounding his command of the Air Force during Vietnam. LeMay defends the military necessity of the raids and argues that, if anything, the incendiary attacks hastened the end of the war and limited overall fatalities. Given his aim, he is understandably humble regarding the extent to which he invented the American incendiary attack. He does take credit – or blame – for the decision, but downplays its ingenuity, while simultaneously understating the importance of events that preceded him (though in his defense, he might not have been aware of them). In *Superfortress: The Story of the B-29 and American Air Power*, a later co-written book, LeMay delves more into the importance and evolution of the B-29 bomber, though his apologetic view obviously leaves much wanting.

Later works responding to the revisionism of the mid 1980s revert somewhat to the party-line argument which asserted that military necessity dominated the decision to use incendiaries. Conrad Crane in *Bombs, Cities, and Civilians* downplays the extent to which the Air Force was already engaging in “area bombing” in the ETO. This extends to



his description of the Japan bombing, wherein he emphasizes the impression among most of the air force that, while civilian casualties were undesirable, they were the necessary outgrowth of the legitimate targeting of military and industrial targets – never the civilians themselves.

Crane also sticks to a trend, found mostly in the biographies of the major Air Force figures, to overemphasize the importance of personnel – usually focusing on the switch between General Hansell and General LeMay in January 1945. Already mentioned above are LeMay's two books. *Iron Eagle*, Thomas Coffee's biography of LeMay's life, provides a more extreme example. Haywood Hansell's *Strategic Air War Against Japan* is a more evenhanded book. Part autobiography, part history, and part theoretical work, Hansell largely avoids the sort of griping about LeMay and his firebomb tactics that might be expected of someone fired from his job for what some consider to be his refusal to give up precision bombing. He gives due credit to the effect of firebombing, though concludes with an inflated analysis of what he views as the potential of precision bombing to have been as decisive as the incendiary attack had he been allowed to stay on and develop his tactics, which seems both anachronistic and impractical.

An excellent essay by Thomas Searle in *Journal of Military History* (and winner of the 2003 Macando Prize from the Society of Military History) is "It Made a Lot of Sense to Kill Skilled Workers." Searle correctly points out the lack of attention in the literature on the Japanese bombings to the years of planning documents the preceded the war, and based on them he convincingly attacks the notion that (a) there was a real switch in policy from Germany to Japan and (b) that LeMay's arrival was the key to the switch to incendiaries. Nonetheless, Searle's all-too-personal attack on General Hansell

(mocking Hansell's displeasure at being fired, Searle quips the real "tragedy was Hansell's narcissism and complete lack of self-awareness," a claim I have not encountered elsewhere in the record), the sweeping negation of LeMay's brilliance in changing tactics, and his oversimplification of the composite pieces within the USAAF planning division are notable shortcomings.<sup>2</sup> In addition, Searle's most contentious claim is that the Air Force leaders both knew about and desired the high civilian casualties that would arise from urban incendiary attacks. Indeed, he shows conclusively that civilian *casualties* and weakened morale – especially among factory workers – were a desired as indirect effects of the bombing, but he subtly turns that into an argument that the Air Force wanted to *kill* civilians. It is quite apparent, however, that while casualties were guaranteed to result from this sort of attack, the probability of deaths and morale changes would vary significantly based on a host of variables out of the control of the Air Force.

Searle effectively wades into the revisionist debate over the morality of the bombing, explaining that the USAAF intended to kill large numbers of civilians as an oblique yet efficient way to shut down the Japanese war industry and economy. Thus it amounted to an attack on industry (with military merit) and consequently did not constitute a switch to "morale" bombing. This of course is in contrast to the two seminal revisionist works of the 1980's – Michael Sherry's *The Rise of American Air Power* and Ronald Schaffer's *Wings of Judgment*. Both Sherry and Schaffer argue that the U.S. was by March 1945 engaged in an immoral deliberate attack on the citizens of Japan, in an effort, not to destroy the Emperor's war making ability, but to terrorize his people into demanding his surrender.

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<sup>2</sup> Searle, "It Made a Lot of Sense to Kill Skilled Workers": The Firebombing of Tokyo in March 1945, *Journal of Military History* 66 (2002), 132.

Shaffer is the more moderate of the two, describing the USAAF's initial choice of the precision doctrine as one mostly of efficiency, not morality. Like Hansell, he considers the effectiveness of the incendiary attacks in destroying precision targets to have been less impressive than the capabilities of conventional bombing, and thus questions the morality of continuing the attack on civilians. Sherry, on the other hand, claims that the gradual shift towards area bombing somehow led the USAAF leaders to harbor delusional views about the bombing's toll on civilians and to ultimately continue the incendiary campaign where they "waged destruction as a functional end to itself" (measured in square miles), "without a clear comprehension of its relationship to stated purposes."<sup>3</sup> Sherry calls it "technological fanaticism," diagnosing it as an almost psychological condition shared by the entire Air Force leadership, a "disjunction between means and ends" whereby the USAAF regarded "the decisions that took lives as the products of technological, strategic, and bureaucratic imperative."<sup>4</sup>

More recently, a more balanced accounting of area bombing entitled *Bombing Civilians: A Twentieth Century History* was put out as a collection of essays edited by Marilyn Young (more famous for her very critical book on the U.S. in Vietnam) and Yuki Tanaka. It includes essays by both Schaffer and Sherry, but the book essentially

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<sup>3</sup> Michael S. Sherry, *The Rise of American Air Power: the Creation of Armageddon* (New Haven: Yale UP, 1987), 252

<sup>4</sup> *Ibid.*, 253. Sherry goes on to describe the "evil of American bombing" as "a sin of a peculiarly modern kind because it seemed so inadvertent, seemed to involve so little choice. Illusions about modern technology had made aerial holocaust seem unthinkable before it occurred and simply imperative once it began. It was the product of a slow accretion of large fears, thoughtless assumptions, and at best discrete decisions." What is striking about Sherry's argument is both the depth of his research and the extent to which he simultaneously appears to call upon and reject the agency of USAAF actors. It seems questionable to me, at least, to rely on the memoranda and reports of Air Force officials to establish a moral accountability while denying that those very individuals ultimately had any control. If that is the case, who is "evil" and who has "sinned?" I quote here at length both to showcase the extreme nature of Sherry's views and also because I aim to argue that technological *determinism* – where practical strategy followed the functional capabilities of the Air Force – was a driving force behind the incendiary raids. And I want to be clear about the distinction between Sherry's theoretically postulated behavioral disorder and, to be frank, my more useful look at the active formation of airpower doctrine given specific limitations and capacities.

splits between those attempting to document the objective facts of the bombing and those attempting to put it into a moral perspective, which relieves it of some of the tension found in Sherry's book. Not so with moral philosopher A.C. Grayling's book *Among the Dead Cities*, which relies on a loose definition of military necessity and an even looser understanding of the realities of war to call the firebombing of Japanese cities (and even more so the RAF attack on Dresden and the USAAF nuclear attacks) "morally criminal." He then goes even further and asserts that "there comes to seem very little difference in principle" between these sorts of attacks "and the destruction of the World Trade Center in New York by terrorists on 11 September 2001."<sup>5</sup> Grayling is less interested in the actual circumstances of the war than in making a contemporary critique. As a *Sunday Times* reviewer noted, "one suspects that it is British and American pilots operating over Afghanistan, Iraq and, perhaps, Iran whom the professor would like to see in the dock rather than the elderly veterans of Bomber Command."<sup>6</sup>

Most helpful have been a number of books dedicated solely to the incendiary and nuclear attacks on Japan. The newest addition, Barrett Tillman's *Whirlwind: The Air War Against Japan, 1942-1945* offers a greater insight into the experience of actual airmen, as well as delving more deeply into the role of the XXI Bomber Command in the hugely important Navy blockade of Japanese harbors. The blockade was first seriously dealt with in *Blankets of Fire* by Kenneth Werrell, in which he argues convincingly that the USAAF made a mistake in their reluctance to assist with aerial mining during the blockade. He credits the incendiary attacks with spreading destruction, but asserts that the mining and

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<sup>5</sup> A.C. Grayling, *Among the Dead Cities: Was the Allied Bombing of Civilians in WWII a Necessity or a Crime?* (London: Bloomsbury Publishing), 2006, 271; 278.

<sup>6</sup> Michael Burleigh, review of *Among the Dead Cities*, by A.C. Grayling, *The Sunday Times*, February 5, 2006, [http://entertainment.timesonline.co.uk/tol/arts\\_and\\_entertainment/books/non-fiction/article723772.ece](http://entertainment.timesonline.co.uk/tol/arts_and_entertainment/books/non-fiction/article723772.ece).

blockade was what actually crippled the Japanese economy – not the firebombing.

Werrell began an important line of inquiry, but did not sufficiently probe the tenuous relationship between the powerful U.S. Navy and the fledgling Air Force.

E. Bartlett Kerr's *Flames over Tokyo* is the only book to look seriously at the development of the incendiary bombs and the impact of non-military operations analysis groups in shaping targeting priorities and thus the nature of the airway in Japan itself. His approach is crucial to shaping my understanding of the bombing campaign, though he overplays the importance of planning and position papers to LeMay's ultimate decision to change tactics and understates the precarious standing of the M-69 in Army tactician's plans.

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This thesis aims to correct the imbalance found in the literature of works focusing on the theoretical air policies and then the actual implementation of them, as if an imperfect match between theory and practice necessarily reveals some sort of failure in the execution. The switch to urban attacks is often portrayed as either (a) an abandonment of Air Force doctrine or (b) a change of Air Force doctrine. Rarely is it considered that a more nuanced middle ground exists, wherein doctrine is more fluid and implementation more variable and responsive to circumstances in the field. This paper will thus stress the essential contingencies found not only in LeMay's decisions but also in the planning for the war itself.

**Chapter One** will establish the intellectual framework for the Air Force doctrine as it emerged through the 1930s and early 40s. It will outline the way in which the war planners conceived of strategic bombing in terms of precision attacks, and investigate the

nature of the strategic-precision relationship, with particular focus on the underlying premise of efficiency of attack. It will continue to describe the process by which this doctrine was inserted into the official United States war plans and will address the unique political considerations of the Air Force during the decades leading up the war.

**Chapter Two** will be a sustained analysis of the first attempts to enact the Air Force's vision in the Pacific War. Central to the discussion will be the creation of the quasi-independent Twentieth Air Force and the state-of-the-art B-29 Superfortress bomber. It will explain the rationale for and the limited success of the XX Bomber Command in China, as well as describe the lessons learned from the ETO that impacted the China mission and further the lessons learned from China that would impact the Mariana campaign.

It is this campaign – particularly the incendiary attacks which began after March 9<sup>th</sup>, 1945 – that is the subject of **Chapter Three**. It is split into three main sections (1) proximate causes for the switch to incendiary attacks, (2) the attacks themselves, their rationale, and their impact, and (3) a more long-term investigation of the peculiar way through which incendiary attacks became incorporated into Air Force doctrine, with a focus on two civilian-led planning groups.

## **Part I: The (Practical) Prophets**

Any serious history of the United States bombing campaigns of WWII and after must begin with a discussion of the doctrinal legacy left for the Air Force by the time the war began. Aviation had been around for less than forty years before the attack on Pearl Harbor and U.S. entry into the war and during that time had expanded impressively - though not as much as Air Force promoters deemed sufficient. Most analysis of the USAAF revolves around two seminal figures in the history of air war – the Italian airman Giulio Douhet and the American Army Air Corps leader William “Billy” Mitchell. I carefully say figures in the *history* of aeronautics, because their importance appears to be as much a result of actual influence as of later historians imbuing them with significance, mythologizing them as the “prophets” of the air. Indeed, while some of the later revisionist histories try to qualify their importance, they do so while still firmly embedding them in the center of air doctrine (and, almost without fail, the first few pages of their books).<sup>7</sup>

This is not to say, however, that these authors are mistaken in crediting these two – among others – with offering some of the first (usually) coherent thoughts on the uses of airplanes in war, or that subsequent doctrine enshrined by the United States Air Corps Tactical School (ACTS) was not indebted to them. Nor will I deviate from this well-trying

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<sup>7</sup> See for example, Conrad C. Crane, *Bombs, Cities, and Civilians: American Airpower Strategy in World War II* (Lawrence, Kan.: University of Kansas, 1993), 15-18; Ronald Schaffer, *Wings of Judgment: American Bombing in World War II* (New York: Oxford UP, 1985), 21-30; Barrett Tillman, *Whirlwind: the Air War against Japan, 1942-1945* (New York: Simon & Schuster, 2010), 9-14; Kenneth P. Werrell, *Blankets of Fire: U.S. Bombers over Japan during World War II* (Washington: Smithsonian Institution, 1996), 9-11; Stewart Halsey Ross, *Strategic Bombing by the United States in World War II: the Myths and the Facts* (Jefferson, NC: McFarland & Company, 2003), 35-45; Michael S. Sherry, *The Rise of American Air Power: the Creation of Armageddon* (New Haven: Yale UP, 1987), 22-38. Sherry provides the longest but also most comprehensive analysis of these men, focusing on their political and cultural context as well as their theories. While ultimately his conclusions regarding the U.S. bombing are rather extreme, his is among the most extensively researched, if meandering, work done to date.

path of establishing some basis for subsequent USAAF policy, though my analysis will focus on substantially different aspects of their ideas.

While I will give brief attention to the innovations of these two theorists, more interesting in their schema are the aspects that are indicative of their role as airmen – not intellectuals.<sup>8</sup> That is, within their proposals there is the palpable sense of the chip on their shoulders, the feeling that they are being unduly ignored and unfairly treated by the Army and Navy – their bigger ‘siblings’ in the military establishment. This is found in both Mitchell and Douhet, and is thus not unique to U.S. institutions. Nonetheless, it would prove to be a particularly important aspect of the decision to use incendiary bombs against Japanese cities.

Douhet’s conception for the future uses of the air force was premised on a keen understanding of the nature and purpose of armies. The Italian Commissioner of Aviation under Mussolini, General Douhet distilled war into a conflict between one “party who wants to occupy a certain portion of the earth” and “his adversary, the party who intends to oppose that occupation.”<sup>9</sup> The attacking army tries to reach the region it hopes to overtake, and the defending army positions itself along the lines they expect the attackers to choose in their assault. Thus, in order to reach their target, the attackers must first overcome the defending army. “Since war had to be fought on the surface of the earth,” Douhet goes on, “it could be waged only in movements and clashes of forces along lines

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<sup>8</sup> Compare, for instance, Curtis LeMay’s handling of Mitchell in *Superfortress: the Story of the B-29 and American Air Power* (New York: McGraw-Hill, 1988) which discusses in detail the story of Mitchell the airman, provocateur, and pain in the Army’s side, but never once mentions Douhet or much in the way of Mitchell’s actual theories. This favoring of action over words is especially apt given air force fliers’ reputations as young whippersnapper cowboys exploring the new frontier of the sky, in distinction to the more established Army and Navy. LeMay will evoke this sentiment again and again against the “armchair” establishment in the military.

<sup>9</sup> Giulio Douhet, *The Command of the Air*. Trans. Dino Ferrari (Washington, D.C.: Office of Air Force History, 1983), 8.



drawn on its surface.”<sup>10</sup> By default, then, war came to be understood as the battle with – and the dominance over – a rival military force, a fact that Douhet thinks belies the real intent of the conflict: “to invade the enemy’s territory” and force the *nation’s* surrender.<sup>11</sup>

With the advance in aeronautics, however, “*it is possible to go far behind the fortified lines of defense without first breaking through them*” and to strike directly at the civilian centers. During a war,

no longer can areas exist in which life can be lived in safety and tranquility, nor can the battlefield any longer be limited to actual combatants. On the contrary, the battlefield will be limited only by the boundaries of the nations at war, and all of their citizens will become combatants, since all of them will be exposed to the aerial offensives of the enemy. *There will be no distinction any longer between soldiers and civilians.* The defenses on land and sea will no longer serve to protect the country behind them [italics mine].<sup>12</sup>

Douhet’s purposes here are twofold. As a true believer in the power of airplanes, he wants to demonstrate the extent to which an air force fundamentally changes not only the practice, but also the rules of war (who is a combatant, where is the battlefield, etc.). In the process of doing so he delves into the details of what future wars should look like and how they should be executed. But more than that – perhaps even primarily – as an airman himself, Douhet wants to establish the basis for an independent air wing. Thus, the throwaway line challenging the efficacy of the traditional defenses in the face of an air assault is anything but secondary. In fact, at the very beginning of his work, before Douhet ever establishes the capabilities of an air force, he recognizes that the Army and Navy have their own planes, “but that does not preclude...the necessity of having an air force capable of accomplishing war missions solely with its own means” and that “an air force should logically be accorded equal importance with the army and navy.”<sup>13</sup>

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<sup>10</sup> Ibid.

<sup>11</sup> Ibid., 9.

<sup>12</sup> Ibid., 9-10.

<sup>13</sup> Ibid., 5.

Essentially, Douhet is writing a polemic whose aim is not simply to elucidate the benefits of the air force, but to precipitate the downfall of the other services from their perches of preeminence.

Douhet was not shy about what methods he deemed acceptable or the effects he hoped to realize. With all citizens turned into combatants, all targets would be fair game. For practical purposes – much like the ACTS doctrine that would follow a decade later – “industrial and commercial establishments” would be of primary importance, but “certain designated areas of civilian population” would be singled out as well. The choice of munitions was equally flexible, and explosives, incendiaries, and even poison gasses would be used as the situation called for it.<sup>14</sup> The effects of large-scale bombardment, where tens of tons of incendiaries, explosives, and poison gasses were dropped on a population center would have devastating effects on the morale of a nation – effects that Douhet felt “may well have more influence upon the conduct of the war than their material effects” that is, the actual infrastructure destroyed.<sup>15</sup> In what would become a highly contested thesis among historians, and whose premise underlay both OPERATION CLARION in the ETO and the late June and July attacks in Japan, Douhet expands on the interaction between bombing and civilian morale. The inability to predict either the locations or the numbers of cities next to come under air assault would lead to “a complete breakdown of the social structure...in a country subjected to this kind of merciless pounding from the air. The time would soon come when, to put an end to the horror and suffering, the people themselves, driven by the instinct of self-preservation,

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<sup>14</sup> Ibid., 20.

<sup>15</sup> Ibid., 57-8.

would rise up and demand an end to the war,” and in a final dig at the establishment, he adds “this before their army and navy had time to mobilize at all!”<sup>16</sup>

Douhet’s theory of airpower centered on understanding the airplane as “being pre-eminently an offensive weapon” and in fact “not adaptable to defense.”<sup>17</sup> However, for reasons political and strategic, Billy Mitchell primarily stressed their defensive capabilities. Promoted to a wartime rank of Brigadier General and Assistant Chief of the Air Service upon his return from fighting in the First World War (when the Air Signal Corps was still firmly entrenched within the Army), Mitchell immediately became a vocal proponent of an independent air force, and by at least some metrics, was successful.<sup>18</sup> A less qualified theorist than Douhet, Mitchell’s importance was as an effective showman and publicist, though his views are important because they animated his actions, and he would become somewhat of a martyr for the next generation of air leaders, as well as a stumbling block because of all the enemies he aroused along the way.<sup>19</sup>

Mitchell argued that with the advent of the airplane, and all the capabilities that it had (see Douhet), “interior cities are now as subject to attack as those along the coast. Nothing can stop the attack of aircraft except other aircraft.”<sup>20</sup> Rather than begin as Douhet did by explaining that the aircraft was an unstoppable offensive weapon, Mitchell

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<sup>16</sup> Ibid.

<sup>17</sup> Ibid., 17.

<sup>18</sup> In being vocal, at least. Mitchell quickly dedicated himself to cataloguing the shortfalls of the Navy, a precarious stance for a provisional General to undertake. And sure enough, after intense provocation, including accusing the Navy and War Department of “incompetency, criminal negligence, and almost treasonable administration” following the crash of the helium dirigible *Shenandoah* in September of 1925, Mitchell (by then already demoted to Colonel) was summarily court-martialed. The charge was recommended by none other than President Coolidge himself, which gives the best sense of the extent to which Mitchell had ruffled feathers (see Ross, *Strategic Bombing* 40-41).

<sup>19</sup> Sherry, 38;

<sup>20</sup> William Mitchell, *Winged Defense: the Development and Possibilities of Modern Air Power - Economic and Military* (New York: G.P. Putnam's Sons, 1925), XIV.

explained that *because* of this fact, it was even more crucial for the defense against enemy planes. Implicit is that airplanes could be used offensively, and would overwhelm any existing defenses. He made this argument for political and practical reasons. Practically, as Mitchell wrote his thoughts in the mid 1920s, the U.S. Air Corps had no aircraft even remotely capable of reaching Europe – most had a flying range of little more than a few hundred miles.<sup>21</sup> Politically speaking, the inter-war period in the United States was a time of retrenchment, isolationism, and intense demilitarization. No argument for a greater offensive reach would resonate with the public. An appeal towards their security – the ability to keep foreign forces out – could very well elicit a positive response. Thus Mitchell carefully asserted that “an efficient air force...would be able to protect the country from invasion and would secure its independence, but would not be able to subject a hostile country to invasion.” Conversely, “no seacraft...is able to contest their aerial supremacy.”<sup>22</sup>

Not only did Mitchell attempt to usurp the Navy’s long heralded role as protector of the nations coasts, but he tried to “consign...naval power (except submarines [largely protected from aerial attacks]) to the deep sea of obsolescence.”<sup>23</sup> He exaggeratedly predicted the demise of navies, which would be left to “control only the areas of water outside of the cruising radius of aircraft. These areas are constantly diminishing with the increasing flying powers of aircraft.... The surface ship, as a means of making war, will gradually disappear.”<sup>24</sup> The Navy might have been able to dismiss this blather as the ravings of a fanatic, but Mitchell targeted what the navy brass surely held most dear: their

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<sup>21</sup> James P. Tate, *The Army and Its Air Corps: Army Policy toward Aviation, 1919-1941* (Maxwell Air Force Base, Ala.: Air UP, 1998), 158.

