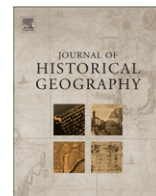


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A cartographic fade to black: mapping the destruction of urban Japan during World War II

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Abstract

In this paper we examine the history, production, and use – practical and rhetorical – of maps created by the United States government during World War II as related to the development and execution of aerial bombing policies against Japan. Drawing from a range of maps and primary documents culled from libraries and archives in the United States, we argue that maps provide an important, and hitherto neglected, means through which to trace the exploration and eventual embrace of the incendiary bombing of Japan's cities. In particular, our aim is to show how maps, along with the men who made and used them, played a central role in the planning and prosecution of air raids on urban Japan. We also address the mobilization of American geographers into the war effort, the re-configuration of America's spatial intelligence community during World War II, and the ways in which maps were constructed in the context of total war.

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In February 1942, Americans rushed to department stores, five-and-dimes, and other retail shops in search of world maps.¹ They had been instructed to have such a map nearby when their President gave an important 'fireside chat' that month. With their 47-cent Rand McNally Pocket World Maps in hand and Geographia Giant War Maps pinned to their walls, they listened to a radio address in which the president asked them to 'take out and spread before you a map of the whole earth.' Assuming the role of geographer-in-chief, President Franklin Roosevelt explained that the current war was different from others 'not only in its methods and weapons but also in its geography.... It is warfare in terms of every continent, every island, every airline in the world.'² Roosevelt's talk both promoted and reflected a changing 'geographical psychology' in the United States brought about by World War II. Map and globe sales skyrocketed, educational institutions at all levels promoted the teaching of geography, and Americans,

consuming news reports of wartime developments, repeatedly turned their gaze to the maps regularly featured in newspapers and that now hung prominently in classrooms, homes, and public spaces.³

In addition to expanding the geographic literacy of Americans, maps became integral to the myriad exigencies of the war itself. In the early phase of U.S. involvement in World War II, Americans listened to another map-related radio address, this one given by Bill Donovan, Chief of the Office of Strategic Services (OSS). In desperate need of spatial information about the Axis Powers, Donovan, the man charged with the enhancement of U.S. intelligence capabilities, appealed to the public for any cartographic materials pertinent to the war effort. According to Leonard Wilson, a geographer working in the Map Section of the OSS, Donovan's request 'brought in a large number of maps and considerable travel information.'⁴ In this and a number of ways as we discuss below, the U.S. government's own

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E-mail addresses: dfedman@stanford.edu (D. Fedman), cary.karacas@csi.cuny.edu (C. Karacas).¹ President's 'plug' booms map trade, *The New York Times*, 22 February 1942, 15a.² F.D.R. Reports to Country on State of War, *The New York Times*, 23 February 1942, 1.³ For a detailed discussion of the changes in this geographical psychology and the shift towards 'Air Age Globalism' see D. Cosgrove and V. Dora, Mapping global war: Los Angeles, the Pacific, and Charles Owen's pictorial cartography, *Annals of the Association of American Geographers* 95 (2005) 373–390; A. Henrikson, The map as an 'idea': the role of cartographic imagery during the Second World War, *The American Cartographer* 2 (1975) 19–53. For a broader discussion of changes to geographical thought and education in the U.S. brought about by WWII see S. Schulten, *The Geographical Imagination in America, 1880–1950*, Chicago, 2001.⁴ L. Wilson, Lessons from the experience of the map information section, OSS, *Geographical Review* 39 (1949) 302.

'geographical psychology' changed radically as it amassed spatial intelligence to be applied in a variety of ways, from logistical planning to political brokering, from plotting troop movements to targeting sites for destruction from the air.⁵ In this article, we focus on this last topic, the relationship between maps and the air raids carried out by the United States Army Air Forces (USAAF). In particular, our aim is to show how maps, along with the men who made and used them, played a central role in the incendiary bombing of Japan's cities by the USAAF's Twentieth Air Force, whose stated mission was to 'achieve the earliest possible destruction and dislocation of the economic systems, and to undermine the morale of the Japanese people to a point where their capacity for war is decisively weakened.'⁶

More than simply occupying 'a small back room in the house of the American memory,' as James Carroll suggests, the intentional destruction of 65 Japanese cities remains one of the most striking gaps in – if not the literature – the U.S. public consciousness regarding the major events of World War II.⁷ Obscured by resilient narratives of 'the Good War', the attention given to the atomic bombings of Hiroshima and Nagasaki, and a general unwillingness to tackle unsettling moral questions about the intentional large-scale targeting of civilians, the U.S. incendiary bombings of Japan, which killed at least 187,000 people,⁸ have been appropriately labeled 'a forgotten holocaust.'⁹

This essay will trace the process by which the Twentieth Air Force's embrace of urbicide and domicide crept onto the map – what we call the cartographic fade to black. Drawing from a corpus of maps and primary documents culled from libraries and archives in the United States, our goal here is to explicate the nexus of map production and the destruction of urban Japan, which constituted a particular 'culture of war', to borrow historian John Dower's term.¹⁰ In the first of three sections, we discuss the mobilization of maps and mapmakers in the initial phase of the war against Japan. In the second section we examine via maps produced for operations analysts in Washington D.C. how the USAAF changed its originally-stated strategy of high altitude precision bombing of military targets to urban areas and the populations within them. We then turn our attention to the role of cartography produced by the Twentieth Air Force's XXI Bomber Command, which from its headquarters on the small island of Guam in the Pacific Ocean directed the firebombing campaign against Japan's cities.

The cartography of these air raids, we contend, has much to say about the rhetoric and reality of total war – a term we use here to connote, among other things, the full-on mobilization of national resources, the technological fanaticism,¹¹ the conflation of civilians and combatants,¹² the racism,¹³ and the general fervor that were constitutive characteristics of World War II. As this essay will show, wartime maps were not only a vital component of the day-to-day operations of the bombing of Japanese cities during World War II, but also facilitated the spatial abstractions that were part and parcel of total war. This is in no small part because map knowledge, as J.B. Harley writes,

allows the conduct of warfare by remote control so that... killing is that more