<sup>22</sup> Mitchell, 11-12.

<sup>23</sup> Sherry, 29.

<sup>24</sup> Mitchell, 18.

coffers. “The advent of air power,” he conjectured, “holds out the probability of decreasing the effort and expense required for naval armaments.”<sup>25</sup> Thus under fire – especially during a time of decreasing military expenditures in America – the Joint Chiefs could no longer countenance his official blasphemy, and had him defrocked. Of course, the spectacle of his court-martial would effect the future of the Air Force as much as his theories, specifically because his defense relied (poorly, it seems) upon the testimonies of two young airmen – Majors Henry Arnold and Carl Spaatz – destined to become the top two officers in the USAAF.<sup>26</sup>

Clearly, Mitchell did not pull his punches when discussing the Navy, and aside from theoretical posturing, he engaged in some very real tests to establish the supremacy of aircraft over a sea fleet. The descriptions of these myriad ocean bombing demonstrations – culminating in the spectacular July 1921 sinking of the “unsinkable” former German dreadnaught Ostfriesland – take up a sizable portion of his book, yet another reason to think of him as less a theoretician than a publicist.<sup>27</sup> These descriptions are spread over 50 pages in two chapters, the latter of which was entitled “The United States Air Force [n.b. – which did not yet exist] Proves that Aircraft Dominate Seacraft.” The Navy, which was incredulous of Mitchell’s claims from the very start (so much so that before the trials, the Secretary of the Navy announced “that he was willing to stand on the bridge of the ship” as Mitchell’s planes bombed it<sup>28</sup>), was quick to call the trials a fluke, and pointed out that real life would not include a lone ship anchored in the open seas. Indeed, there was reason to be skeptical. Hitting a precision target was hard

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<sup>25</sup> Ibid.

<sup>26</sup> Ross, 41.

<sup>27</sup> Mitchell, 67-72.

<sup>28</sup> Ibid., 42.

enough, even without the Navy's carefully scripted test conditions intended to make them most difficult for the fliers, such as positioning the ship 75 miles off the coast, a 100-mile trip from the landing strip.<sup>29</sup> But the success further buoyed Mitchell's confidence, leading to his eventual court-martial and slow decent into obscurity until his untimely death in February 1936 at the age of 56.

As far as the particulars of his theory go, Mitchell did not leave an especially large footprint. His primary interest was to establish an independent air force, and he tailored his conception of the uses of airplanes to fit into the unique interwar-U.S. ethos during which he was prominent. This meant a stress on the defensive aspects of airplanes, but an intentional vagueness about their general capabilities, to allow for the shift from defensive to offensive action. This helps explain his elusive definition of air power as "the ability to do something in or through the air," a contention so pedantic so as to make it worthless, unless we recognize that Mitchell was trying to carve out the greatest space for aerial operations without upsetting too many people. His antics proved to make him less successful at this last goal. It explains as well the absurdity of his oft-quoted assertion – used to challenge his grasp of the real workings of air power – that "a few gas bombs" would be more than enough to send a city into a paroxysm and quickly win the future air war.<sup>30</sup> Confidence in the ease as well as abstract nature of future wars, wars involving technologies that perhaps did not yet exist, would limit the outcry among the American populace and increase the likelihood of receiving some leeway in expanding his beloved Air Corps. It was in this way that he hoped to free aircraft from their position as *tactical* resources – ones supporting military action in the field – towards a goal of

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<sup>29</sup> Ibid., 43.

<sup>30</sup> Quoted in Ross, 42.

*strategic* action, in which they themselves would bring the war to the enemy and undermine their ability to continue fighting at all – not simply in a particular skirmish.<sup>31</sup> He was far from an original or even careful thinker, but he was a skilled public relations artist, and the history must frame his theory within the understanding of the inter-service and political – rather than simply the theoretical – challenges that he faced.

And it would be Mitchell's battle for this goal that would live on in the minds of the leaders of the USAAF. LeMay met Mitchell only once, around 1930 when LeMay was still a second lieutenant, and recalls that, while they "held him in very high regard," "we didn't say 'this is a very holy man'; we just believed in what he said."<sup>32</sup> It was not his contention that cities should be gassed that animated LeMay and others, but his staunch defense of the idea of strategic air power, and therefore the necessity for an independent, unified command structure to organize a proactive, rather than reactive tactical support force.

### ***A Doctrine Enshrined***

As Douhet and Mitchell were busy publicizing their views on the future of air power, the U.S. Army Air Corps was concerned with the immediate definition of the role of the airplane. Like the two theorists, the Air Corps was interested in the independence of their branch, but before that could be achieved, they had to develop a practical fighting doctrine. Through the 1930s, the Air Corps was still a part of the Army, and therefore had no official mechanism for establishing doctrine. The elite officers of the Air Corps went through the Army's West Point Academy, and the Army resolutely maintained that the

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<sup>31</sup> LeMay, *Superfortress*, 13-14.

<sup>32</sup> *Ibid.*, 14.

airplane was to serve a tactical purpose in support of ground forces, and thus did not need a distinct fighting policy.<sup>33</sup> Thus, the best sense of directions that the Air Corps received was from the semi-formal air strategies taught in the Air Corps Tactical School (ACTS).

It is hard to overstate the absolute rejection of an independent air force that animated all American centers of power during the inter war period. As late as 1935 – by which point, as we will see, ACTS had formulated a coherent argument for independence – former Secretary of War Newton D. Baker presided over a review board which categorically denied the merits of Air Corps independence. The board’s conclusions would guide President Roosevelt’s thoughts on the Air Corps until 1939, when the specter of a world war fought with increasingly powerful weapons became impossible to discount. But back in 1935 Baker found that “the ideas that aviation, acting alone, can control sea lanes, or defend the coast, or produce decisive results in any other general mission contemplated under our policy are all visionary, as is the idea that a very large and independent air force is necessary to defend our country against attack.”<sup>34</sup>

Baker’s rejection of strategic bombing stemmed from two separate views. The first is the adherence to the classical view of ground forces acting as the primary actor in military matters, which shunted air forces to tactical support roles. Any moves towards independence or the development of bombers ill suited to support roles would be rejected. The second was that of 1935 American isolationism and its intent on staying out of conflicts on the European continent. Thus, any weapons developed would have to be of a purely defensive character. Mitchell understood this when trying to sell aircrafts as

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<sup>33</sup> Haywood S. Hansell, *Strategic Air War against Japan* (Maxwell Air Force Base, Ala.: Airpower Research Institute, Air War College, 1980), 3.

<sup>34</sup> Wesley Frank Craven and James Lea Cate, *The Army Air Forces in World War II, Vol. VI: Men and Planes* (Washington, D.C.: Office of Air Force History, 1985), 3.



coast defenders. However, Baker rightly pointed out, that a large independent force is hardly necessary if the only purpose was coastal defense. It was this line of reasoning that compelled the Army General Staff at the same to time to strictly limit (other than the thirteen prototypes already built) the Air Corps' production of the B-17, its cutting edge long range and high altitude bomber, and to be wary of any sort of advanced bomber development. After all, the bomber was "distinctly an airplane of aggression" incapable of fitting "in the armament of a nation which has a National Policy of good will and Military Policy of protection, not aggression."<sup>35</sup>

Writing as he did in 1935, it is hard to blame Baker for this perception of the Air Corps. On the one hand, the policies emerging from ACTS increasingly suggested that airplanes, attacking strategically, could single handedly end an armed conflict. On the other hand, a look at the actual strength of the Air Corps by 1936 showed a force of only 946 planes on hand, not even accounting for the number of them that were actually serviceable or bordering on obsolete.<sup>36</sup> It should come as no surprise, then, that Baker was skeptical of the Air Corps' ability, or that, given his recommendations, a senior airman in 1939 would describe the Air Corps as a "fifth rate airforce."<sup>37</sup>

Still, on the eve of America's entry into the war, some important changes had occurred to the Air Corps, most prominently the June 20<sup>th</sup> 1941 decision to restructure the Corps as the Army Air Force, with General Henry "Hap" Arnold serving as its Chief of Staff. It was still not the complete independence that the airmen had desired, because the Air Force remained subordinate to the Army – not coequal. But it offered Arnold his own dedicated air staff, a unity of command over all Army aircraft, and a tentative position on

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<sup>35</sup> Sherry, 61.

<sup>36</sup> Ibid., 171.

<sup>37</sup> Quoted in Craven and Cate, vol. VI, 173.

the Joint Chiefs.<sup>38</sup> The other major change was Roosevelt's January 1939 allocation of some \$300 million to bring the (then still) Air Corps up to 5,500 airplanes, which they hoped to amass by June 1941.<sup>39</sup>

The nascent USAAF had thus barely been established and was still a jumble of poorly defined channels of command when, on July 9<sup>th</sup> 1941, Roosevelt asked the Army and Navy to prepare "an estimate of overall production requirements required to defeat our potential enemies."<sup>40</sup> On August 4<sup>th</sup>, the Army asked the AAF to prepare an Air Annex, and the responsibility fell upon Col. Harold George, onetime ACTS instructor and the new chief of the just-formed Air War Plans Division of the AAF, to produce the document, a mere seven days before it was due on August 12<sup>th</sup>. George would assemble a team of three other men – Lt. Col. Kenneth Walker, Major Larry Kuter, and Major Haywood "Possum" Hansell – all former instructors at ACTS, and future leaders of the AAF's efforts in WWII.<sup>41</sup> The document they produced, titled AWPD-1, would go far beyond what was requested of them and, by its addition into the War Department's report, would become the first 'official' AAF doctrine. "The result," as Hansell would write years later, "was a straightforward product of air doctrine produced at [ACTS]," one that would become the basis for the AAF's wartime policy and the marker against which its conduct would be assessed for years to follow.<sup>42</sup> In order to understand how the Air Force found itself firebombing Japanese cities less than five years later, we must first appreciate the multitude of factors which determined the dominant ACTS doctrine by the

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<sup>38</sup> Ibid., 24-5.

<sup>39</sup> Ibid., 173.

<sup>40</sup> Quoted in Hansell, 5.

<sup>41</sup> Hansell, 5.

<sup>42</sup> Ibid.

mid 1930s, and the circumstances of the subsequent crystallization of the first official Army Air policy by dedicated ACTS instructors in 1941.

### ***Air Corps Tactical School***

The first ACTS report of consequence, at least as far as this discussion is concerned, was the manual *Employment of Combined Air Forces*, released in 1926. Using concepts derived from Douhet, this was the first Air Corps document to systematically reject the tactical role of airplanes in favor of a strategic attack on the enemy's population centers and "vital points."<sup>43</sup> The definition of these "vital points" would prove to be a crucial undertaking both in the planning and execution of the war itself and different "target systems" would occupy higher priorities as situations and intelligence changed. On the purely theoretical basis of early ACTS publications, these vital centers were discrete targets such as power systems, transportation networks, and industrial factories, and were to be attacked using precision munitions. The demolition of these targets would serve two complementary objectives. The first was the actual destruction of the productive capacity of the enemy, and thus their ability to continue waging war. The second was to terrorize the population, through both the direct bombing of cities and the indirect withholding of necessary municipal services through the destruction of infrastructure, which would undermine the *will* to continue fighting.<sup>44</sup>

The 1926 policy centered on attacking both vital centers and populations themselves, and this latter target brought the condemnation of the Army, Navy, and

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<sup>43</sup> Crane, 20-21. Nor is it a coincidence, I think, that this report came out when it did, just as Billy Mitchell was resigning from the Air Corps in February 1926.

<sup>44</sup> The implications and intentions of the ACTS doctrines are well discussed in the literature, and I will explore the evolution and impact more below. But for more information on the personalities and culture of airfare during the interwar period, see Sherry 47-69; Schaffer 28-34; Werrell 13-18; and Crane 18-22.

Congress, a three-pronged attack the Air Corps was in no position to withstand, especially given the damage Mitchell had just done and the Corps' continued need for financial and political support.<sup>45</sup> Likewise, as much as the Air Corps bragged about the strategic capabilities of the airplane, they recognized that they were in no practical position to recommend a policy that required innumerable planes indiscriminately (and inaccurately) blanketing a city with munitions that they could ill afford to waste. Even by 1941, when the Army Air Force was significantly better supported than the Air Corps of the early 30s, Generals Ira Eaker and Hap Arnold wrote that “bombers in far larger numbers than are available today will be required for wiping out people in sufficient numbers by aerial bombardment to break the will of a whole nation.”<sup>46</sup> It was simply a question of efficiency – one that admittedly left open the possibility of this sort of “area” or “morale” bombing should the sufficient resources avail themselves.

The new concept that developed in the place of bombing city centers was based on a theory of “bottleneck” or “choke points” in industry and infrastructure. These would be specific targets whose destruction would cause an avalanche effect and bring down increasingly large sectors of society and industry in its wake. As the core of the new *precision* strategic targets, the moment of inspiration for this realization has been highly mythologized in the histories. Some credit ACTS instructor Donald Wilson for the Eureka! Moment, when he realized in 1933 that entire railroads would be stopped by the lack of a single lubrication ingredient.<sup>47</sup> Others attribute the idea to the simple recognition of the great strain that war and depression had placed on all economies, and that the destruction of the economy's vital points would mean sure devastation for the entire

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<sup>45</sup> Crane, 19.

<sup>46</sup> Schaffer, 29.

<sup>47</sup> Crane, 20.

economy.<sup>48</sup> Still others refer to a 1935 power failure in New York, and the thought that an attack on power stations with only eighteen bombers would bring an entire city to its knees. There is also the well cited example of a flood in a Pittsburgh spring manufacturing plant which caused a drop in production of controllable pitch propellers nationwide.<sup>49</sup>

I go through these different attributions because the doctrine of precision strategic attacks became the watchword of American aerial doctrine in WWII. Subsequently, its invention has almost become the stuff of legend, established as the great moment of clarity in American war planning, and thus as sacrosanct. But a look at the variety of possible sources of inspiration for the plan shows on the one hand that all – or none – of them might have been true, but more importantly, that the choice to abandon area bombing in favor of precision strategic bombing *was not* a moment of divine inspiration, but rather was influenced by any number of specific forces prevalent in the late 1920s and 1930s, ones that were bound to change, transforming practice with it.

Nonetheless, in line with the evolution of strategic bombing, the subsequent manuals in 1931 and 1934 saw ACTS doctrine slowly shy away from direct Douhetian attacks on civilians. In 1931 cities became “political objectives” not to be targeted without careful considerations of the collateral damage and public relations crisis that would ensue. The 1934 policy took a small step back, recognizing that attacking cities – especially western ones with high standards of living – offered an exceptional opportunity for undermining civilian morale. While the public would likely find it

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<sup>48</sup> Schaffer, 29.

<sup>49</sup> Werrell, 15; Sherry, 54. Indeed, this thinking would continue to dominate AAF thinking through the ETO. The infamous and extremely costly botched raid on Schweinfurt was aimed at destroying a crucial ball bearings plant there, without which, the German aircraft industry would have come to an absolute standstill.

distasteful, the Air Corps could not ignore the fact that all major powers were preparing similar war plans, and thus the option had to remain on the table. Nevertheless, they were convinced that “a more desirable and more effective approach is available” involving strikes on specific sites “upon which the social life of the nation depends,” such as transportation, power, or food stocks. In 1935 this view was streamlined, rejecting area bombing as inefficient and internationally abhorred, while noting that precision bombing could accomplish the same objectives of destroying the capability and will of the people more proficiently and humanely, by attacking the (now expanded) list of “transportation facilities and sources of energy and raw materials.” By 1939, ACTS lectures clearly laid out that “direct attack of the civil populace...is rejected...due to humanitarian considerations,” while the target list grew further to include petroleum and financial facilities.<sup>50</sup>

As alluded to above, the adoption of the “vital points” concept ushered in the notion of *precision* strategic bombing, one that relied on the bomber’s ability to consistently place his munitions within a 100 foot by 100 foot target area – the estimated size of an average factory.<sup>51</sup> The move towards this level of precision in the ACTS air theory had as much to do with political and public relations imperatives to avoid any intimation of targeting civilians as it did with the technological conditions that prevailed in the 1930s – especially towards the end of the decade.<sup>52</sup>

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<sup>50</sup> Crane, 21-22; Werrell, 16.

<sup>51</sup> Ross, 50.

<sup>52</sup> Sherry, 57, 141. For discussion of the American public’s perception of bombing see George Hopkins, “Bombing and the American Conscience During World War II,” *The Historian* 28 (May 1966): 451-73. Hopkins explains that through the 1930s, American public opinion was nearly uniformly against the idea of bombing in general, and specifically against bombing civilians. By the time the U.S. entered the war, however, this attitude had reversed and polls showed that the “vast majority of Americans favored the strategic bombing campaigns against Germany and Japan” (451). This analysis is supported by the lackluster response to both the bombings of Dresden and Tokyo. In both attacks, civilian centers were the

Most influential was the 1923 development of the first gyroscope stabilized bombsight by the Norden Company. Until the development of the Norden bombsights, bombardiers had to “aim” their bombs optically, but the increasing speeds and altitudes of modern bombers made it near impossible to accurately place the munitions. By the late 1930s Norden had developed the Mark XI bombsight, which employed an automatic tachometer (speed sensor) and a gyroscope attached to a rudimentary computer. The bomber would align the target with the crosshairs of his viewing telescope, and the bombsight would take over the autopilot of the aircraft, correct for the pitch and yaw, maintain airspeed and altitude, and calculate the proper trajectory of the bomb. This was the technology that the USAAF and Navy entered the war with in 1941. It was considered such proprietary knowledge that it was classified as Secret, and downed pilots were instructed to put “two rounds with a .45 caliber service pistol” through the unit rather than have it captured.<sup>53</sup>

Tactical School instructors hoped to capitalize on this technical advantage, and enshrined precision bombing – a capability at that time only possible with the Norden,

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primary targets of the bombings, and yet the American press was triumphant, extolling the numbers of deaths and the damage caused. (For instance, the *NY Times* on February 15<sup>th</sup> filled half the front page with discussions of the previous day’s attacks, glibly retelling that “Dresden’s fires were still blazing when 450 American Flying Fortresses...arrived...to augment the destruction” (Feb. 15<sup>th</sup> 1945, page 3). Little outrage met the tiny addendum on page 6 the following day that reported on the 20-35,000 people believed to have been killed in the attack). Only a few of the more liberal and Christian magazines and newsletters debated the morality of the bombings (see Schaffer, 69 and 230n 25; Sherry, 263-4, 289-91).

There was particularly little sympathy for the Japanese, who, unlike the Germans, had actually attacked the U.S. at Pearl Harbor. Augmenting this disdain was highly racialized propaganda depicting Japanese as subhuman, supported by the horrifying stories of Japanese treatment of Allied POWs and their massacre of the Chinese in the late 1930s – particularly through aerial bombardment. Many historians credit this racism with stoking and legitimizing the bombing of Japanese civilians, attacks thought to be guided by “racist assumptions” as much as “operational considerations.” “Never,” Sherry contends, “was it thought appropriate to cripple the Renault plants making vehicles for the German army by causing “a serious loss of labor” among the Parisian masses” – a justification relied upon heavily in the bombing of Japanese cities (Sherry, 285); also, for the complete and authoritative study of American racist conceptions of the Japanese during WWII, see John W. Dower, *War Without Mercy: Race & Power in the Pacific War* (New York: Pantheon Books, 1986).

<sup>53</sup> Ross, 128-131.

and only in the daytime when targets were visible – as the cornerstone of their aerial bombing policy. Testing this new gadget through the 1930s from altitudes of 4,000-11,000 feet, the Air Corps became confident that they could drop bombs “into a pickle barrel,” and increasingly modeled their air strategy based on that conviction. Of course, almost no tests were done above the 16,000-foot ceiling that saw most of the bombing in Germany, let alone the 30,000-foot altitude achieved by the B-29 in Japan. Nor did the test-bombers have to deal with the adverse weather or anti-aircraft flak that would define wartime experience. Needless to say, even with the Norden, if clouds obscured the target, there was no way to accurately target it. The daytime precision bombing doctrine, then, was premised upon a perceived technological superiority that did not pan out as well as planners had hoped.<sup>54</sup>

LeMay recalls a telling interaction between himself and the derisively named “Great Minds at Wright [air force base],” the AAF training and testing ground. An

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<sup>54</sup> Ross, 132; Werrell 6-7; Sherry, 51-54.

Sherry has a particularly complex understanding of the interplay between strategic ideas and technology that created the ACTS doctrine. Ultimately, though, he concludes that this was a case in which “technology was the offspring, not the parent, of doctrine,” which I do not think is so clear (52). Sherry presents the straw man that new technology – bombsights and bombers like the B-17 with longer ranges that put enemy cities reach – made the new doctrine possible, only to undercut it by pointing out that the precision doctrine emerged before 1935, when the B-17 first flew. This is surely true, but a closer and more nuanced understanding of the different ACTS directives as well as the *perception* of the Norden turn the argument on its head. First of all, as we have seen, by 1926 ACTS was in favor of strategic rather than area bombing, but this decision was one of *negative* reasoning – they did not have the forces to attack a city, so they settled for something smaller. Not until the 1934 policy was a positive affirmation of the efficiency of attacking precision targets really affirmed. Even the dates attributed to the mythologized Eureka Moments are in the early 1930s. By that time, of course, the B-17 was already in the pipeline, having been submitted in late 1933 to a Air Corps proffer, and can thus hardly be considered only an idea.

More conceptually, however, the fact that the Norden was most tested on planes like the old B-18As (flying at under 150 miles per hour and below 12,000 feet) is a much more useful tool in understanding the abject failure of the ACTS doctrine in actual war conditions. It is exactly because the ACTS choices were so based on the practical and extremely fast-changing situation they faced – the technologies available to them, both for better and for worse – that the theories that emerged in the mid 1930s did not apply even seven years later. Sherry tries to establish the theory as predominate because he hopes to judge later USAAF actions against the standard it set. If he understands it, as I do, as emerging equally (if not more) from practical as from theoretical concerns, it is near impossible to make the (extremely farfetched) moral argument he proposes. It is unfortunate that he chooses to do this, because his analysis of the underlying context facing the Air Corps is very insightful.



experimental “mercury-vapor bombsight” had been created whose gyroscope locked-in its settings based on stabilization earlier in flight, thus freeing aircraft of the dangerous need to fly in “straight-and-level” over a well-defended target. The downside was that it was inherently less accurate, because the calibration was based on earlier flight conditions. “The eventual verdict” at Wright was “that – out *there* – that you could bomb much more effectively with the regular Norden bombsight.” LeMay tried to explain that in combat conditions “you’re not flying straight-and-level every second. Your speed is jumping up and down...and sometime demanded changes in position. Thus the so called experimental...sight gave us infinitely better results.” To which the response was “you don’t know what you’re talking about. The thing is not as accurate as the one we are giving you *now* [i.e. the Norden].”<sup>55</sup> Inevitably, the airmen actually executing the war would need to adapt to the conditions as they experienced them, not as the ACTS instructors or other armchair warriors imagined them.

The requirement to bomb during the day (so that the Norden could provide its tactical advantage) placed the airplanes at greater risk for interception by enemy fighters and flak. One possible response was to simply create a plane that could fly higher, faster, and further than any pursuit plane, thus putting it out of range of both flak and fighters. This would be the inspiration for the “Very Heavy Bomber,” what would eventually become the B-29, which first flew a decade later, in late September 1941. But in the 1930s this was still a long way off and so technically advanced so as to make it unimaginable (after all, they had barely just created the B-17, though it too was incredibly advanced for its time and offered a very high cruising altitude). Similarly

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<sup>55</sup> Curtis E LeMay and MacKinlay Kantor. *Mission with LeMay: My Story* (Garden City, NY: Doubleday, 1966), 308-9.

difficult to conceive of was sending along a fighter escort to protect the bombers, because no fighter in existence had anywhere near the range of a bomber, and it was thought to be impossible to develop one. A bomber on a daylight mission, then, would need to be heavily armored to withstand flak hits and a self-defending craft able to engage with enemy fighters on its own (or, more correctly, in combat formation).<sup>56</sup>

Thus emerged the (later, much maligned) policy of the unescorted bomber and the claim – out of practical necessity, not inherent strategy – that “the bombers always get through.”<sup>57</sup> It was not a claim as much as an imperative, as a 1924-25 ACTS bombing text explained, “regardless of the opposition by the enemy...[the bombing crew] *must* find a way to reach their objective...no matter how numerous or how powerful [the defenses] may be, they will not prevent the bombardment from accomplishing its assigned missions.... Bombardment will reach and destroy its objective [italics mine].”<sup>58</sup> Until the 1930s, this view was upheld with the clear understanding that, “bombers opposed by enemy fighters would have to be supported by pursuit escort.”<sup>59</sup> However, with the major advances in technology leading to the B-9 and B-10 high-speed bombers, as well as the promising results of early B-17 testing – with no comparable work being done on pursuit or fighter aircraft – the consensus emerged that U.S. pursuit aircraft could no longer keep up with their modern bombers. The hope would become that neither would enemy fighters.<sup>60</sup>

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<sup>56</sup> Werrell, 16-17; Tillman, *Whirlwind*, 18. (In contrast to Sherry, Tillman recognizes that the “technological tail wagged the doctrinal dog”).

<sup>57</sup> James C. Gaston, *Planning the American Air War: Four Men and Nine Days in 1941: An Inside Narrative* (Fort Lesley J. McNair, Washington, D.C.: National Defense UP, 1982), 78.

<sup>58</sup> Quoted in Werrell, 12.

<sup>59</sup> Thomas H. Greer, *The Development of Air Doctrine in the Army Air Arm, 1917-1941* (Washington, D.C.: Office of Air Force History, 1985), 58.

<sup>60</sup> Already by the 1930s, this hope should have been squashed by events in the Sino-Japanese war (beginning in 1931), The Spanish Civil War (beginning in 1936), and eventually the Battle of Britain in

The development of the precision strategic doctrine from practical and conditional needs, however, would pit the actual planners of war in 1941 and on against another practical concern. Even Douhet, when discussing attacks on cities, recognized that the destruction of certain targets is more effective than others. “The selection of objectives,” he said, “the grouping of zones and *determining the order in which they are to be destroyed* is the most delicate task in aerial warfare [italics mine].”<sup>61</sup> The ACTS instructors stumbled upon the idea of precision attacks, and using local examples (New York power, Pittsburgh spring manufacturing, railroad lubricants...) speculated about which “vital centers” would be most vulnerable in Germany, and later Japan. However, post-war studies found that although military intelligence had some data, very little was actually understood about the German economy and absolutely nothing was known about Japan – which had been particularly careful to keep a cloak of secrecy over its industrial growth.<sup>62</sup> Hansell would sum up the process in a lecture after the war. Target selection,

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1940 (Tillman, 17-18). While there is some evidence that the “bomber always gets through” policy was a theory adopted from Douhet, the Air Corps’ dogged adherence to the claim, even in the face of extremely persuasive empirical evidence, is compelling support for a more practical understanding of the pursuit aircraft question. This is further reinforced by the fact that the inadequacy of the self-defending bomber was soon recognized, but was addressed by simply adding better armor and more defensive guns, again because no pursuit aircraft were available, and the only other alternative – to attack at night – would undermine the crucial precision doctrine (Greer, 117). The notion that the bomber could defend itself is made all the more absurd when considering that Haywood Hansell, a chief ACTS theorist and adherent to precision bombing, admits that at the time of the policy’s inception, “we had no power turrets, no .50-cal. defensive guns, no accurate gunners” (Ibid., 60). That is, no feasible way to actually allow the planes to defend themselves.

Still, it is hard to blame the planners for their conclusions. Left with little alternative, they relied on the fact that, theoretically speaking, the bomber was a more advanced aircraft and, if properly outfitted and arranged, could overcome fighter opposition. They had no way of knowing in 1935 that radar would advance by such leaps and bounds in the next decade, making incoming bombers more easily identified, anticipated, and thus more reliably intercepted. In a truly remarkable statement made years later, Hansell contends that “If our air theorists had had knowledge of radar in 1935, the American doctrine of strategic bombing in deep daylight penetrations would surely not have evolved” (Ibid.).

<sup>61</sup> Quoted in James Trapier Lowe, *A Philosophy of Air Power* (Lanham, MD: University of America, 1984), 98.

<sup>62</sup> Crane, 20; Sherry, 55-56; Gaston, 32-33.

For example, in 1940, General Arnold created the Strategic Air Intelligence Office, and placed Hansell in charge of intelligence about economic-industrial systems – exactly the information crucial for

he explained, “was essentially a problem for industrial economists, but no economists were available and no money was available to hire them, in view of the War Department’s attitude toward [strategic targeting]. So the School did the best it could.”<sup>63</sup> Later in the war, the actual task of discovering and ranking these targets would fall upon Operations Research groups loosely tied to the military, ones brought in to objectively assess the worth of each “target system” (i.e. aircraft production, power, transportation, etc...), leading to conclusions strikingly different than the theories of pre-war planners. That is, when *actual* efficiency was calculated using real data and accounting for tangible constraints, rather than speculation based on the prevailing circumstances of the late 1930s, Air Force actions would change radically.

### ***AWPD-1***

On August 4<sup>th</sup>, 1941, Col. George and his team embarked on the seemingly impossible task of estimating in seven days the production requirements the Air Force

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properly selecting industrial “choke-points.” Hansell knew a lot of information about German industry, and when writing AWPD-1 in 1941, he came to the conclusion that the German economy was “under heavy strain” from wartime production, which would thus make it easier to seriously interrupt production by focusing on the most stressed targets. But the U.S. Strategic Bomber Survey, which reviewed the war effort after German surrender, came to a very different conclusion. It found that only 49 percent of Germany’s GNP was being dedicated to the war as of 1941, a number that would be easily increased to 64 percent in 1944. Thus, the economy was nowhere near its capacity at the time, which fundamentally alters the target priorities.

Against Japan this deficiency would be even more amplified. Not until October 13, 1944 did the USAAF get a photoreconnaissance flight over Japan. That is, until October of 1944 – after the XX Bomber Command had been attacking Japanese territories from China and the XXI Bomber Command was already established in the Marianas and was supposed to be attacking precision targets on the Japanese mainland – the USAAF had almost no idea what the actual distribution of Japanese industry and manufacturing looked like! The pictures that the *Tokyo Rose* took that day were turned into the Command’s targets (LeMay, *Superfortress*, 99-100). Before then, I am honestly unsure of how targets were chosen and evaluated with any sense of accuracy. It would seem, rather, that in the absence of concrete targets, Hansell and the leaders of the USAAF attacks against Japan fell back upon Douhet and Mitchell’s logic of bombing simply to sow chaos and destruction, display American air superiority, and undermine civilian morale (albeit while sticking to precision bombing techniques). Looked at it this way, very little changed when LeMay took over in January.

<sup>63</sup> Greer, 80-81.

needed to defeat its “potential enemies.” Compounding the difficulty was the understanding that it was impossible to come to a conclusion on force numbers without knowing what they would be needed for, i.e. without establishing a strategic policy for the U.S. war effort. In 1941, regardless of the myriad statements emerging from ACTS over the previous decade, the War Department conceptualized the Air Force largely in tactical terms – in support of Army and Navy ground operations. The production requirements to soften resistance pockets or clear out an artillery position before a ground assault were vastly different – both in numbers and in aircraft type – from those of strategic bombing. So in just seven days, George, Kuter, Walker, and Hansell would need to establish an official strategy of the just-formed USAAF, which until that point had been defined by documents emerging from the unofficial Tactical School statements, make sure it was in line with ABC-1<sup>64</sup> and RAINBOW no. 5<sup>65</sup>, and come to a conclusion on force requirements, all while trying to adhere to their own well-entrenched understanding of the best way to employ the aircraft.<sup>66</sup> It is not surprising, then, that they simply applied the accumulated knowledge of ACTS doctrine, with all its shortsightedness and practical limitations.

What emerged by August 12<sup>th</sup> was likely not at all what the War Department had in mind. It adhered to the “Germany First” policy and did not mention requirements versus a potential attack against Japan. But the fundamental outlook of AWPD-1 was the

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<sup>64</sup> ABC-1 was an early 1941 U.S. Staff Committee and British Chiefs of Staff agreement stipulating that, should the U.S. have to enter the war, it would be fought on the basis of “Germany First” and the protection of the Western Hemisphere. The role of aerial warfare was primarily to be aimed against military (tactical) targets, all in preparation for an eventual invasion of the continent. Only after Germany’s surrender would the war move to the Pacific, where again invasion would be the official operating thesis, though by then the Air Force had other plans.

<sup>65</sup> Basic War Plan RAINBOW no. 5 was a Joint Army-Navy war plan that conformed with the understanding reached with the British in the ABC-1 agreement.

<sup>66</sup> Greer, 123-24; Hansell, 5-6.

ability of air assault to compel surrender on its own. George and his team figured that strategic attacks would serve to weaken the enemy nation in preparation for a ground assault regardless, and in order to placate the Army, they “appended a provision for [tactical] support of an invasion if necessary.” Instead of focusing on military targets, AWPD-1 focused on the destruction of four systems. The overriding objective was the “neutralization of the German fighter force” – both its planes and the factories producing them. The control of the skies that would follow would allow unimpeded access to the other three objectives: power, transportation, and oil and petroleum systems. Interestingly enough, the plan stipulated that should German morale be on the brink of collapse, it might be useful to employ area bombing tactics and attack cities, to strike a fatal blow to enemy resistance (a long known war theory called *Todestoss* [lit. deathblow]<sup>67</sup>).<sup>68</sup>

Amazingly enough, General Marshall, Secretary Stimson, and the Joint Army-Navy Board accepted AWPD-1 – a plan that was in significant contradiction to official American war plans. Even more shocking were the production requirements they appear to have accepted. Upon final calculation of bombing accuracy, payload, and target characteristics, AWPD-1 called for almost 62,000 aircraft to be manned by just fewer than 180,000 officers and 2 million enlisted men.<sup>69</sup> At that point in 1941, the AAF had not even reached its authorized limit of 152,000 men, and the entire Army itself was made up of just over 1.5 million men!<sup>70</sup> Whether this plan was accepted because the war leaders were pressed for time (AWPD-1 was submitted at the very last moment), because

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<sup>67</sup> Crane, 26.

<sup>68</sup> Greer, 125-26; Hansell 6.

<sup>69</sup> Ross, 51.

<sup>70</sup> Gaston, 42.

they did not pay much attention to its content<sup>71</sup>, or because the Army was beginning to have a change of heart regarding the role of aviation, the fact remained that USAAF strategic bombing was now firmly established as official policy. One year later, on September 9<sup>th</sup>, 1942, AWPD-42 was assembled, this time not as a plan against *potential* enemies, but because the U.S. had entered the war, it was an accounting of actual requirements. It differed little from AWPD-1 in strategy, other than including a short section on Japan, listing eight target systems that might prove beneficial to attack. Still, it was too early and far too little was known about Japan to prepare real estimates.<sup>72</sup>

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On the surface, then, the evolution of ACTS doctrine and (for the most part) its official sanction as AWPD-1 appears to be a clear repudiation of targeting or intentionally terrorizing enemy civilians and a rejection of Douhet and Mitchell's contentions that the air war obviated the distinction between combatants and non-combatants. But both Schaffer and Sherry point out that, when analyzed carefully, not much had changed from the "prophet's" understandings of the end game of war. True, the tactics themselves has been altered significantly – civilian casualties were to be avoided, precision doctrine and all that it entailed was adopted – but these changes appear to have

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<sup>71</sup> Upon submitting the full report, the Joint Board remarked that "Air Forces...can render valuable assistance, but it can be accepted as an almost invariable rule that only armies can win wars" (quoted in Hansell, 6).

<sup>72</sup> Particularly absent from both AWPD-1 and -42 was any mention of the need for pursuit aircraft. This again reinforces the practical limitations constricting the air planners. In creating AWPD-1 it was a mix of time constraints, policy restrictions, limited knowledge, and practical limitations of pursuit aircraft technologies. By a year later, it was largely the latter restriction (especially because by 1942, the B-29 was in the works) that compelled air planners to stick to the notion of a self-defending bomber, even though years of observing the European air war had highlighted the success of German Luftwaffe interceptors in downing Allied aircraft. The point would really be driven home during the disastrous American raid on Schweinfurt on October 14<sup>th</sup>, 1943, a raid led by LeMay (which would inform his decisions in March of 1945) in which 60 unescorted Fortresses were lost, 17 suffered major damage, and 121 others were hit by German ground and air defenses (Greer, 126).

simply been a different response to the same question: How can we best end the enemy's ability to wage war? Douhet thought it was to totally decimate the city, while Mitchell was convinced that a few gas bombs would suffice. With the development of precision techniques and a keener appreciation of the Air Corps' limited resources, the Tactical School felt that "vital centers" and choke points would be the most efficient way to achieve their objective. Ultimately, whether the attack was directed at the civilians themselves or at the utilities that served them, the goal remained to make life unlivable for the enemy's population – both in fact and in psyche. Put another way, "Americans planned to use airpower independently to destroy strategic targets (industrial infrastructure), and the ultimate goal of this strategy was to bring about a collapse in enemy morale, defined as civilian morale."<sup>73</sup> That civilians themselves would not be the target did not change the fact that, to a great extent, their morale still was.

The true test of what defined the new policy would be whether the end goal was the morale of the population or its ability to make war. Crucially, this distinction was never fully appreciated by the ACTS theorists. In 1939, Muir Fairchild, an influential ACTS instructor, echoed Mitchell when he claimed that

The industrial mechanisms which provide the means of war to the armed forces, and those that provide the means of sustaining a normal life to the civil population, are not separate, disconnected entities.... If not electrical power, then the destruction of some other *common* element will render them *both* inoperative at a single blow. The nationwide reaction to the stunning discovery that the sources of the country's power to resist and sustain itself, are being relentlessly destroyed, can hardly fail to be decisive.<sup>74</sup>

The fact that both will and ability could be destroyed at once begs the question, because the time would come when this would no longer be the case, or at least the claim would be more tenuous. At that time, a decision would need to be made as to what was more

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<sup>73</sup> Alexander B. Downes, "Military Culture and Civilian Victimization: The Case of American Strategic Bombing in World War II," 17.

<sup>74</sup> Sherry, 55.



important: the steel factory itself, or the impression among its workers of whether or not it was safe to leave their homes. Contrary to that which is said about the clarity of American precision doctrine, this question cannot be answered by appealing to official policy, and it would be this dilemma which faced LeMay as he took over the XXI Bomber Command in January of 1945, and more markedly in late April of that year.

“Area bombing” was abandoned primarily for practical reasons of efficiency and the availability of technology which compelled the adoption of precision methods, though humanitarian concerns made it more attractive. As General Hansell, a leading proponent of precision bombing expressed, “the idea of killing thousands of men, women, and children was basically in contrast to American mores.” However, he was sure to add that “from a pragmatic view, people did not make good targets for the high explosive bomb, the principle weapon of the offense.”<sup>75</sup> But what would happen when new munitions, which were more effective against individuals and their homes, were introduced and began to occupy a central role in AAF tactics? It seems apparent that while the humanitarian limitation on collateral damage was an appealing and admirable aspiration, it played second fiddle to the technical limitations facing the airmen. Already discussed is General Arnold’s 1941 contention that too many bombers were needed to effectively destroy a city. The inverse is implicit, that should the requisite strength be available, there would be no moral apprehension among the leading airmen to attacking cities – though the public might need to be shielded from the truth.

By 1945 in Japan, LeMay had hundreds of B-29s under his command – a plane whose capabilities were just barely being imagined in 1941 – with more coming by the

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<sup>75</sup> Quoted in John H. Curatola, “No Quarter Given: The Change in Strategic Bombing Application in the Pacific Theater During World War II,” Masters Thesis, U.S. Army Command and General Staff College, 2002, Pg. 8.

day. After months of failed raids on the mainland, the notion that precision bombing was more efficient than *anything* came under serious debate. At that point, the only obstacle separating the XXI Bomber Command and all-out attacks on civilian centers – an option made much more attractive by the recently acquired M-69 incendiary bomb – was a legacy of USAAF policy and its apparent concern for human life. However, when briefly held up to scrutiny, this concern buckled under its inherent indecisiveness regarding the objective of aerial attacks.<sup>76</sup>

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<sup>76</sup> See Schaffer, 29-34 and Sherry, 53-56.

## **Part II: Early Operations Against Japan**

### ***The Twentieth Air Force***

The Twentieth Air Force, established April 4<sup>th</sup> 1944 to oversee the B-29 combat groups in the Pacific Theater, was not your regular AAF command, simply following the Nineteenth Air Force in the date of its incorporation. In fact, there *was no* Nineteenth Air Force, or Eighteenth, or even Sixteenth. The Twentieth Air Force was to be General Arnold's own command, answering directly to his office in Washington. So to distinguish it from the other "numbered air forces," Arnold chose to jump it up to the Twentieth.<sup>77</sup> But it was not just for vanity. The projected air campaign against Japan would be unlike any ever waged before, with an airplane whose capabilities were a pipedream only years earlier, and Arnold was intent on learning from organizational mistakes made over the two years of air combat in Germany.<sup>78</sup> The Twentieth would be qualitatively different.

After Roosevelt's 1939 volte-face on airplane research and development, General Arnold took it upon himself to bring the Air Corps up to speed with its potential enemies. He immediately contracted Consolidated Aircraft to produce what would become the B-24 Liberator, the sister of the B-17 in the European theater and assigned a committee to determine the specifics of a plane that would exceed even the modern B-17 and B-24: the "*super* strategic," "Very Long Ranger (VLR)" or "Very Heavy Bomber (VHB)." The specifics of this revolutionary aircraft will be discussed later in conjunction with the technical aspects of the incendiary bombing of Japan; for our purposes now, the origins of the plane will suffice. By May of 1940, the over 141-foot wingspan Boeing Model 345 had been presented to the Air Corps and it promised nearly 5,5000 miles in range and

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<sup>77</sup> Hansell, 27.

<sup>78</sup> Sherry, 119-20.

three times the bomb load of a B-17. Just under four months later, the Air Corps put down \$3.6 million for two Model 345s, designating them the XB-29. A full-scale mock-up was tested in a wind tunnel in April of 1941, and the next month, the Air Corps – before even seeing it in the air - placed an order for 250 production B-29 aircraft. The first combat-ready B-29 would fly to the Pacific on March 26<sup>th</sup>, 1944 – fewer than four years after the initial blueprint was presented to the Air Corps. Desperate times called for desperate measures, and with the Luftwaffe wreaking havoc on British cities in 1941, there was the palpable sense within the United States Military that aerial attacks against the German mainland might need to be launched from the Western Hemisphere.<sup>79</sup>

Thus began Arnold’s “three-billion-dollar-gamble,” surely the most unorthodox procurement process the military had ever known – or likely has known since. By the time the first prototype B-29 took flight in September 1941, 1,664 planes had been ordered, with more to follow.<sup>80</sup> Given that Arnold staked his reputation on this plane’s success, it is no wonder that he fought to bring it under his control in what would become the Twentieth AF. But there were practical reasons as well, and it was these that would win over the Joint Chiefs of Staff.

The Pacific command structure was unlike that of the European Theater. In Europe, the U.S.-British Combined Chiefs of Staff (CCS) shared operational control, and established a Supreme Commander over the entire theater. The ABC-1 agreement had stipulated that, below the supreme commander, “all U.S. forces were to be under the immediate control of the commanding general of the U.S. Army Forces in Great Britain

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<sup>79</sup> LeMay, *Superfortress*, 28.

<sup>80</sup> Craven and Cate, vol. V, 6-7.

(or British Isles-USAFBI).”<sup>81</sup> Thus, the Eighth Air Force – the American’s primary strategic air unit in Europe – was assigned under the ultimate command of the Theater’s Army commander. The arrangement under the CCS led to two outcomes – one favorable and one unfavorable – that would shape Arnold’s thinking when establishing the Twentieth AF.

On the plus side, Britain’s Royal Air Force was co-equal with their Navy and Army (as of 1917, in response to General Jan Christiaan Smuts’ recommendation)<sup>82</sup>, and thus a real member of the CCS. The Joint Chiefs, particularly Chief of Staff of the Army General George Marshall, felt that General Arnold should be included in the CCS as the corollary to the RAF. Thus arose a unique opportunity for Arnold in his quest for Air Force independence:

“Within the War Department, Arnold was subject to Marshall as Chief of Staff, and...the stubborn facts of seniority and rank: Arnold had only received his third star with the advent of war and was not to be made a four-star general for another year. Within the CCS and JCS there was no hierarchy and legally, at least, the Commanding General of the Army Air Forces, the Army Chief of Staff, and the Chief of Naval Operations shared equal responsibilities and powers.”<sup>83</sup>

As a result, “in most important respects the AAF enjoyed tacitly a quasi-equality with the Army and Navy rather than the parity with the [Army Ground Forces] and [Army Service Forces] which was its legal status.”<sup>84</sup> Arnold would further build upon this “quasi-equality” with the institution of the Twentieth AF.

However, the setup also had a downside, one that undermined the very path to independence that Arnold advocated. The subordination of the actual fighting units to the Army theater commanders meant that the aircraft would be used primarily as tactical

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<sup>81</sup> Craven and Cate, *The Army Air Forces in WWII, Vol. I: Plans and Operations, January 1939 to August 1942*, pg 577.

<sup>82</sup> Lowe, 73.

<sup>83</sup> Craven and Cate, *op. cit.*, 265.

<sup>84</sup> *Ibid.*, 267.

support for ground operations, rather than in the strategic role for which they were envisioned and established. Rather than displaying the AAF's unique ability to influence the war's outcome, the Air Force would be implicated in reinforcing the dominance of ground forces. This is exactly what happened, as the Eighth AF was tied up in the summer of 1942 in support of OPERATION TORCH (the invasion of North Africa), and again would be diverted by the CCS OPERATION POINTBLANK, promising air support in preparation for the Normandy invasion (OVERLORD), starting from February 1944. U.S. air leaders would vigorously oppose this diversion and argue for the necessity of continuing strategic attacks, but to no avail.<sup>85</sup> The Air Force in Europe never succeeded in delivering a mortal blow to the Germans, and as we see from the response to POINTBLANK, it to some extent was implicitly blamed on the command structure which limited the AAF's latitude to employ strategic bombing to its fullest. This was the second

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<sup>85</sup> Sherry, 120; Max Hastings, *Overlord: D-Day and the Battle for Normandy* (New York: Simon and Schuster, 1984), 40-42.

Hastings argues, correctly, it seems, that POINTBLANK was actually a very positive result for the AAF. Especially its inclusion of the newly-delivered P-51 Mustang, a long-range pursuit plane decisively shown to be necessary after the repeated devastating USAAF losses sustained trying to destroy the ball-bearing plants at Schweinfurt.

Though it was largely a tactical mission, as the first major operation involving USAAF planes and tactics, TORCH offers us (just like it offered Air Force leaders in 1943) an initial critical view of the workings of ACTS doctrine in actual combat situations. As mentioned in chapter one, tactical aviation had largely been shunned in ACTS in favor of strategic doctrine, but it still had influential supporters and adherents (foremost was then-Colonel – later Major General – Claire Chennault, who would resign from the Air Corps to become Chiang Kai-Shek's air advisor and commander of the "Flying Tigers," only to be incorporated into the USAAF in 1942 as the Fourteenth AF [Charles F. Romanus and Riley Sunderland, *United States Army in World War II, China-Burma-India Theater: Stilwell's Mission to China* (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1953), 10; 17]) who taught the theory to pursuit aviators at ACTS. An interesting essay "A Question of Success: Tactical Air Doctrine and Practice in North Africa, 1942-43" by B. Michael Bechthold (*The Journal of Military History* 68.3 (2004): 821-51), analyses the growing pains of the Eighth AF as it struggled to adapt its tactical theory to combat situations in the early months of TORCH. Though largely the fault of a refusal by the Army commanders to relinquish absolute control of the tactical aircraft, Bechthold concludes that "American theory prior to the campaign... was found lacking in an number of areas when exposed to the crucible of battle" (850). Though the theories themselves were largely sound, their application was found wanting when the pristine conditions of ACTS training sessions were replaced by the travails of battle. And while almost no aspect of tactical doctrine was similar to precision doctrine, the same chasm between the theoretical assumptions and the hard realities of war would necessitate an ad-hoc reevaluation of precision policy and restructuring of precision practice, just as it did for tactical aviation during the TORCH campaign in Northern Africa.

impetus animating Arnold in his quest to establish the Twentieth Air Force. And he was helped along the way by the peculiar circumstances of the Pacific theater.

Contrary to the growing feeling within the Air Force, the prevailing wisdom within the Army was still that final victory over Japan would come only through an invasion of the Kyushu and Honshu islands. Still, a Navy defensive posture by sea would occupy the first few years of the battle until the Army could be freed from the Germany offensive (per ABC-1 agreement). Naval leaders, then, believed that they should be afforded the supreme command of the Pacific Theater because they would be there first (and thought they would be able to compel surrender by blockade, a notion at least somewhat borne-out by the United States Strategic Bombing Survey (USSBS) post-war analysis<sup>86</sup>). Army leaders, on the other hand, felt that since they would be leading the ultimate ground invasion, as well as operations in Japanese-controlled China, that they should receive the command. Faced with this rivalry, Roosevelt and the Joint Chiefs chose in March 1942 to accede to both. The Army was given command of the South West Pacific Area (SWPA), led by General Douglas MacArthur and the Navy received the Pacific Ocean Area, under the leadership of Admiral Chester Nimitz.<sup>87</sup>

Thus, as the B-29s began to trickle out to India for their participation in OPERATION MATTERHORN (more on this in a moment), a complex plan that involved shuttling B-29s from their bases in India, over the Himalayas, to forward stations in China from where they were to attack Japanese targets in China and Kyushu (the southernmost island on the Japanese archipelago), the problems of the distinct Pacific commands came to the fore. This was exacerbated by a third command, the Southeast

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<sup>86</sup> USSBS, "Summary Report (Pacific War)," 82.

<sup>87</sup> Sherry, 168-9; LeMay, *Superfortress*, 54-58; Hansell, 25-27.

Asia Command, this one not even residing in the American military, but with the British Admiral Lord Luis Mountbatten as Supreme Allied Commander. His American deputy was General Joseph Stillwell, commander of the China-Burma-India (CBI) Theater, who oversaw all U.S. forces in India, including the proposed B-29 bases in Calcutta. With B-29 bases also to be placed on the soon-to-be captured Mariana Islands, the B-29s were poised to be based in, operate out of, or attack locations in all three commands in the Pacific.

Traditional Army rules prized the unity of command, which placed all the resources of a specified *geographical* area under the control of the theater or area commander. This would pose two significant problems for Arnold, the AAF, and his hopes for the B-29. First of all, the B-29 was created specifically for its super-long range, the assumption being that it would be able to fly across and above command areas to attack far-flung targets. The importance for the Air Force was “unity at the target area” and it was irrelevant where the planes came from.<sup>88</sup> Indeed, it was often ideal that aircraft from divergent theaters converge at the same time over a target, which would spread thin the air defenses. Timing would be crucial and coordinating take-off times between remote commands would be complicated. It was also unclear how an area commander would be able to control a resource meant to operate outside of his command zone. Along those lines, it would be natural for theater commanders to want to employ B-29s in support of their actions in their areas, thus diverting the B-29 to a tactical role. This was unthinkable to Arnold, and attempts to avoid the co-option of the B-29 would continue to animate USAAF actions throughout the war.

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<sup>88</sup> Hansell, 25.



With no hope for a more orderly organization (Arnold would quip that he “could find no one out there who wanted unity of command, seemingly, unless he himself was made Supreme Commander”), it became apparent that another command would be necessary.<sup>89</sup> It took some convincing, but eventually the Joint Chiefs accepted the merit of the above arguments, and in their 155<sup>th</sup> meeting, agreed in principle to the creation of the Twentieth Air Force. The language of the agreement highlights an important shift in Army thinking solidified by the creation of the Twentieth. The new “*strategic* Army Air Force” would be “created to operate directly under the Joint Chiefs of Staff” and “commanded by the Commanding General, Army Air Forces, who will act as the executive agent” of the JCS [*italics mine*].<sup>90</sup> While still believing that invasion would be necessary, the experience in Germany convinced the Army that the Air Force bombers were more useful in a strategic – rather than tactical – role.

Still, unlike the Navy (which also unifies command under their top-echelon of officers, not mid-level area commanders), the AAF was based on land and so logistical support as well as “the provision of suitable bases...and the provision for their defense, [would] be the responsibility of the theater or area commander.”<sup>91</sup> Local commanders would thus put in a tough spot. They had to provide for and defend the B-29s, taking much-needed resources away from their own crews, but were not furnished with control of the airplane and would not receive any credit for its success. The agreement sought to limit this tension with the proviso that “should a strategic or tactical emergency” arise in the theater, the commander could “at their discretion, utilize the VLR bomber for

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<sup>89</sup> LeMay, *Superfortress*, 56.

<sup>90</sup> Memorandum by the Com. Gen., AAF, “Command and Control of VLR Bomber Forces in the War Against Japan,” undated, Entry 57 box 11, National Archives and Records Administration (NARA), College Park, Maryland.

<sup>91</sup> *Ibid.*

purposes other than their primary mission.”<sup>92</sup> This would be employed, for example, for the invasions of Iwo Jima and Okinawa, but bitterly contested by the AAF commanders every step of the way.<sup>93</sup>

Nonetheless, the ultimate commander was to be General Arnold, and in light of his intimate connection with the development of the B-29, his legacy as USAAF leader rested squarely on the shoulders of this plane and the Twentieth AF’s successes. This would lead to a complicated scenario in which Arnold on the one hand tried to be very involved in the day-to-day activities of the Bomber Commands, yet on the other hand was constrained by a failing health (Arnold had at least four heart attacks, one of which Arnold’s biographer has directly attributed to the pressures of the war) and the nearly 8,000 mile distance separating the Twentieth AF’s Washington HQ and the XXI Guam base.<sup>94</sup> Moreover, it was abundantly clear to Arnold and to the Joint Chiefs that this experiment was a test case for Air Force independence, and so aside from simply helping the war effort, it became critical that the success of the B-29 program be entirely that of the USAAF and in line with its agenda. Tactical support – especially to the Navy, its prime inter-service rival, which longed to get control of the lucrative B-29 program – was

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<sup>92</sup> Ibid.

<sup>93</sup> For LeMay’s feelings on the diversion to support the Navy invasions, see LeMay, *Superfortress*, 127-31. As for the requirement to build bases and supply resources, LeMay recounts that the Navy got off to a rocky start. Upon taking command of the XXI command in Guam in January of 1945 (Hansell had been in command since October of 1944), LeMay found himself in possession of the Navy’s construction priority list. Apparently, the Navy Seabees (nickname for the Construction Battalions, or CBs) thought that tennis courts and Marine recreational facilities were more important than adequate shelter or runways for the XXI. LeMay made quick work to change that. (LeMay, *Mission*, 340).

<sup>94</sup> Historians argue over how involved Arnold was in the daily activities of the command. His pressure was surely felt, and the extent to which an independent force depended on success was readily apparent. But it is pretty clear that while he recommended certain attacks and would respond to failures and delays, he was essentially helpless to stop an attack – especially if he was not told about it until it happened (like LeMay’s tactic on his March 9/10 raid on Tokyo). Crane seems to circumscribe Arnold’s influence (6), while Sherry and Schaffer try to show greater control exerted by Washington, as part of their larger goal of attributing culpability for U.S. actions to the military at large and trying to show that actual policy, rather than just implementation, underwent a major shift.

to be avoided at all costs. Victory needed to come from an awesome display of technical achievement, force, and destruction. And it needed to happen before the November 1945 timeframe set for the Army invasion of Kyushu.<sup>95</sup>

### ***MATTERHORN***

Arnold's sense of urgency, along with Roosevelt's political desire to support Generalissimo Chiang Kai-Shek led to the ill-fated OPERATION MATTERHORN. The Calcutta-to-Chengtu campaign was intended to allow for strikes on Japanese targets in Manchuria, Korea, and the southern Japanese island of Kyushu by April of 1944, before the anticipated capture of the Mariana Islands (Guam, Saipan, and Tinian), which had been pushed forward to June 1944. The intentionally short time span given to MATTERHORN and the rush to establish the more permanent bases in the Marianas tells us everything we need to know about the viability of the program.

It appears that much of the impetus for the move came from Roosevelt's conviction that "the initiation of the bomber offensive, and even measures in the preparation therefore, [would] tremendously stimulate Chinese morale and unify the Chinese people under the leadership of Chiang Kai-Shek."<sup>96</sup> Roosevelt's hedge of "even measures in the preparation" for the attack shows the extent to which he realized that this

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<sup>95</sup> Hansell, 48; Sherry, 258; Thomas R. Searle, "It Made a Lot of Sense to Kill Skilled Workers": The Firebombing of Tokyo in March 1945, *Journal of Military History* 66 (2002), 112-13; Thomas M. Coffee, *Iron Eagle: the Turbulent Life of General Curtis LeMay* (New York: Crown, 1986), 144-46.

Coffee cites a particularly telling memo written from Arnold to General Giles in February 1945 (when Arnold was recovering in Florida from his fourth heart attack and Giles was de-facto Chief of Staff of the USAAF. Complaining about a recent newspaper article that reported the Navy getting 1,500 airplanes over mainland Japan, while the XXI BC was proud when they could get over 100 over the target. Arnold worried that he "would not be surprised any day to see the control of the 20<sup>th</sup> Air Force pass to either Nimitz or MacArthur" (quoted in Coffee, 144-45). This of course, would mean the demise of Arnold's career and the hopes for an independent air force in his life.

<sup>96</sup> Quoted in Craven and Cate, vol. V, 17.

was a foolish use of resources, and unlikely to amount to much in terms of bombing results. The rationale for attacks out of Chengtu was based largely on a November 1944 report on strategic targets in Japan by the Committee of Operations Analysis (COA) – a group formed by General Arnold in December 1942 to study and decide upon bombing targets that fulfilled the AAF’s notions of strategic “vital centers.”<sup>97</sup> The report identified six strategic targets – one of which was the steel industry – easily crippled by the destruction of coke ovens, which were highly concentrated in locations within the range of a B-29 in Chengtu. The appeal of cutting off the steel supply was that it was one of these theoretical “choke points” from ACTS doctrine, one that would immobilize the rest of industrial production that depended on steel as raw material.

Using Roosevelt’s political desire to support the Generalissimo, Arnold pushed for the immediate deployment of the XX Bomber Command to India, intent on showing off his beloved plane’s capabilities and legitimizing its expense and the new command built around it. To lead the group, Arnold tapped General Kenneth Wolfe, the man who had guided the B-29 program through development to production, and who was seen as a brilliant engineer, but not a particularly innovative commander.<sup>98</sup> His choice reflected the state of the B-29 as it entered service. Roosevelt had promised Chiang Kai-Shek that if the Generalissimo could get runways built (and he did –with half a million laborers crushing rock and laying 6-foot thick runways by hand),<sup>99</sup> the planes would arrive in mid April. And yet by March, no planes were ready for combat. What followed in the next five weeks has been called “the Battle of Kansas” (the locations of the B-29 plants)

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<sup>97</sup> Craven and Cate, vol. V, 16. The COA would be imperative in the evolution of USAAF doctrine, and will be discussed at length next chapter.

<sup>98</sup> Sherry, 178.

<sup>99</sup> Werrell, 97.

during which the B-29 program was put into hyper-speed, and succeeded in getting the planes out in time.<sup>100</sup> The downside was that the new plane, already rushed through development, would need even more flight-line maintenance and modification. Fifty-four major modifications were made to every B-29 produced in 1944, and over the course of the war, more than 1,000 modifications would be considered, two thirds of which were acted upon.<sup>101</sup> Wolfe would be the perfect man for “shaking down the plane” – to see those changes through on the tarmac.<sup>102</sup>

But the B-29 would not be the only obstacle facing the XX BC. Even before the first planes left Kansas for Calcutta, the nearly unanimous rejoinder of the Joint War Planning Committee (JWPC) and Joint Intelligence Committee (JIC) – the two planning staffs of the Joint Chiefs – was that MATTERHORN was foolish and inefficient. The COA targets themselves were worthwhile, but the job of the COA was to analyze the value of economic (strategic) target in a vacuum – without regard for the tactical or military problems involved: bases, alternative requirements for resources, etc. When the planning staffs reviewed MATTERHORN in light of the operation limitations that existed in early 1944, they found that shipping was the most pressing target, and that the long-term results of attacking the steel industry could not be substantiated so early in the Pacific conflict. As for the actual merits of base selection – which the COA did not investigate – they found Chengtu to be the absolute worst. However, the president and Joint Chiefs had already agreed to the plan and promised Chiang Kai-Shek the support. Thus, the JWPC’s final report acceded to the plan, while warning “that the

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<sup>100</sup> LeMay, *Superfortress*, 70-71.

<sup>101</sup> Werrell, 80; LeMay, *Superfortress*, 70.

<sup>102</sup> Craven and Cate, vol. V, 103.

implementation of MATTERHORN first is not in consonance with conclusions reached from the detailed studies.”<sup>103</sup>

Indeed, it had been a political move, and the planning staff’s concerns would prove prophetic. Still, it is impossible to remove politics from even the inter-military disagreement regarding the merits of MATTERHORN. The JWPC was an ‘establishment’ group, and its rejection of the plan in favor of a campaign out of Australia aimed at shipping and petroleum was indicative of the Navy point of view. It would have facilitated both the Army and Navy’s war plans for the Pacific, while prejudicing the AAF’s view which recognized shipping “as a vitally important target, but not as a proper B-29 objective. The plane and its equipment had been designed for high-altitude bombardment.”<sup>104</sup> Per the AAF’s doctrinal development process, wherein policy followed technique, any attempt to co-opt the B-29 for operations other than those it was designed for was tantamount to rejection of the strategic doctrine altogether, and with it the notion of the necessity of an independent Air Force.

After the war, the USSBS found that “prior to the occupation of the Marianas, B-29s could have been more effectively used in coordination with submarines for search, low-level attacks and mining in accelerating the destruction of Japanese shipping, or in destroying oil and metal plants in the southern areas, than in striking the Japanese "Inner Zone" from China bases.”<sup>105</sup> That is, in almost any capacity other than the one decided upon! The primary reason for this inefficiency was the absurd system required to supply the forward Chengtu base. Cut off by from land or sea supply routes by Japanese blockade and primitive roads, the Americans had to fly all their supplies 1,200 miles from

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<sup>103</sup> Craven and Cate, vol. V, 28-29.

<sup>104</sup> Ibid., 30.

<sup>105</sup> USSBS, “Summary Report (Pacific War)”, 112.

Calcutta, over the dangerous Himalayas (“the Hump”), and to Chengtu – often using stripped-down B-29s as cargo planes. Fuel was only available in India, so every flight carrying fuel to supply the eventual air strike needed to use much of the fuel it carried over for its own return trip. From May to July 1944, an average of seven gallons of fuel were burned for every one delivered, allowing for little more than one mission a month. By July, after tweaking the system, the XX would reach its concept of self-sufficiency, with its own haul supporting the roughly 115 sorties engaged in. Still, this was half of the “weight of attack” anticipated by its planners. Clearly, MATTERHORN would have a very limited capability to effect any significant damage on Japan, especially in relation to the resources expended.<sup>106</sup>

Wolfe’s first attack on June 5<sup>th</sup> 1944 was staged from India rather than China to give his team a good practice run without cutting into the vital fuel stocks which had been painstakingly built up in Chengtu. Interestingly, in direct opposition to Air Force doctrine, Wolfe ordered that this very first mission of the Twentieth AF – the one made up exclusively of the “*super tactical*” B-29 – be a *nighttime* attack with planes attacking individually, rather than in formation. He feared that his men did not have enough training under their belts to either bomb or even arrive at their target successfully in formation (it took more gas). Arnold, however, would not accept this and ordered a daylight mission, arguing that if the crews needed training in precision bombing, this was the time to do it. Ultimately, the raid was completed during the day – though thick fog led more than half the planes to bomb by radar rather than visually.<sup>107</sup> But Wolfe’s assumption that the nighttime option was legitimate (and his decision to bomb by night

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<sup>106</sup> Craven and Cate, vol. V, 81-91.

<sup>107</sup> E. Bartlett Kerr, *Flames over Tokyo: the U.S. Army Air Force's Incendiary Campaign against Japan, 1944-1945* (New York: D.I. Fine, 1991), 58-59; Craven and Cate, vol. V, 94-98.

for almost all his – admittedly few – future raids) is a clear indication of the way that commanders in the field understood the imperative of official doctrine. After Wolfe's dismissal, there was a two month interlude before LeMay made it out to take command. By that time, four of the eight raids the command had managed to eek out were night attacks, and "perhaps the majority [of XX BC staff officers] had come to favor the employment of the Superfort exclusively as a night bomber."<sup>108</sup>

On July 4<sup>th</sup>, less than a month after his first attack, Wolfe was fired and by August his replacement, General Curtis LeMay, was in India. In a way, Wolfe had accomplished what he could – he set up the supply system and streamlined the transport of materials as much as was feasible. However, judged against Wolfe's own projection of the campaign's possibilities – the MATTERHORN proposal was called "Early Sustained Bombing of Japan" – he's brief tenure can hardly be considered successful. As Arnold wrote to General Carl Spaatz, commander of the Strategic Air Forces in Europe, Wolfe "did his best, and he did a grand job, but LeMay's operations make Wolfe seem very amateurish."<sup>109</sup> LeMay was an unparalleled operator. And while he would not have much greater success with the XX BC than did Wolfe (he would manage bring up the sortie rate to once a week), the lessons he learned in China – which themselves built off his experiences in Europe – would form the basis for the switch to incendiary bombing which he would undertake 6 months later from the Marianas.

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<sup>108</sup> Craven and Cate, vol. V, 113; 116.

<sup>109</sup> Quoted in Werrell, 116.



### *LeMay in China*

By the time LeMay arrived in China, he had a critical advantage over Wolfe: he had seen combat. Surely there were other attributes – LeMay was a doer, Wolfe a planner, etc. But above all, the major changes that LeMay implemented in the few months he spent with the XX BC were ones developed through the trial and error of his experiences with the Eighth Air Force in the European theater. Wolfe did not have the luxury of a previous command through which to work out the kinks, so his “shake-down” period had to be with Arnold’s baby, the B-29. LeMay would swoop in and, after some retraining, immediately begin to see (limited) results. It helped that, as opposed to Wolfe who helped craft the MATTERHORN plan, LeMay came in with a more guarded view: “no one could make [MATTERHORN] work. It was founded on an utterly absurd logistic basis.”<sup>110</sup> The best LeMay could hope to do was to more efficiently use the resources that they *could* get over the hump.

LeMay’s methodology is clear from his earliest actions upon assuming his first command in Germany. Placed in charge of the 305<sup>th</sup> Bomber Group, LeMay recalls that he immediately began “making a nuisance of [himself],” as he scrounged for pictures of bomb damage on targets, to get a sense of the groups’ accuracy. He was not one to trust the “common sense” of bombing, and he was going to find out for himself just how well his men were doing. And he would make it better. The problem, he found, was that the airmen were so concerned with the anti-aircraft flak that they would take evasive action *during* their bombing run. It was impossible, LeMay concluded, to “swing evasively all over the sky without throwing your bombs all over the lot too.”<sup>111</sup> Either he had to settle

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<sup>110</sup> LeMay, *Mission*, 322.

<sup>111</sup> *Ibid.*, 232.

with the 305's poor accuracy, or he would need to radically undermine the understanding that "*if you fly straight and level for as much as ten seconds, the enemy are bound to shoot you down.*"<sup>112</sup> He chose the latter.

What made LeMay such an impressive leader – not a visionary or theoretical genius – was his ability to identify the core practical obstacles to attaining efficiency, to solve them, and then to be so confident in his conclusions that everyone else is converted too, even though it flew in the face of everything they believed. Thus, before he took his group on their first combat mission – before he had ever been over a target – he was instructing his men that he “was going straight in...and...would be flying the lead aircraft.” As far as LeMay was concerned – and this is a theory he would stick to throughout his career – “if we we’re going to [the target] we’re going to get some bombs on [it], by God. And this is the only way I can see to do it.”<sup>113</sup> LeMay’s focus was on getting the job done, and neither the prevailing wisdom nor the official doctrine would stop him from identifying the best way to accomplish that goal.<sup>114</sup> As LeMay would say regarding an unorthodox low-altitude mission that he planned for the XXI BC against a Tokyo aircraft plant that had been targeted – and missed – five times before he took over: “Well, lets get it, instead of paying the price of a mission every time and going up there,

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<sup>112</sup> Ibid., 230.

<sup>113</sup> Ibid., 242.

<sup>114</sup> This approach has an interesting corollary in what might be called LeMay’s moral code. Asked after the war about the morality of the huge civilian casualties from the firebombing of Japan, LeMay asked whether it wasn’t crueler to besiege the people and have them slowly starve to death? Using an oft-quoted parable, he recalls the “stupid man who was not basically cruel – he was well meaning. The guy who cut off the dog’s tail an inch at a time so that it wouldn’t hurt so much” (*Mission*, 384). If a job had to be done, there was no point in doing it half-heartedly and thus requiring a return to the same objective over and over – it would simply lead to more deaths in the long run. He advocated the immorality of “NOT [using] more force than necessary” (*Reminiscences of Curtis E. LeMay* (1971), p. 83, Columbia University Oral History Research Office Collection (hereafter CUOHROC). This should be kept in mind for his approach to precision bombing and area bombing, and in his view of risking the lives of aviators and civilians alike. If the risk needs to be taken to accomplish the effects of bombing, best to do it right the first time, which often meant doing it on a massive scale.

up there, up there, up there, and still not getting it.”<sup>115</sup> As one mordant wing navigator put it “our job was to hit the target – planes and crews, it seemed, were expendable.”<sup>116</sup>

This was the attitude the LeMay brought with him to India as he assumed command of the XX Bomber Group on August 29, 1944. He would leave just a bit more than four months later, and recommend to General Arnold to scrap the whole campaign.<sup>117</sup> However, this does not mean that he accomplished nothing. LeMay used MATTERHORN as a kind of way station, a place to implant the best practices of Europe onto the Japanese theater, and to sort out the endless technical difficulties being offered up by the B-29 before they put it to serious use. The official Air Force history would similarly conclude that “no critic has challenged the utility or success of the command's shakedown process.” However, they are sure to point out the argument of the JWPC – rehashed by the USSBS – that “necessary training and combat experience with B-29's provided by this operation might have been secured through attacks on Outer Zone targets, from bases more easily supplied.”<sup>118</sup>

Still, given that MATTERHORN was realized, it is useful to look at the three primary changes implemented by LeMay in China: the reorganization of the maintenance organization, new combat formations, and lead bomber training. In conjunction with the last two technical changes, LeMay also reinstated the primacy of daytime bombing over the nighttime attacks that the XX BC had become accustomed to. He was not wedded to daytime bombing – and surely not to nighttime attacks either – but was devoted to being

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<sup>115</sup> Reminiscences of Curtis E. LeMay (1971), p. 40, CUOHROC.

<sup>116</sup> Quoted in Werrell, 117.

<sup>117</sup> LeMay, *Superfortress*, 91.

<sup>118</sup> Craven and Cate, vol. V, 174.

prepared for any and every situation.<sup>119</sup> The inability to fly in formation during the day precluded half of all possible flying hours and limited the scope of bombing that the command was capable of. Thus, among LeMay's first activities was to teach the crews a bombing formation and daytime flying techniques.

German fighter resistance had taught LeMay early on that the four-plane diamond formation used by most bomber groups would not sufficiently protect an unescorted group against a concerted fighter attack. He developed a 12-plane combat box formation, a grouping that staggered the planes in altitude and to the front and back, which was intended to maximize the defensive firepower by ensuring that no plane was directly in front of another, yet still offered very tight bombing patterns. For a number of reasons, formation flying was only useful when flying during the day. Most practically, it was more dangerous to fly so close to another aircraft at night. Moreover, the defensive formation was unnecessary at night (when fighter resistance was negligible) and the tighter bombing pattern was made irrelevant by the imprecise non-visual radar bombing required by nighttime attacks. The reliance on night bombing had also meant that none of the crews were really familiar with their targets. So along with the insistence of formation flying, LeMay began a lead-bomber training school, where the most accurate bomber units were trained to be experts in individual target areas – each had to be able to “draw

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<sup>119</sup> Interestingly enough, it was this flexibility and preparedness that can be blamed for the disastrous raid he led over Regensburg in Germany on August 17, 1943. LeMay had been training his division “on bad weather practice.” He would make the pilots take off blind “completely on instruments” with the co-pilot prepared to take over with visual flying if necessary. When August 17<sup>th</sup> rolled around, he was supposed to attack Regensburg while another division would attack Schweinfurt ten minutes later, which would spread the German fighter defenses thin, allowing both divisions relatively free-access (LeMay, *Mission*, 291). But the weather that morning was abysmal, and only through extensive training and being “guided by ground-crew men with flashlights” did LeMay's division manage to get into the air (Coffee, *Iron Eagle*, 83). However, the other bombing groups and fighter planes could not get up in time, and LeMay had to take his men alone. The results were twenty four planes lost to LeMay, and when the other division finally got there, the Germans had time to reinforce and downed thirty six U.S. bombers – a total of sixty planes (*Mission*, 293).

[his] area freehand in [his] sleep.”<sup>120</sup> These lead crews would be the navigators for each group and it would be upon their timing that all “other crews in a formation would drop” their bombs.<sup>121</sup>

It is important to understand that this did not mean that LeMay rejected radar bombing, which was indispensable for operating during the notoriously bad weather of western Europe – and as LeMay would soon find out, perhaps rivaled in its dreadfulness only by the Japanese conditions. Indeed, one of LeMay’s first actions in the Marianas would be to implement a radar-training program, along with the changes he made in China. More than just an alternate bombing method, radar used effectively would allow planes to navigate to their targets in low visibility situations where even seeing rally points was impossible. Thus wrote LeMay to General Norstad (deputy chief of Air Staff and chief of staff, Twentieth AF) in late February, asking for the creation of an “intensive training program for radar operators” in the States. “In order to take advantage of conditions whereby target is visible for only limited periods during bombing approach,” he continued, “our units must be capable of utilizing radar to become established on prescribed axis of attack” [sic].<sup>122</sup>

LeMay’s ideal would thus be “a ‘synchronous bombing’ in which both the bombardier and radar operator followed the bomb run in, with visibility determining who would control the plane during the crucial seconds before release.”<sup>123</sup> However, it is equally – if not more – important to see that LeMay was anything if attached to night bombing or an abandonment of AAF precision doctrine. LeMay is sometimes portrayed

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<sup>120</sup> LeMay, *Superfortress*, 80-81; *Mission*, 328.

<sup>121</sup> Craven and Cate, vol. V, 116.

<sup>122</sup> LeMay to Norstad, “Radar Bombing,” 2/24/45, RG 18, Entry 57C Box 71 (HQ 20th AF Message Files, 1944-5), NARA.

<sup>123</sup> *Ibid.*

as itching for the opportunity to start incendiary area attacks or at least as planning it from the moment he took over the XXI BC in the Mariana's in January 1945.<sup>124</sup> But based on his actions upon taking command in China and (as we shall see shortly) the Marianas, nothing could be further from the truth. LeMay came in intent on giving himself and his team the greatest chance of accomplishing their mission of an "Early Sustained Bombing of Japan and that required the skills to bomb accurately, using all the tools at their disposal.

It also depended on two other extrinsic factors, one somewhat within LeMay's control and the other absolutely independent of him. Those were the mechanical issues and adverse weather conditions which prevented enough aircraft from either taking off or reaching their targets in the first place.

Without a doubt, the B-29 was the most sophisticated and technically complex aircraft built during the war. Simply listing the raw material used in the production of the plane is awe-inspiring: "It took 27,000 pounds of sheet aluminum, over 1,000 pounds of copper, and 600,000 rivets to build one aircraft. There were about 9½ miles of wiring, and 2 miles of tubing in the Superfort."<sup>125</sup> With an average cruising speed of 253 mile per hour (mph) and a range of almost 5,500 miles, it could fly 70 mph faster and over twice as far as the B-17, while its 8-ton bomb load almost tripled its predecessor's.<sup>126</sup> It also included two state of the art technologies. Unlike other planes in which gunners had to man their individual weapons, the B-29's twelve .50 caliber machine guns were controlled by a remote central fire control system, which stationed the gunners (other

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<sup>124</sup> Schaffer, 125.

<sup>125</sup> Werrell, 74-75.

<sup>126</sup> LeMay, *Superfortress*, 175.

than the tail gunner) away from the weapons themselves.<sup>127</sup> The gunners thus remained within the pressurized cabin of the aircraft – the other cutting edge design feature, which was required to allow the plane to fulfill one of its main tasks: high-altitude flying.<sup>128</sup>

Along with its range and increased bomb load, the altitude was the most important aspect of the B-29, essential for it to operate outside of the range of attack fighters and thus allow it to operate without the protection of pursuit aircraft. It was able to reach these great heights with the help of the 2,200 horsepower Wright Aeronautical R-3350 radial engines. Though they were the most powerful engines available during the 1940 bidding for the contract, the B-29's abbreviated development process led to the engines being by far the most meddlesome aspect of an aircraft that LeMay describes as having “as many bugs as the entomological department at the Smithsonian Institute.”<sup>129</sup> The engines would overheat, he explained, and “had a tendency to swallow valves. A valve would burn, and then the head would go off and chew up one of the engines eighteen cylinders. Sometimes the cylinder would, in turn, fly off and chew up the whole engine....sometimes the whole damned engine seized and twisted right out of the wing.”<sup>130</sup> The engine problems were the primary cause of aircraft losses during the India-to-China “Hump” ferrying, exacerbated by the already too-hot ground temperatures in the tropical bases. All told, from February 1943 until July 1945, engine fires caused one-fifth of B-29 accidents. A commander would recall years later that “the only thing wrong with the B-29 was that it had a Wright engine.”<sup>131</sup>

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<sup>127</sup> Werrell, 64.

<sup>128</sup> Ibid.

<sup>129</sup> Werrell, 68; LeMay, *Mission*, 321.

<sup>130</sup> LeMay, *Superfortress*, 78.

<sup>131</sup> Werrell, 71-72.

It was therefore of utmost importance that the mechanical teams be at their most efficient, because they would have to perform hundreds of modifications to every plane the XX BC received, and expect to give special attention to its finicky engine. So LeMay centralized the maintenance program, based on a system he conceived of in Europe and perfected in China. He got rid of the previous system which tied a specific crew to maintain and supply each squadron – one that inherently led to waste and poor distribution of parts and labor – and put in its place a “production-line maintenance program for the whole base.”<sup>132</sup> This allowed any mechanic to work on any plane that needed it and centralized the parts supply depot, a much more efficient use of resources, especially in China where supplies were scarce. Moreover, LeMay made it clear that even though the Army was supplying the bases, it would be the AAF group commander who would be in charge of the base. Just like Arnold realized that the Twentieth AF could not be responsible to an area commander, because his requirements would be different than those of the AAF, LeMay learned early in his European tour that base commanders had their own ideas of how to run a base, and that it often conflicted with getting the maximum planes into the air.<sup>133</sup> LeMay reflected on his changes and found a convincing metric for the efficiency of his program. Once in place in the Marianas, LeMay had his command “flying a hundred and twenty hours a month on our airplanes. Four times as much as in England.” And this in the middle of the Pacific, far from supplies, and with a much more demanding plane than the B-17 of Europe.<sup>134</sup>

So much for what he could control; not so the weather. Though accustomed to the poor visibility of Europe, LeMay was left in China without the weather services that were

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<sup>132</sup> LeMay, *op. cit.*, 82.

<sup>133</sup> Craven and Cate, vol. V, 124.

<sup>134</sup> LeMay, *Mission*, 271.



available from the British. The Russians refused to pass along any information, and attempts to intercept and decode their weather reports proved difficult.<sup>135</sup> Through an odd set of circumstances, LeMay – who later, as Chief the Air Force, would preside over the destruction of Vietnam in order to defeat the communists – came to have a good relationship with Mao in Northwestern China, and succeeded in getting some weather reports from him now and then. Still, the problem remained that Japan was more than 1,700 miles away, and save for sending a reconnaissance flight ahead of time, LeMay had no way of knowing what conditions to expect over their target area or on the way.<sup>136</sup> This was a problem that would continue to inhibit AAF actions through the rest of the war, and would be further aggravated by additional obstacles in the Pacific.

There was, however, one tactic that seemed to provide a solution to the problem of poor visibility and high winds that wreaked havoc with the XX Bomber Command's precision bombing accuracy: incendiaries. General Chennault, the commander of the Fourteenth AF in China had long been pestering LeMay to make an incendiary attack on the port city of Hankow, which was being used to supply the Japanese ground troops in China. LeMay continually repelled the requests, because it was a tactical mission in support of the Army, and thus outside of the B-29's mandate of conducting strategic attacks. However, when intelligence found that a buildup was occurring for a large-scale attack on Kunming, a city "key to all American efforts in China," Lt. Gen. Albert C. Wedemeyer, who had replaced Stilwell as commander of the CBI, invoked the one caveat of the Twentieth AF's mandate: that theater commanders could divert the B-29 "should a

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<sup>135</sup> Ibid., 344.

<sup>136</sup> LeMay, *Superfortress*, 87.

strategic or tactical emergency” arise. The JCS thus ordered LeMay to attack Hankow, which he complied with on December 18<sup>th</sup>, 1945.<sup>137</sup>

As far as the technique of the bombing went, LeMay could not have been pleased. The attack was meant to be coordinated with Chennault’s Fourteenth AF, but a last-minute message from Chennault to delay the attack for 45 minutes was never received, so the planes that arrived over the target bombed out of order, and of the 84 planes that dropped incendiaries during the daytime attack, only 33 dropped them on target. LeMay recounts that “everything was fouled up there, beginning with Chennault’s last minute request for a change...people dropped in the wrong sequence, smoke [from the fires started by the planes that arrived earlier] obscured the primary areas, and so on.”<sup>138</sup> And yet, even with all this confusion, visibility problems, and poor aiming, the damage was very impressive. The command estimated that “40 to 50 per cent of the target area had been destroyed by 38 percent of the weight of attack.”<sup>139</sup> Incendiaries had been selected because of the highly flammable wood and paper construction of the dock area, and the intuition paid off. Even without getting their bombs on target, LeMay’s airmen were able to destroy the docks.

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The Hankow raid was the first large-scale use of incendiary weapons on Japanese targets. Chennault would later imply that the Hankow attack – one that he recommended – was the inspiration for the raids from the Marianas that would devastate the Japanese

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<sup>137</sup> Craven and Cate, vol. V, 143.

<sup>138</sup> LeMay, *Mission*, 351.

<sup>139</sup> Craven and Cate, vol. V, 144.

mainland, a claim that the official Air Force historians go out of their way to refute.<sup>140</sup> Part of Chennault's assertion would require that LeMay became attached to the idea of incendiary bombing from that moment on, and indeed there is no evidence of that. When he got to the Marianas, LeMay undertook precision daylight bombing for the first month, until a directive from General Norstad ordered him to carry out an incendiary attack against Kobe in early February.

In fact, though the Hankow raid's success surely pleased LeMay, it appears that neither he nor his higher-ups in the Twentieth thought too much about it at the time, especially because "neither Arnold or LeMay wanted to bomb Hankow."<sup>141</sup> It was a successful attack, but a tactical one all the same, and aerial achievement was supposed to confirm AAF independence, not undermine it. Still, in LeMay's memoir, he brings up the Hankow attack during his discussion of the rationale for the March 1945 switch to incendiary tactics.<sup>142</sup> So while the Hankow raid did not implant the goal of incendiary bombing into LeMay's mind – and surely not the kind that LeMay sent over Tokyo on March 9/10, with its drastic shifts in *technique* (nighttime, low-level, etc.), as opposed to simply the type of ordinance – it remained there nonetheless as a moment where his bombers overcame adverse weather and poor accuracy. And when weather and other complications began to build up in the Marianas, this memory would be recalled as precedent for a potential solution.

Ultimately it would be LeMay – and LeMay only – who would make the decision to send in his planes on incendiary attacks of urban areas. The success of the raids retroactively imputed his very controversial revisions to bombing technique with an air of

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<sup>140</sup> Ibid.

<sup>141</sup> Kerr, 116.

<sup>142</sup> LeMay, *Mission*, 351.

brilliance. And it is rightly deserved. Like his decision in Germany to go in straight and level against German anti-aircraft defense, his instructions for the low-level nighttime incendiary attack with B-29s stripped of their guns was based on a supreme self-confidence in his own reason and a disdain for the tyranny of “common sense.” Unlike in Germany, he would not be leading the mission himself, and his ability to compel his men was a mix of their belief in him with their inability to question a direct order.

That said, without taking anything away from the revolutionary character of LeMay’s actual order, it is clear that the fact that he was even able to make such a decision was contingent on a processes which had been progressing since the start of the war. His almost unconscious choice to use M-69 napalm incendiaries against the Japanese mainland (another difference between the Hankow raid and all that followed), the ones that inflicted such wanton destruction on the island nation, was decided on by civilian advisors in Washington long before LeMay even thought to firebomb Tokyo. General Hansell admitted years later that inherent in the ACTS doctrine of precision bombing was a necessity to bring in non-military experts to define what exactly constituted a “vital point.” As AAF practice began to increasingly rely on the conclusions of these operations analyst’s reports, decisions which were supposed to reflect the military’s principles were being largely determined by civilian experts – often individuals involved in the war industry and munitions procurement. The story of the M-69’s path from conception to deployment and the Committee of Operations Analysis’s reports on Japanese target priorities are examples of the civilian ability to control military imperatives by limiting their perceived options. Cast within the specific circumstances of anti-oriental racism, inter-service rivalries, and poor performance, the M-69 and urban

area attacks would emerge – seemingly out of thin air – as the long-awaited solution to all of the airmen’s problems. A closer look will reveal the concerted effort to make these options appear self-evident.

"Operation tonight will be largest yet if plan can be carried out. The effect may be significant.... [it] may be an outstanding show.... leave no doubt that this is an important operation.... this is a big one."<sup>143</sup>

Cable from General Norstad to Commander, Twentieth Air Force (Arnold)  
March 9th, 1945

### **Part III: The Road to MEETINGHOUSE**

#### ***The Marianas***

The story of the firebombing of Japan really begins with LeMay's arrival in the Marianas in late January 1945. But the path to the fateful March 9<sup>th</sup> mission began to coalesce months earlier, on October 12<sup>th</sup>, 1944 when General Haywood Hansell arrived in the island of Saipan in the Marianas to create the XXI Bomber Command.<sup>144</sup> Hansell had been awarded the command of the XXI on August 29<sup>th</sup>, 1944 – the same day that LeMay took over from General Wolfe in India. The overlap is not a coincidence. LeMay had originally been slated to take the XXI, while Hansell would get the planned XXII Bomber Command which was to be established out of the Philippines. With Wolfe's dismissal, however, the list was pushed up and with LeMay heading to China, Hansell took the XXI.<sup>145</sup>

Before taking control of the XXI command, Hansell had been the Chief of Staff of the Twentieth AF, one of General Arnold's protégées, a chief planner of ACTS doctrine and AWPD-1 and -42, and a commander in the European Theater. He seemed to be the ideal candidate for taking charge of the main proving grounds for Arnold's Twentieth and its B-29 weapon. His background in air theory led him to stick doggedly to the concept of precision strategic bombing as the only acceptable method of aerial attack.

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<sup>143</sup> "Forthcoming Operation" Norstad to COMAF 20, 3/9/45, Message Number FN-09-3, RG 18, Entry 57C Box 71 (HQ 20th AF Message Files, 1944-5), NARA.

<sup>144</sup> Craven and Cate, vol. V, 546.

<sup>145</sup> Searle, 129-30.

He was faced, however, with many of the problems that LeMay faced in India – terrible weather, poor bombing accuracy, and mechanical issues – which would make precision bombing untenable as an effective tactical approach.

Many, including Hansell's biographer and likely even Hansell himself attribute his dismissal from the XXI command to his resistance to area attacks.<sup>146</sup> This is surely plausible, but more important was generally his lack of success with the precision doctrine as he executed it. General Norstad, who replaced Hansell as chief of staff (and was a friend of his) described the problem as not so much Hansell's rejection of any particular tactic, but of an overall "utter absolute complete and irreversible lack of competence."<sup>147</sup> The urge to explain Hansell's dismissal in light of area bombing is convenient for a number of reasons, most obviously because it portrays his firing as a stand against the immortality of area bombing rather than a vote of no confidence. But more importantly, it serves to attribute the genesis of the area attacks to the top echelon of the Air Force. If Arnold and Norstad fired Hansell and installed LeMay because the former would not consent to incendiary attacks while the latter would, it would mean that, as Hansell asserts "a change in strategic interest" had taken place in Washington.<sup>148</sup>

Reality, however, does not appear to be as clear-cut. Hansell was relieved of his command for a number of reasons, most of them practical, some personal, but none of them seemed to be specifically in reference to a refusal to use incendiary bombs. This is most evident from the fact that, in response to a directive from Norstad on 12/18/1944, asking for "a full-scale incendiary attack on Nagoya...as an 'urgent requirement' for

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<sup>146</sup> Charles Griffith, *The Quest: Haywood Hansell and American Strategic Bombing in World War II* (Alabama: Air University Press, 1999), 193.

<sup>147</sup> Quoted in Searle, 131.

<sup>148</sup> Hansell, 50-1.

planning purposes,” Hansell duly protested but carried out the mission on January 3<sup>rd</sup> nonetheless.<sup>149</sup> He would use incendiaries in urban attacks if instructed to, but simply did not use them – or any bombs, it seems – very well. In addition, the record does not support the notion that LeMay entered the Marianas with the objective of setting Japan alight. Just days before he began his incendiary campaign, LeMay cabled Norstad about how bad the weather had become, and explained that he had begun “working on several very radical methods of employment of the force.” He lamented the fact that he would have to bomb by night – “I don’t believe it is an efficient method of operation – but “a few bombs on the target [is] better than no bombs at all.”<sup>150</sup> LeMay was far from excited to abandon precision doctrine, but he was interested in results, and he had yet to see any.

LeMay’s reluctance to abandon precision doctrine is also borne out by his February 1945 calculation of his command’s ordinance needs for the following months. He planned for average bomb loads of 4 tons (split into 60% high explosives and 40% incendiary – a pretty standard mix) and an average sortie rate of 735 per month, which would leave him with just over 3,500 tons of incendiaries for March. Yet in just the first *three* of the five incendiary missions that he would send with planes carrying 6 tons of exclusively incendiary weapons, the Twentieth saw 948 planes drop 3,900 tons of bombs – more than the entire amount planned for the month in the span of four days.<sup>151</sup> The decision and success of the incendiary attack took LeMay by surprise just as it did everyone else. Immediately thereafter he would go to Admiral Nimitz (who was responsible for supplying the Twentieth) and request a reassessment of munitions

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<sup>149</sup> Craven and Cate, vol. V, 564-5.

<sup>150</sup> LeMay to Norstad, 3/3/45, Curtis LeMay Papers, Library of Congress, Washington D.C. <http://www.scribd.com/doc/37161159/Curtis-E-LeMay-and-Lauris-Norstad-Correspondence>.

<sup>151</sup> *Ibid.*, 621.



requirements based on a previously unthinkable rate of bombing: 120 flying hours per month with 6 tons of incendiaries in the holds. The best anyone had done in Europe was 30 hours and LeMay already had planned for 60 in the Pacific. Nimitz thought him crazy – LeMay paraphrased Nimitz’s response as “Go away, boy, don’t bother us.”<sup>152</sup> But again LeMay was proved correct as the Twentieth was forced to stop its incendiary “blitz week” after five missions in ten days, because they had exhausted their incendiary stocks. They would be unable to restart them for another six weeks, at which point supplies finally arrived.<sup>153</sup>

In fact, a comparison of both LeMay and Hansell’s early missions shows very little difference: “Only two of Hansell's first nine missions against Japan were area raids and only two of LeMay's first eight missions against Japan from the Marianas were area raids.”<sup>154</sup> A better – and more humorous – explanation is that ““LeMay was writing half-page reports telling Arnold what he did yesterday, and Hansell was writing a three-page report explaining why the mission aborted.”<sup>155</sup> It was his shortcoming as an operator and commander in general, in contrast to LeMay’s excellence, that was to be Hansell’s undoing – not any one decision in particular. LeMay had already “went through the time and trouble [with the B-29] over in India before they got the Hansell outfit out [to the Marianas].”<sup>156</sup> LeMay was always a step or two ahead of Hansell, and when he took over the command, he would waste little time setting up a maintenance and organizational system that he had already proven in China. Thus he could immediately get to work on improving the XXI bombing results.

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<sup>152</sup> Reminiscences of Curtis E. LeMay, pg. 38, CUOHROC.

<sup>153</sup> Ibid.

<sup>154</sup> Searle, 131.

<sup>155</sup> Maj. Gen. John B. Montgomery quoted in Griffith, 191.

<sup>156</sup> Reminiscences of Curtis E. LeMay (1971), p. 44, CUOHROC.

Finally, while air leaders in Washington had begun to show greater interest in incendiaries, this interest was hardly new, nor was it a “change in strategic interest.” The desire to use incendiaries against urban areas fell squarely within the framework of strategic bombing as established by ACTS doctrine and reflected a much more subtle and complex policy and planning structure in the Air Force than is being portrayed by Hansell’s unitarian “Washington.”

A brief accounting of Hansell and LeMay’s early raids will help put the choice to use incendiaries into perspective. Per the Committee of Operations Analysts, the target-selecting group for the Twentieth AF (more on this group later), the overriding priority for the Air Force was the Japanese aircraft industry, which, until a belated industry dispersal program, was centralized almost exclusively in the six largest cities on Honshu.<sup>157</sup> Thus, all but one of Hansell’s raids were precision attacks (even when incendiaries were used) directed against the aircraft industry. To Hansell and Arnold’s dismay, however, intent does not destroy targets. Hansell’s first mission is illustrative of the average results of his attempted attacks against the Japanese mainland.

Delayed for almost a week because of poor weather both in the Marianas and over Tokyo, Hansell finally got 111 B-29s carrying 277.5 tons of bombs off the ground on November 24<sup>th</sup>, 1944, for the XXI bomber command’s first mission against the Musashino aircraft plant near Tokyo. Performance would only get worse. Before reaching the target, 17 planes aborted and returned home, while mechanical problems prevented another six from dropping their bombs.<sup>158</sup> The weather over Japan made bombing near impossible for everyone else. LeMay would recall that “The weather at

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<sup>157</sup> USSBS 55, IV.

<sup>158</sup> Craven and Cate, vol. V, 558.

high altitude [over Japan] was unquestionably the worst bomber weather in the world.”<sup>159</sup> At 30,000 feet over the Japanese mainland, the altitude set as the operational floor for B-29 precision bombing, the Twentieth met a theretofore unheard of “phenomenon known as the jet stream.”<sup>160</sup> At that height, winds blew at speeds as high as 230 miles per hour, wreaking havoc on the bombardier’s accuracy and the pilot’s ability to control the aircraft. Flying with the wind at its tail, the B-29 would reach speeds of over 500 miles per hour, far beyond the calibration ability of the Norden bombsight, rendering it – and any hopes of precise bombing – obsolete. The alternative, to fly into the wind, was equally impossible, because it would slow the B-29 to the snail’s pace of 125 miles per hour, easy prey for the roving Japanese fighter planes.

If that was not enough, clouds blanketed the island nation almost every day. One historian mentions that “the Japanese home islands experience two seasonal weather patterns – winter and summer.”<sup>161</sup> Perhaps he should have said “cloudy and cloudier.” LeMay recalls that the weather limited precision to “three or four days a month,” seven at most.<sup>162</sup> Demanding that all attacks be visual precision attacks would lead to unacceptable sortie rates by any account – even if they were all hugely successful. But of course they weren’t. Going back to Hansell’s first mission on November the 24<sup>th</sup>, “an undercast almost completely obscured the target. Only twenty-four planes bombed the Musashino plant.” The rest bombed the secondary targets of docks and urban areas, around half resorting to radar bombing. In the words of the official Air Force historians

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<sup>159</sup> Quoted in Curatola, 39.

<sup>160</sup> Curatola, 41.

<sup>161</sup> *Ibid.*, 37.

<sup>162</sup> LeMay, *Mission*, 344.

“bombing results of the mission were not encouraging.... [only] 1 percent of the building area and 2.4 percent of the machinery were damaged.”<sup>163</sup>

Hansell would return to this target four more time and LeMay another three. Their eight failed attempts to destroy the Musashino aircraft plant – the most important industrial target in Japan<sup>164</sup> – epitomized the failure of precision bombing as a functional doctrine for the war against Japan. Fittingly, LeMay’s last precision attack before beginning his major incendiary campaign was another failed attempt to destroy the elusive Musashino plant on March 4<sup>th</sup>, 1945. Again, to quote the Air Force historians, who also summarize the success of the campaign against other precision targets:

This eighth fiasco at [Musashino] marked the end of a well-defined phase of XXI Bomber Command's operations. The effort to knock out the Japanese aircraft industry by high-altitude, daylight precision bombing of carefully selected targets had failed.... Not one of the nine high-priority targets had been destroyed.... [Musashino] had suffered only 4 per cent damage after 835 B-29 sorties had been sent against it.<sup>165</sup>

Not all the raids were as poor as the ones led against this plant, and ironically, Hansell’s final mission was a rousing success, or more correctly “a welcome interlude in this litany of failure.”<sup>166</sup> Sixty-two of the 77 B-29s succeeded in bombing the Kawasaki aircraft plant near Kobe, destroying 38% of its roof and cutting its production by 90%, with no aircraft losses. But on the whole the numbers tell a sobering story. The post war bombing survey reported that “of 16 attacks executed at high altitudes during the early days of operations, 4 completely failed to bomb the primary target, 7 bombed with three-quarters of the airborne force, and 5 with less than three-quarters of the mission force.”<sup>167</sup>

Adding in the first few missions under LeMay’s command, the first 22 missions saw

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<sup>163</sup> Craven and Cate, vol. V, 559.

<sup>164</sup> Kerr, 93.

<sup>165</sup> Craven and Cate, vol. V, 573.

<sup>166</sup> *Ibid.*, 565.

<sup>167</sup> USSBS #55, “The Effects of Air Attack on Japanese Urban Economy,” 44.

2,148 sorties that dropped a combined 5,398 tons of bombs, with only half of the B-29s bombing primary targets. Losses had been prohibitive, reaching 5.7% of planes by January 1945.<sup>168</sup>

It is very telling that when describing an alternative target system (railroads) that the U.S. could have focused on for decisive results in Japan, the USSBS opines that the “use of high-precision forms of air attack, particularly *carrier-based aircraft*, at the two vital bottlenecks at the extremities of the island of Honshu would have strengthened the campaign” (italics mine).<sup>169</sup> So poor was B-29 accuracy, that when giving an example of “high-precision” attacks, the USSBS ignored the B-29 – the aircraft designed for high-altitude precision attacks!

### ***Pressure Mounts***

The B-29’s failure to inflict any significant damage on the Musashino plant was more significant than just serving as an apt microcosm for the failure of precision tactics. Just a few weeks before LeMay’s final attempt on the plant – and two days before his previous try – the Navy launched a carrier-based attack with low-flying planes bearing small bombs, and had exacted significant damage on the plant.<sup>170</sup> If the Navy could in one attack do more damage than the Twentieth could in eight, Arnold would be hard pressed to rationalize the Twentieth’s continued existence – let alone its independence. Indeed, on February 16<sup>th</sup>, a day before the Navy raid on Musashino, but after reading a news clipping of an earlier successful Navy attack on Tokyo telling of “the Navy’s fifteen hundred planes hitting Japan proper,” Arnold cabled General Giles to register his concern

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<sup>168</sup> Craven and Cate, vol. V, 574.

<sup>169</sup> USSBS #53, “Effects on Japan War Economy,” 64.

<sup>170</sup> *Ibid.*, 571.

“over the number of B-29s actually employed in operations against Japan.” “I would not be surprised,” Arnold continued ominously, “to see the control of the Twentieth Air Force pass to either Nimitz or MacArthur.”<sup>171</sup>

Aside from two test incendiary attacks run (with modest but promising results) against Kobe and Tokyo at Norstad’s behest, LeMay had not altered his bombing tactics much from Hansell’s. He had instituted his characteristic organizational changes – lead bomber school, radar training, centralizing maintenance (a processes Hansell had begun) – but was still adhering to precision bombing, though he lowered the altitude to slightly below 30,000 feet. Suddenly, LeMay had been in the Marianas for two months and “hadn’t done anything much yet. I’d better do something,” he told himself.<sup>172</sup> He was not the only one telling him that. If General Arnold was feeling the pressure, then so would his subordinates. LeMay explained that “General Arnold needed results. [General] Larry Norstad had made that very plain. In effect he had said: “You go ahead and get results with the B-29. If you don’t get results you’ll be fired...also there’ll never be any Strategic Air Forces of the Pacific.”<sup>173</sup>

It is important, also, not to get caught in a Pacific-centric mindset, and to realize that the travails of the Twentieth in the Pacific were also being understood in the context of the suddenly escalating war in Europe. The Battle of the Bulge – the last-ditch maximum effort German counteroffensive in the Ardennes – had set back the AAF’s hopes of establishing the Eighth AF as a strategic bombing unit. Suddenly, after months of pounding German industry and petroleum reserves, they were diverted back to tactical support of the advancing Allied infantry. Equally important, it seemed to prove, as

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<sup>171</sup> Coffee, *Iron Eagle*, 144.

<sup>172</sup> Reminiscences of Curtis E. LeMay, pg. 40, CUOHROC.

<sup>173</sup> LeMay, *Mission*, 347.

Secretary Stimson told the President, that the U.S. is unlikely “to break down organized German resistance...by constant bombardment.”<sup>174</sup> More than ever, the future of the independent Air Force rested on the wings of the B-29. “We have built up ideas in the Army, the Navy, and among civilians of what we can do with our B-29s,” Arnold explained. “These airplanes are quite expensive...and yet our results are far from what we expects and from what everyone else expects.”<sup>175</sup>

These results would be realized through a radical reevaluation of precision *tactics* (though, as I will explain below, *not* strategic *doctrine*), but also would come at the expense of alternative, perhaps even more effective options. Part of the urgency to see results was to fend off Navy grabs at the coveted B-29. It was a fear that permeated the entire ranks. One B-29 airman recalled hearing that “the Navy...was finally on the verge of pouncing. Wasn’t it time, the Admirals were saying to face reality and turn the B-29s over to the Fleet as a tactical support arm?”<sup>176</sup> Thus, not only would impressive results have to emerge from the Twentieth AF, but critically, they must not be seen to corroborate the Navy’s claims that the aircraft would best serve the war effort in a tactical role.

We already have seen the AAF’s strong resistance to any attempt to co-opt their strategic bombers for tactical missions (TORCH in North Africa, OVERLORD in preparation for D-Day), and the same would be true in the Pacific. LeMay’s planes would be diverted twice during his command, in the middle of February to support the invasion of Iwo Jima (DETACHMENT) and in mid-April – diverting the XXI from the incendiary

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<sup>174</sup> Quoted in Sherry, 259.

<sup>175</sup> Ibid., 266.

<sup>176</sup> Robert Morgan with Ron Powers, *The Man Who Flew the Memphis Belle: Memoir of a WWII Bomber Pilot* (New York: Dutton, 2001), 302.

campaign – to assist with the taking of Okinawa (ICEBERG). LeMay attempted to resist these encroachments, but Navy area commanders invoked the emergency statute in the Twentieth's charter. More importantly, these islands were being invaded to facilitate Air Force bases. LeMay could hardly deny a few weeks of help when thousands of Marines were to give their lives for his command.<sup>177</sup>

More significant was Hansell and (at first) LeMay's resistance to assisting the Navy in mine laying campaigns in Japanese harbors, again because it would be a tactical diversion which would make the Navy look good. And in the zero-sum game of credit for being the primary cause of American victory, a Navy success was an Air Force loss. Post-war analysis found that perhaps nothing led to Japan's downfall more than the blockade of her coasts. The USSBS Summary Report maintained that "by August 1945, even without direct air attack on her cities and industries, the over-all level of Japanese war production would have declined below the peak levels of 1944 by 40 to 50 percent solely as a result of the interdiction of overseas imports."<sup>178</sup> Hansell describes the "cool reception" given to the aerial mining campaign by the XXI, and his protests to General Arnold to postpone any pledges of aircraft for mining until more of a force was built up.

Nonetheless, on December 22<sup>nd</sup>, Arnold ordered him to establish a mining-technique training program, but set the mission for April 1945 rather than January. It would be LeMay who – separating out the 313<sup>th</sup> Bombardment Wing on Tinian for the task – would oversee the bulk of the training and the campaign itself, aptly titled OPERATION STARVATION.<sup>179</sup> It seems that the Air Force offered this extraordinary assistance not out of a belief in mining, but again a fear that if they rejected the request,

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<sup>177</sup> Craven and Cate, vol. V, 589; 630-33.

<sup>178</sup> USSBS, "Summary Report Pacific," 82.

<sup>179</sup> Hansell, 42.



that the Navy would have cause to procure their own long-range aircraft for the task.<sup>180</sup> The irony is that, of all the B-29s used throughout the Pacific, the USSBS found that “those air units which had anti-shipping attacks as their prime mission...achieved against ships the best results for the effort expended” in the entire war.<sup>181</sup> In 46 missions, the 313<sup>th</sup> flew 1,500 sorties and dropped 12,000 mines and lost just 15 planes in an operation that Admiral Nimitz would call “phenomenal” and “a source of gratification.”<sup>182</sup> The initial resistance to the mining effort took a promising alternative to precision bombing off the table. Few plausible choices were available other than a switch to area attacks.

### ***Firestorm***

It was LeMay’s tactical response to the numerous challenges facing the XXI that was the most radical and innovative aspect of the shift to area bombing, not the doctrinal shift itself. As we saw in Part I, ACTS doctrine had been established as a tautological capability-driven scheme, where the (largely imagined) capacity of the Air Force was channeled into a doctrine to endorse and reinforce that potential. It is for that reason that incendiary attacks – even when aimed against industrial targets – seemed to be a rejection of AAF strategic doctrine. The inherent inaccuracy of incendiaries contradicted the precision aspect of the strategy, even though the aim of the mission was still to cripple a strategic asset. Sherry argues that the incendiary campaign was an example of “technological fanaticism” in which the ability to destroy clouded the Air Force’s conception of the purposes of that very destruction. I would argue the opposite: that it

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<sup>180</sup> Craven and Cate, vol. V, 664-65.

<sup>181</sup> USSBS, “Summary,” 73.

<sup>182</sup> Tillman, 199; Cable from CINCPAC Adv Hq to USASTAF, 8/2/45, RG 18, Entry 57C Box 71 (HQ 20th AF Message Files, 1944-5), NARA.

was not the Air Force in 1945 that suffered from this malady, but rather the 1935 ACTS planners and the apostles of precision bombing who lost sight of the real purpose of strategic bombing. Recall that strategic bombing was conceived of in terms of efficiency: that bottlenecks existed, could be targeted best by the precision capabilities of the Air Force, and thus strategic bombing should be conceived of as precision bombing. This was not the gospel, just its explication. It was a kind of planning known as “blueprint availability syndrome,” wherein “the types of intelligence available and examined will necessarily shape one's view on how a system operates.”<sup>183</sup> When circumstances showed the technique to be faulty, the doctrine had to change.

Conceived as such, we see that the biggest change that LeMay instituted was not the decision to attack urban areas – indeed, this was still conceived of in strategic terms. Rather, it was the *method* of attack: low-altitude, nighttime, single file (rather than in formations), without defensive armaments, and with only incendiary bombs. These choices, while brilliant, themselves seemed to emerge organically, in a logical syllogism. If weather at 30,000 feet made precision bombing impossible, then altitude had to be reduced. But reduced altitude would make the unescorted B-29s too vulnerable to Japanese fighter planes. However, the heavy attrition rate of Japanese pilots had seriously drained the Empire of skilled pilots. By the time of surrender, the average Japanese pilot had “just over 100 hours [of flight time], as contrasted to 600 hours for United States pilots,”<sup>184</sup> and Japan really had no night fighters to speak of. So the attack would be at night, when fighter opposition could be discounted. But what of the anti-aircraft defenses? LeMay studied them in depth, and found that “the Japanese just didn’t seem to

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<sup>183</sup> Meilinger, “A History of Effects-Based Air Operations,” *Journal Of Military History* Vol. 71 No.1 (January, 2007), 140.

<sup>184</sup> USSBS, “Summary Report,” 69.

have those 20- and 40-millimeter guns. That's the type of defense which must be used against bombers coming in to attack at a low or medium altitude."<sup>185</sup> Antiaircraft fire calibrated to hit planes at 30,000 feet would be too slow to follow planes flying at 5,000-9,000 feet, because the planes appear to cross the sky much faster. So the planes would come in really low and at night.

But if they came at night with little chance of interception, there was no need for the extra weight (or risk of friendly fire) from defensive guns – so those too were removed. Unnecessary too was formation flying, which wasted gas, risked collision, and was only useful for defensive purposes. Most importantly, nighttime attacks precluded precision tactics, and thus it was pointless to use high explosives. If the bombing would be inaccurate, the AAF might as well use a munitions intended to be used that way, so incendiaries – 6 tons of them, from the extra weight freed up – were carried on the raids. Simple, clean, logical, and crucially, not begun with the desire to kill civilians or reject precision *doctrine*, but simply out of a recognition of the failure of precision *tactics*.

That said, it is impossible to discuss the urban incendiary attacks without at least addressing the fact that hundreds of thousands of human beings were killed and severely injured, and millions were rendered homeless. The incendiary campaign began in earnest on the night of March 9<sup>th</sup>, 1945, and continued with little reprieve for 10 days. In that time, five missions were run against four cities – Tokyo, Kobe, Osaka, and Nagoya (twice). The first raid, code named MEETINGHOUSE was staged against Tokyo's urban center, and saw 279 of the 325 B-29s that took to the air that night drop 1,665 tons of incendiaries – almost half a million individual bombs. Most of the planes were loaded with 24 500-pound clusters of 6.2 lb M-69 tail ejection napalm incendiaries, which upon

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<sup>185</sup> LeMay, *Mission*, 346.

impact would shoot a flaming stream of jellied gasoline up to 50 feet away, immediately igniting any flammable objects in its vicinity, The lead bombers carried larger 70-pound M47 incendiaries that would be used as pathfinders – dropped by the most skilled bombardiers to outline the edges of the target area.<sup>186</sup> As fires cropped up throughout the city, the air above became superheated and sucked cool air upward, creating a cyclone-like effect on the ground level: a firestorm.

Frankly, the only way I can describe the true horror of the scene – literally a holocaust – is from someone who witnessed some of it, and even he with the help of a professional writer. Col. Robert Morgan, veteran of the European theater (and pilot of the famous *Memphis Belle*) was flying the *Dauntless Dotty* that night over Tokyo. The experience of airmen over the fire was difficult in its own right:

Most of the Japanese... fighters still sat, some melted, on their airstrips. Of those that had managed to get into the air, the thermal windstorms whipped up by the fires tossed them about the skies like helpless kites... the violent flames were literally burning the oxygen out of the atmosphere. The updrafts brought with them a sickening odor, an odor that I will never be able to get completely out of my nostrils – the smell of roasting human flesh... some pilots and crewmen gagged and vomited... a few had passed out...

As the fires surged into vacuums created by the eaten-up oxygen, wind velocity increased, and scrambling human herds were overtaken by hundred-mile-an-hour firewinds. In their desperation, thousands of men, women, and children flocked towards the rivers and canals that cut through Tokyo, but these only yielded other forms of hideous death. Jumpers drowned, were asphyxiated, or were crushed to death by succeeding waves of jumpers. Soon, the steel girders of the bridges spanning the waters grew white hot, forcing refugees to jump into water that itself was beginning to boil.<sup>187</sup>

As a member of a Japanese military rescue crew recalled:

In the black Sumida River, countless bodies were floating, clothed bodies, naked bodies, all as black as charcoal. It was unreal. These were dead people but you couldn't tell whether they were men or women. You couldn't even tell if the objects floating by were arms and legs or pieces of burnt wood.<sup>188</sup>

The Japanese' primitive neighborhood fire-fighting system was crushed under the sheer weight of the attack. The few fire engines were quickly reduced to hunks of metal, while

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<sup>186</sup> Craven and Cate, vol. V, 614.

<sup>187</sup> Morgan, *Memphis Belle*, 311-12.

<sup>188</sup> Quoted in Schaffer, 135.

homeowners soon decided to flee rather than attempt to contain the growing flames licking their walls.<sup>189</sup> The firestorm that erupted in Tokyo was due to a particularly dense urban area, with highly flammable structures separated by narrow roads and few firebreaks. By the end of the night “an area of 15.8 square miles had been burned out. This included 18 percent of the industrial area, 63 percent of the commercial area, and the heart of the congested residential district. The XXI Bomber Command's intelligence officers struck off their lists twenty-two numbered [that is, important] industrial targets.”<sup>190</sup> Numbers vary regarding the casualties that night, and recent scholarship has found that it is likely that more people were killed in the Tokyo raid of March 9<sup>th</sup> than at either Hiroshima or Nagasaki.<sup>191</sup> The USSBS found that 250,000 buildings were destroyed, while 87,793 people were killed, 40,918 were injured, and 1,008,005 were rendered homeless in what an AAF General later called “the greatest single disaster incurred by any enemy in military history.”<sup>192</sup> It was a remarkably clear night: tail gunners on the return trip could see the glow for 150 miles.

Not all the urban fire raids were that massive, and none inflicted as many casualties, likely because a retreat from cities to the countryside was immediately initiated. Still, by the end of the 10-day “blitz week,” the Twentieth AF had flown 1,595 sorties – three-fourths of all previous Twentieth AF missions – while the 8,365 tons of bombs dropped were three times the weight dropped until that point. 32 square miles and many important industrial targets – and hundreds of thousands of civilians – were

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<sup>189</sup> Schaffer, 133.

<sup>190</sup> Craven and Cate, vol. V, 616.

<sup>191</sup> Sherry, 406n 76

<sup>192</sup> Quoted in Schaffer, 132.

destroyed and killed, with only a 0.9 percent attrition rate of B-29s.<sup>193</sup> The success of the new tactics was undeniable, and the Joint Target Group (JTG) was quick to incorporate the best-practices into future targeting policy. Their response was enlightening. After studying the results of the incendiary bombings, the JTG found that there “were no strategic bottlenecks in the Japanese industrial and economic system except aircraft engine plants.”<sup>194</sup> The JTG then adopted a two-phase incendiary campaign: phase one would direct LeMay against urban areas with important industrial targets, while the second phase was to be assessed after completion of the first, but would likely not include inherently important targets. The fact that incendiary low level incendiary bombing worked did not *have* to mean that there were no bottlenecks in Japan. But the notion of the efficiency of bottlenecks was the basis for precision bombing. With precision bombing shown to no longer be efficient, it therefore had to follow (in Air Force-ese) that bottlenecks did not exist. In that way, their doctrine was not wrong, nor was it being contravened. It just must not have been applicable to that case.

The argument that attacking urban areas was immoral is based on the assumption that (1) many civilians were being deliberately put in harm’s way and (2) it served no military purpose, and that it only intended to demoralize the population, which is not a legitimate military target. It therefore would be a rejection of U.S. air doctrine as well, because strategic bombing was meant to attack only military or economic targets to destroy the enemy’s ability to wage war.

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<sup>193</sup> Craven and Cate, vol. V, 623.

<sup>194</sup> *Ibid.*, 624.

After the poor performance of precision bombing, the switch to urban attacks might appear to have been an abandonment of the entire project of strategic bombing, especially if strategic bombing is only understood in terms of precision bombing. Perhaps LeMay decided to simply terrorize the public in hopes that the sheer horror would end the war. But, as shown above, that is manifestly not the process that brought about the incendiary attacks. We know this partially because by March 9<sup>th</sup>, the U.S. plan was still based on a proposed November 1945 invasion, so the point of the air attack was never capitulation, it was to weaken the economy and infrastructure – still a strategic attack, just with different methods. But as we saw from the original planning of ACTS doctrine, methods and ends, capability and doctrine were inextricably intertwined. As the former was found to be wanting, the latter changed of course.

It is important to understand the perceptions of the Japanese industry and economy that the American military and its intelligence community held during WWII, and the effects accomplished by the urban attacks. In hindsight we know that “before the air attacks against the cities began, war production had been steadily declining because of the ever-increasing shortages of raw materials, skilled labor, and an ill conceived dispersal program which was initiated too late.”<sup>195</sup> However, planners at the time still saw the urban economy as a prime target because, in the end of 1944, as they formed the target lists “in the [Japanese] urban economy, the aircraft and ordnance industries achieved particularly impressive gains.... Aircraft reaching its highest peak in October, ordnance in November.”<sup>196</sup>

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<sup>195</sup> USSBS #55, V.

<sup>196</sup> *Ibid.*, 3.

The AAF also had poor information about actual Japanese industrial organization, and based much of their analysis on pre-war intelligence. That information told them that a substantial amount of the war industry was provided by home-industry, factories employing as few as one or two people. As LeMay explained:

In Japan they would be set up like this: they'd have a factory; and then the families, in their homes throughout the area, would manufacture small parts. You might call it a home-folks assembly line deal. The Suzuki clan would manufacture bolt 64; the Harunobo family next door might be making nut 64, 65, or 63, or all the gaskets in between. These would be manufactured right in the same neighborhood. Then Mr. Kitagawa from the factory would scoot around with his cart and pick up the parts in proper order.<sup>197</sup>

It was these industries – both the plants themselves and the men (and women) that operated them – that were the targets of urban attacks. That is why a 1945 memo to the Commanding General USSTAAF regarding Japanese bombardment listed among its primary objectives to “complete the present program against *industrial concentrations and stores located in urban areas* (italics mine).”<sup>198</sup> The industry was a primary – not secondary – objective, though as Arnold and others understood, “it was practically impossible to destroy the war output of Japan without doing more damage to civilians connected with the output than in Europe.”<sup>199</sup>

After the war, it was found out that, in fact, these home-industries had largely disappeared in the industrialization and pre-war buildup for the war effort. “Before the urban attacks began,” explained the USSBS, “‘home’ industry, in the strict sense of household industry (which by Japanese definition included plants with up to 10 workers) had almost disappeared.”<sup>200</sup> This, of course, was not known by LeMay or any of the air planners at the time, and the growth in output during the end of 1944 was reason enough

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<sup>197</sup> LeMay, *Mission*, 384.

<sup>198</sup> Quoted in Curatola, 44

<sup>199</sup> Quoted in Crane, 135.

<sup>200</sup> USSBS #55, 30



to suspect that a strong feeder system still existed. Still, some historians, while recognizing the limits of intelligence at the time, attempt to argue that more should have or could have been known, and structure their argument such that – though the writers are in the clear by acknowledging the lack of information – they leave the reader to judge the intent of the actors based on the outcomes only known through hindsight.<sup>201</sup>

But even without the home-industry, LeMay and the planners were not wrong in analyzing the economic importance of these areas. Many Tokyo component factories were of the small to medium order – from 50 to 10,000 workers – and “the effect of the urban raids on the great number of plants within that range was extensive.”<sup>202</sup> Most importantly, in view of the strategic doctrine of the Air Force and the idea of “bottlenecks” on which it stood – that is, attacking down-line production to stymie final assembly (recall the spring and propeller inspiration) – “the effect of the area raids was felt most by plants manufacturing components for large end-product customers. The chief value of those raids would have been to interrupt end-product manufacture by creating component shortages.”<sup>203</sup> A post-war survey of plant managers found that “damage to component suppliers was cited as the primary cause of component failure among the 33

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<sup>201</sup> See for instance, Schaffer, 137, 163-64; Sherry, 285-87. The question of what was known is crucial. The attack is only immoral insofar as it really was done in spite of the target’s lack of military importance. If the economic or industrial argument can be cast as a way to “implicitly justify” (Sherry, 285) the urban attacks, then there must have been a more sinister reason for the carnage. That motive, Sherry would argue, could only be a mix of fanatical racism, blood lust, and self-delusion regarding the human cost of the attacks. Even if it is granted that the urban areas were legitimate urban targets, it is also important to ascertain whether the incendiary raids were even effective. If, as the Air Force claimed, their purpose was to destroy the war making ability (not morale) in hopes of easing an invasion, then to what extent were the attacks a success? Schaffer, without citation and seemingly in rejection of the USSBS (on which he relies heavily when it suits him) appears to claim that the effect of the area raids on production was substantial and yet would not have made a difference in easing the invasion. If this were the case, I am unsure how even the destruction of the larger plants would have been effective. If anything, the USSBS says that by early 1945, *all* bombing – precision or area – was duplicative of the Navy blockade’s effect on the economy.

<sup>202</sup> USSBS #55, 30.

<sup>203</sup> *Ibid.*, 10.

customer plants [surveyed].”<sup>204</sup> As far as the aim of strategic bombing was to cripple the enemy’s war-making ability, the urban incendiary attacks appear to constitute a textbook case of its implementation.

The effect on the workers was also impressive: 37 percent of all evacuees who had jobs were employed in the war-industry.<sup>205</sup> If we can allow ourselves to ignore the fact that collateral damage here was human beings, then compared to the abject failure of precision bombing, an effect rate of over one-third was not a bad result. Ultimately, the urban attacks did not succeed as much as was anticipated in spreading to and damaging the larger factories, but between the precision and area attacks, the aircraft engine plants saw a 75% decrease in production and airframe plants one of 60%.<sup>206</sup> Again, it is doubtful that much of that was accomplished by the precision campaign.

In April the Twentieth AF was diverted to assist the invasion of Okinawa. Upon resuming incendiary attacks on May 14<sup>th</sup>, they continued their bombing of industrial cities, attacking another 11 cities through June 15<sup>th</sup>, at which point phase one of the new JTG directive was complete. During the entire March-June urban attack against industrial capabilities in the 6 largest cities, 6,960 planes had dropped 41,592 tons of bombs on Japanese cities, destroying 105.6 square miles (including 56.3 square miles of Tokyo – half of the entire urban area).<sup>207</sup>

After June 15<sup>th</sup>, the nature of the attack changed much more significantly than it did even on March 9<sup>th</sup>, but less conspicuously. By that point, there were no more economic targets worth attacking in Japan. The entire bombing campaign until that point had been

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<sup>204</sup> Ibid., 31.

<sup>205</sup> Ibid., 7.

<sup>206</sup> USSBS, “Summary Report,” 88.

<sup>207</sup> Craven and Cate, vol. V, 643-44.

based on the understanding that an invasion would be necessary, and the aerial attacks were to soften the resistance. But after the great show of force from the March raids, LeMay and others became convinced that air power alone could compel the end of the war – and prove once and for all that the Air Force was worthy of co-equal standing with the Army and Navy. On April 25<sup>th</sup>, in the middle of the Okinawa invasion, LeMay cabled General Norstad: "I am influenced by the conviction that the present stage of development of the air war against Japan presents the AAF for the first time with the opportunity of proving the power of the strategic air arm.... I feel that the destruction of Japan's ability to wage war lies within the capability of this command"<sup>208</sup>

From June 15<sup>th</sup> until the dropping of the atomic bombs and the Japanese surrender, the Twentieth AF would embark on an incendiary campaign that can only be characterized as an assault on the morale and will of the Japanese people. "After 17 June, 8,014 sorties, with a total of 54,184 tons of incendiaries, were sent against 58 secondary cities," ones with generally insignificant connections to the war industry.<sup>209</sup> The Twentieth had enough planes now, and the cities were small enough, to allow for multiple cities to be targeted per night. The command would drop leaflets a night before an attack with a list of twelve cities selected as targets, and the next night, six would be in flames. The remaining six came the following night. The purpose of this was twofold: most importantly, to show the citizens that the U.S. had complete control of the skies, and that even knowledge of the targets would not help the Japanese military defend them. The only option left was surrender. Second, but still important, was that by this time the Japanese people knew the horror of air attacks and trusted the AAF's promises to attack.

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<sup>208</sup> Quoted in Craven and Cate, vol. V, 626-27.

<sup>209</sup> Craven and Cate, vol. V, 655.

Upon receiving the leaflets, many citizens evacuated the cities. This both reduced casualties and convinced many Japanese that, as the leaflets read, “in accordance with America's well-known humanitarian principles, the American Air Force...does not wish to injure innocent people.”<sup>210</sup> This campaign was more radical than the phase one attacks because, for the first time (in the Pacific war, at least; OPERATION CLARION in Europe was in many ways similar to these attacks), the AAF was deliberately attacking civilians without affiliation to the war effort with the primary objective of undermining the nation’s morale and will to resist – *not* its ability to resist.

Still, it is important to note that even during phase two, the Twentieth never gave up on precision attacks against the aircraft industry, and when weather permitted, they would use high explosives against those precision targets. The incendiary attacks did not replace strategic bombing, and from June to August, about 22 percent of the XXI sorties were precision attacks.<sup>211</sup> LeMay simply beefed up the flagging strategic campaign and “supplemented and unspectacular precision bombing campaign with a stunningly successful urban incendiary campaign.”<sup>212</sup>

### ***Civilian Planners and the Incendiary Air War***

So much for the proximate precipitants for the abandonment of precision tactics in the war against Japan. Alone they provided compelling reasons to reevaluate the war plan. But it would be telling only half the story if we stopped here. As much as the immediate triggers were needed to push Arnold and LeMay over the edge, they did not

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<sup>210</sup> Ibid., 656-57.

<sup>211</sup> Curtis E. LeMay Speech - B-29 Campaign in the Pacific, undated, pg. 16, <http://www.scribd.com/doc/37163161/Curtis-E-LeMay-Speech-B-29-Campaign-in-the-Pacific>.

<sup>212</sup> Searle, 128.

create the interest within the Air Force for incendiary attacks. As we saw, Norstad was instructing Hansell to carry out test incendiary attacks as early as November 1944 – long before the precision campaign could be proven to have failed. In fact, the War Department’s interests in incendiary bombs go back at least as far as February 1941 (and surely earlier), when the Chemical Warfare Service (CWS) – the contracting and procurement arm of the military – was instructed to begin working on “an oil filling for incendiary bombs.”<sup>213</sup>

Two months later, the Chief of the Air Corps received a memo laying out the different sorts of incendiaries that could conceivably be produced for Air Corps use.<sup>214</sup> Thus, in order to fully appreciate the way in which area incendiary bombing developed within the Air Force and how it was able to fit into the strategic doctrine schema, we have to step back from the immediate causes that made a change necessary, and look at the longer trend on the institutional and policy planning levels that made the choice of incendiaries – particularly the highly effective M-69 – even possible.

1942 is when our story begins. On March 9<sup>th</sup> of that year, the Air Corps was finally granted autonomy and became the Army Air Force, and General Arnold got to work building his fleet for war. Eight days later, he met with representatives of CWS and instructed them to develop “large numbers of the smaller types of incendiary bombs” to be made available as soon as possible.<sup>215</sup> Arnold wanted magnesium, thermate, and oil bombs, but due to the shortage of magnesium, especially wanted to focus on the latter two. Arnold explained that the Air Force would need large stocks of these bombs for use

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<sup>213</sup> “Incendiary Materials and Incendiary Bombs,” Lt. Col. M.E. Barker to Commanding General, Edgewood Arsenal, Md., 2/18/41, RG 175, NARA.

<sup>214</sup> “Incendiary Aircraft Munitions” Chief of CWS to Chief of Air Corps, 4/19/41, RG 175, NARA.

<sup>215</sup> “Meeting with General Arnold” Memo from Colonels Loucks and Zanetti to Chief of CWS, 3/17/42, RG 175, NARA.

in the theaters “with Japan as a final objective.” This should come as no surprise, because Japan’s vulnerability to fire had been known since the disastrous earthquake and fire of 1923, and none other than Billy Mitchell had held forth about the susceptibility of the Japanese cities: “These towns are built largely of wood and paper...and form the greatest aerial targets the world has ever seen.... Incendiary projectiles would burn the cities to the ground in short order.”<sup>216</sup> This should not imply that Arnold held a deep-seated desire to burn down the Japanese cities, especially because just months earlier he had signed off on AWPD-1, which codified precision strategic attacks. More likely, it is the first clue that incendiary bombing need not be necessarily in contradiction to strategic doctrine.

In December of 1942, Arnold established the Committee of Operations Analysts (COA) to help develop targeting priorities for Europe and Japan. ACTS doctrine had created a targeting system that depended on identifying the central nodes of an enemy’s economy, and the COA, a group made up largely of civilians experienced in complex business and industrial decision-making and analysis, would fill that role.<sup>217</sup> To the dismay of the Air Force’s own intelligence arm (A-2), the COA inhabited a crucial niche in the planning hierarchy, and the decisions they made regarding which targets were more important to the enemy’s war effort would factor very heavily in the military decisions of force allocation, targeting priorities, etc. The A-2 was unhappy both because their position was to an extent usurped, but more importantly because “much of that work took place outside regular military channels altogether, in the work of the [COA], men who had almost no firsthand contacts with war.”<sup>218</sup> Military commitments were being decided

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<sup>216</sup> Schaffer, 108; Mitchell quoted in Sherry, 58.

<sup>217</sup> Schaffer, 110; Kerr, 22.

<sup>218</sup> Sherry, 224

by a mostly civilian group whose members were unfamiliar with the actual war conditions.

Guido R. Perera, a corporate attorney who was also a commissioned Colonel in the AAF was elected to lead the COA. Upon its incorporation in December of 1942 it was tasked with selecting targets for the European theater. A few months later, on March 23<sup>rd</sup>, it was instructed to furnish a report on Japan as well.<sup>219</sup> As they were just beginning their fact-finding regarding the nature of Japanese urban areas, another report had begun to circulate regarding the ease with which the M-69 could burn down Japanese cities. It had been written privately by Raymond Ewell, a 33 year old chemical engineer who worked for the National Defense Research Committee (NDRC), a civilian military research arm created by President Roosevelt on June 27<sup>th</sup> 1940 to “correlate and support scientific research on the mechanisms and devices of warfare.”<sup>220</sup> The NDRC had been tasked to develop a small oil incendiary bomb, and by early 1943 they were convinced that what they had developed – the M-69 Napalm incendiary – was far and away the most effective fire-starter in the U.S. arsenal. Ewell, whose research was in the viscosity of fluids, had an obvious interest in the napalm weapon.<sup>221</sup> Working under Richard P. Russell, vice president of the Standard Oil Development Company and the chief of Division 11 (Chemical Engineering) of the NDRC<sup>222</sup>, where incendiaries were

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<sup>219</sup> Guido R. Perera, *Leaves from My Book of Life*, vol. 2, Washington and War Years (Boston: privately printed, 1975), 96.

<sup>220</sup> Irving Stewart, *Organizing Scientific Research for War: The Administrative History of the Office of Scientific Research and Development* (Boston: Little, Brown, and Company, 1948), 8.

<sup>221</sup> Kerr, 16-17.

<sup>222</sup> Part of the NDRC’s success was that it brought in civilian experts from every field to help develop weapons for the Army. These experts naturally worked in the munitions or science industries, so the NDRC was staffed by executives and scientists from some of the nation’s largest corporations and research universities. Division 11 had particularly close ties to Standard Oil, Arthur D. Little, MIT, and Harvard. This was likely because Harvard and Arthur D. Little worked together to create Napalm, while Standard Oil Corp worked with the NDRC on the creation of the M-69. Such partnerships were crucial for

researched, Ewell became a fierce advocate of the M-69's ability to easily incinerate Japanese structures.

Already by September 1942, Ewell was speaking very favorably of the "Tail Ejection Oil Bombs" (they had yet to be standardized as the M-69) dedicating half of his 12-page incendiary bombs report to it, while 5 other munitions had to share 6 pages.<sup>223</sup> Around the same time, Ewell and Russell left to England to tell the British about the results of their incendiary development, and to try and convince the RAF to choose M-69s for their raids – a backhanded way to get the weapon into circulation in the war.<sup>224</sup> Upon their return, Russell sent a curious letter to Dr. Garner of Britain's Petroleum Warfare Department. Commenting on what he understood to be an upcoming "shortage of incendiaries...particularly for the cold nights of this long winter and early spring," he added that "R.A.F acceptance based on their tests with the 1,000 [M-69] bombs to be received in England...might leave us in a position to correct the shortage." If the tone sounds suspicious, it is because it appears that Russell was trying to come to a quid-pro-quo agreement with the British. If the British would send "word through official channels" about whether the M-69 would be useful for their attacks on German industry, and thereby get U.S. military support for the M-69, then Russell would be in a position to supply them to the British to ameliorate their bomb shortage.<sup>225</sup> Of course, Russell was in no such position, because procurement and distribution was the purview of CWS – who did not always get along well with the NDRC.

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expediting the development process and to leverage resources, but of course, having the division run by employees of the companies to which work was being contracted out can lead to predictable conflicts of interest.

<sup>223</sup> "Incendiary Bomb Tests at Jefferson Proving Ground" Memo from R.H. Ewell to Lt. Fix, Directorate of Bombardment, 9/9/42, RG 18, NARA.

<sup>224</sup> Kerr, 16

<sup>225</sup> Russell to Dr. Garner, 9/5/42, pg. 3, RG 227, NARA.



Even more surprising is a memo Russell wrote for the U.S. Military on September 15<sup>th</sup>. Deceptively titled “Memorandum on Incendiary Bomb Requirements,” what Russell really recommended was an immediate adoption of area incendiary attacks against civilian targets – this just six days after AWPD-42 reestablished precision bombing as the policy of the AAF. Russell – the vice president of Standard Oil, with no military expertise – opined: “Even more vital...then the mere temporary dislocation of an industrial target through the use of [high explosives] is the permanent fire destruction of the houses and essential civilian services for Germany’s war workers. These are, therefore, today regarded as *the primary target for air attacks*” (italics mine). He went on to add that the “new U.S. 6.2 lb. oil bomb [M-69] is, the N.D.R.C. group believes, several times as effective” as its competitor bomb against these targets. This observation, too, was based purely on conjecture, because the first tests against German (and Japanese) structures would only occur in mid-1943. Finally, as the coup-de-grace, Russell concluded that it was “indeed unfortunate that so few incendiary bombs are available to the RAF and U.S. Air Force.”<sup>226</sup> Implicitly tying the military necessity with the dearth of incendiaries, Russell was pushing the military to quickly bring his beloved M-69 into production and simultaneously attempting to shift its bombing doctrine to area attacks, so as to better suit the M-69’s use. All this before the COA took up the cause. Quite unusual for a chief of an organization meant simply to “support research.”

The British do not appear to have been impressed and their own tests seriously questioned the M-69’s usability as an actual aerial bomb – not simply as a fire starter. They worried about its ability to penetrate German roofs and its poor aimability, two

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<sup>226</sup> Russell, “Memorandum on Incendiary Bomb Requirements,” 9/15/42, RG 227, Box 3 – Records of Division Chiefs 1940-45. Russell Files, NARA.

problems which, in their conception, overrode the above-average fire-starting ability of the incendiary: if it doesn't land on (or near) the target, it has no chance of destroying it. Ewell responded on December 11<sup>th</sup> 1942 with an impassioned defense of the bomb and a critique of the British tests, remarking that the U.S. had begun production of the weapon in October (so apparently Russell's argument was convincing enough!), and called for new tests to determine the M-69's usability.<sup>227</sup>

These tests would begin in May 1943 at the military's Dugway Proving Grounds in Utah, where mock Japanese and German structures were painstakingly and meticulously assembled to replicate – down to the interior décor – the conditions that these incendiaries could expect to encounter in the field (see Appendix for photos). Before these began, though, Ewell was already sending around the above-mentioned April report, in which he boldly claimed that only “10 tons of M-69's would have the possibility of wiping out major portions of any of the large Japanese cities.”<sup>228</sup> Like his associate Russell, Ewell based this on little hard evidence (indeed, he admitted that confirmation would need to wait for Dugway test results) and went on to prescribe his preferred method of aerial assault as well. He would send these sentiments on to Col. Perera of the COA, in hopes of getting his ideas incorporated into official AAF target directives. It is unknown if Perera looked at or acted on the memo, but it would soon be irrelevant.<sup>229</sup> Ewell and Russell also were not alone in pushing fire attacks. Other civilians with vested interests in fires – such as Horatio Bond, Chief Engineer of the

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<sup>227</sup> Ewell, “Tests of the M.69 Incendiary Bomb” 12/11/42, RG 175, entry 4M boxes 294-5, NARA.

<sup>228</sup> Quoted in Kerr, 24.

<sup>229</sup> Kerr, 25.

National Fire Protection Agency, who edited the 1946 compilation *Fire and the Air War* – also “relished the thought of war by fire.”<sup>230</sup>

According to Perera’s memoir, in November 1943, Bond wrote a report very similar to Ewell’s, and claimed that 1,690 tons of incendiaries would destroy the 20 most important Japanese cities. The AAF Intelligence Wing (A-2) received the report very favorably.<sup>231</sup> Perera claims to have opposed the idea, even though the COA included urban areas as one of six priorities for attack in the Far East. Indeed, his timeline is a little suspect, especially because already in May of 1943, the Plans Section had asked the A-2 to prepare information on “the vulnerability of Japanese target areas to incendiary attack” to supplement their “Japanese Target Data” that they put out in March.<sup>232</sup> This report, “Japan, Incendiary Attack Data,” was completed on October 15<sup>th</sup> – a month before Bond’s own report – and was written with the help of Raymond Ewell!<sup>233</sup>

The result of this work was to get Ewell loaned to COA, which was at that moment completing its own targeting plan, one which as mentioned would include urban areas as one of six (non-ranked) strategic target priorities for Japan.<sup>234</sup> What should be clear by this point is that Ewell did not know very much about the method by which the ACTS doctrine had evolved towards and decided upon precision doctrine, and frankly did not care. What he was interested in was finding a way to get the M-69 into higher production, and would accomplish that through embedding its use into the war plan. Unbeknownst to the war planners, Ewell, Russell, Bond, and their fellow civilian fire-lovers were sowing the seeds for the reversal of precision strategic bombing.

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<sup>230</sup> Sherry, 227.

<sup>231</sup> Perera, 110.

<sup>232</sup> Searle, 117.

<sup>233</sup> Kerr, 41.

<sup>234</sup> *Ibid.*, 45-7.

However, there was a hiccup in the plan. While the COA by this point was committed to including urban attacks at least as an option for the Air Force, the Dugway results raised the question for the Air Force of whether the M-69 was the right tool for the job. While the M-69 proved to be a great fire-starter, its overall performance disappointed. It was concluded that

“There is not a single standard incendiary munition... that is satisfactory, or sufficiently acceptable, for use in the principal mission of the Air Forces – the precision bombing attack of specific military and industrial targets.... Many of the personnel connected with incendiary development appeared unaware of Air Force directives and requirements for precision incendiary munitions”<sup>235</sup>

A report from General Arnold’s staff was even more forward: “[the incendiaries] are not sufficiently accurate from a ballistic standpoint *even for area bombing*” (italics mine).<sup>236</sup>

Of course, those involved with incendiary development knew very well what the AAF policy was – they just did not care. Russell had written to a fellow NDRC and Standard Oil man a few weeks earlier, cynically lamenting the fact that the AAF will claim that the M-69 is “usable not at all by the U.S. Air Force – all because it is alleged that the M-69 is even more difficult to lay on the target than the [very poor] M50.”<sup>237</sup>

Russell’s attitude toward the AAF can be summed up by a somewhat tangential letter sent to his fellow NDRC chiefs regarding an M-69 bomb with a high explosive charge (called the M-69X) under development in the NDRC. After testing, it was found that an average of around 23 percent of the charges were malfunctioning – a clearly unacceptable rate. Instead, Russell tried to argue that this defect will be “found to be of real advantage” because the non-exploded charges will explode once reached by the growing fires,

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<sup>235</sup> “Incendiary Bomb Tests at Dugway” Major George Fix to Col. Maxwell, 6/22/43, RG 18, NARA.

<sup>236</sup> “Incendiary Bombs” Major Echols (Assistant Chief of Air Staff, Material Maintenance, and Distribution) to Chief, CWS, 7/4/43, RG 18, NARA.

<sup>237</sup> Russell to N.F. Meyers, 5/26/43, RG 227, Box 3 – Records of Division Chiefs 1940-45. Russell Files, NARA.

allowing for a de-facto fuse of a much longer duration than they could construct.<sup>238</sup> More important than having a well-made product up to the AAF specifications was to get the product that the NDRC had into production fast. This is not to cast either Russell or Ewell as nefarious characters – their aim was to help the war effort with a weapon they legitimately though was an excellent incendiary – and ultimately they were vindicated. However, though I found no evidence of corruption, it is not hard to imagine the desire of an oil company executive to produce large amounts of oil bombs, especially when that company was helping to build them as well.

The final results of the Dugway tests were even more damning. On August 12<sup>th</sup>, 1943, the Assistant Chief of Staff for Operations sent the following three-point memo to the Army Requirement Division.

1. The committee on the testing of chemical and incendiary bombs has reported that all of our incendiary bombs are absolutely inefficient and have caused fires only under the most favorable circumstances.
2. The fault lies in the bomb being (1) too small (2) poor ballistically and (3) unable to cause fires.
3. It is directed that steps be taken toward the immediate development of a new type of incendiary bomb...also, steps should be taken to discontinue the manufacture of the inefficient projectiles we now have.<sup>239</sup>

It is impossible to conceive of a greater condemnation of the M-69 – it could not hit its targets and could not start fires. It was worthless as a bomb. And yet, just a day later, Russell wrote to his boss, Dr. James Conant that “you will be interested to note the five-fold superiority of the M-69 over the M50 for attack against Germany.”<sup>240</sup> Three days later, orders were going out to cancel all M-69 shipments, and by early fall its production was terminated, not to be restarted until mid-1944, at which point a suitable “aimable

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<sup>238</sup> Russell to E.P. Stevenson and H.C. Hottel, 9/23/43, RG 227, Box 3 – Records of Division Chiefs 1940-45. Russell Files, NARA.

<sup>239</sup> “Incendiary Bombs” General H.A. Craig to Requirements Division, 8/12/43. RG 18, NARA.

<sup>240</sup> Memo Russell to Conant, 8/13/43, RG 227, Box 3 – Records of Division Chiefs 1940-45. Russell Files, NARA.

cluster” was developed to allow for the M-69 to reach its targets with any sort of accuracy.<sup>241</sup>

This analysis of the development of the M-69 and the interaction between NDRC members and the A-2 and COA planners is not meant to discredit the M-69, and its results in Japan speak for itself regarding its capabilities. There is no question that ultimately it was a successful weapon. What is important is that for over two years during its development, it was unequivocally *not* an acceptable weapon by Air Force standards, and yet these non-military targeting groups – led by people like Russell, Ewell, and Bond – included it as the central aspect in deciding whether urban areas would be worthwhile targets for primary attack. It was through a decidedly non-military process and on a strikingly non-military basis that these plans came about. And yet based on these early planning papers emerged the October 1944 COA report that planned the Twentieth Air Force’s approach to attacking the Japanese mainland, in which, in the scenario in which ground invasion was to follow, the top three targets (in priority order) were (1) aircraft industry, (2) urban industrial areas, and (3) shipping.<sup>242</sup>

I have argued, and still maintain, that incendiary bombing fit into the strategic framework as it was conceived. Still, it is impossible to ignore the fact that incendiary bombing entered the Air Force’s plan entirely oblivious to its implications for precision bombing. Surely, had the aimable clusters not been perfected at the tail end of 1944 – just in time to get out to the Marianas for LeMay’s use – then the March 9<sup>th</sup> raid would not have been as effective as it was and area bombing might never have taken off the way it

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<sup>241</sup> Leo P. Brophy, Wyndham D. Miles, and Rexmond C. Cochrane, *The Chemical Warfare Service: From Laboratory to Field* (Washington D.C: Office of the Chief of Military History, Department of the Army, 1959), 348.

<sup>242</sup> Kerr, 83.

did. Similarly, had the weather and other proximate factors not shown the precision attacks on the aircraft factories to be such failures, there would have been no need to jump to the next-best target system. But even more than these contingencies, the very presence of urban areas within the Air Force target lists and the existence of the M-69 in sufficient amounts to cause the necessary damage was wholly dependent on the confluence of a number of seemingly unrelated events in the years before the Tokyo firebombing.

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Building upon arguments established by Sherry and Schaffer, Thomas Searle has already argued forcefully and convincingly that, at the very least, the urban attack against Japan was not a shift in the practice of the AAF, because the radar bombings against Germany were area attacks in all but name. Radar accuracy in the ETO was incredibly poor, with roughly 4 percent of bombing landing *within* a mile of the target zone, so the AAF needed to find targets that were measured in miles, not feet. “Effectively, that meant aiming at the centers of cities rather than at individual factories. In the last eighteen months of the war in Europe, the USAAF launched at least sixty-nine substantial raids (each comprised of at least one hundred heavy bombers), which dropped a total of almost sixty thousand tons of bombs on targets designated as the “city area” of twenty-five different German cities.”<sup>243</sup> Quoting the Air Force historians, Searle points out that, by these standards, “the aiming point,” and thus the so-call precision bombing, “became a highly theoretical term.”<sup>244</sup> While this explains the functional shift in AAF tactics in

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<sup>243</sup> Searle, 108.

<sup>244</sup> Quoted in Searle, 108.

Europe – and as I have argued, in the AAF policy, function was the lynchpin of doctrine – it does not account for the full scope of change which we understand to have been demonstrated by the Japanese attacks. This is because while attacks in Europe *seemed* like area attacks, the AAF still insisted they were precision attacks. In contrast, while the Japanese attacks were likewise portrayed as necessary and not simply the indiscriminate sowing of destruction, the notion of precision was more openly abandoned.

This is a fundamental difference, because it shows that the Japanese urban attacks were still conceived of and operated within the confines of AAF policy, while the radar bombings of Europe appear to have to some extent existed outside of that conceptual framework. That is, Searle might argue that functionally, little changed from Europe, but might still have to concede that, therefore, both the European and Japanese attacks contravened AAF policy and perhaps should be considered morally corrupt. As I have argued in this paper, that view is not necessary, though the issue of morality can remain an open question. Whether it is really ever justifiable to target civilians remains a legitimate path of inquiry, though mostly for international lawyers, philosophers, and politicians – not the historian working with what *actually* occurred, rather than what he or she thinks *should* have occurred. Absent that question, I have demonstrated that the decision to attack urban areas was consistent with ACTS and AAF policy, perhaps not how some of its initial planners conceived of it (and became attached to), but surely how they conveyed it. Moreover, when the process by which urban areas came to be included in Air Force target priorities is understood, it is impossible to claim that the “Air Force” itself had a moment in which it decided to abandon precision bombing. It occurred gradually and largely outside of the official military structure.



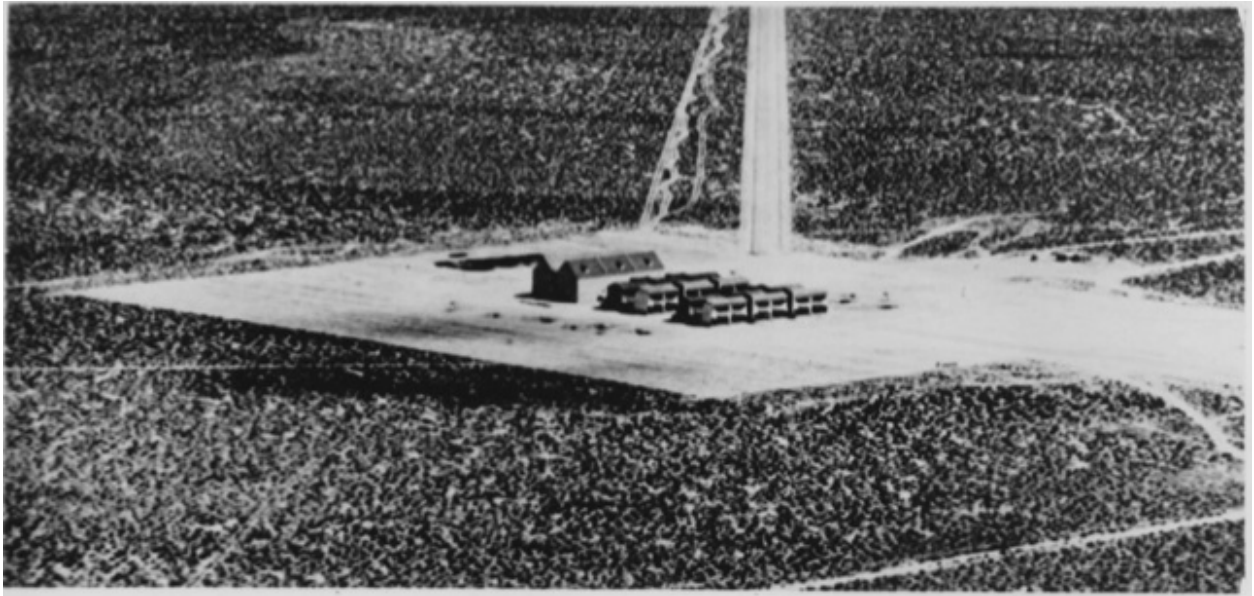
Revisionist histories try to show a change in bombing policy from the highest echelons of the AAF and even try and show some sort of knowledge by FDR or his administration. They do this by citing memos that request reports on the effects of incendiary attacks on cities, letters between Arnold and his subordinates regarding incendiary attacks or ways to spin PR to avoid mentioning area attacks, and even the direct requests from Norstad to Hansell and LeMay to try incendiary test runs. All these memos are correct, and they surely show an interest and knowledge of using incendiaries and attacking urban centers. They also, however, miss the point.

I argue that the mere request for incendiary research and questions about attacking Japanese cities did not imply a rejection of strategic bombing policy, nor did it necessarily mean a rejection of precision policy. It were these requests, ones that could easily fit within the precision attack rubric, that led to the creation of the COA and work by the NDRC on incendiaries, and it would be these non-military groups, once given the essentially harmless task of research, that would actually go about changing the targeting priorities of the AAF. Because ultimately the AAF plans depended on questions of efficiency to select between different methods and policies of attack, it would be the men who decided which targets were efficient that became the true deciders of policy.

This set in motion a more subtle and unforeseeable process than the revisionists would like to portray. Indeed, the AAF generals did ask for incendiary attacks and morale did come into question here and there (though not functionally until after the major industries had been destroyed in the spring of 1945, when the AAF realized that they could win without invasion). But they emerged not from a rejection of AAF policy, but from following it – just not the manifestation of the policy with which they had entered

the war. There was nothing sinister in this decision, one which ultimately was made based on the operational reality facing LeMay in the Marianas. The important thing to understand, though, is how contingent, gradual, almost natural was the evolution – rather than the paradigm shift – of Army Air Force policy in World War Two.

Appendix: Dugway Testing Grounds Photos (Source: NARA)



Narrow Street Between Test Structures



Typical Unit Between Fire Walls



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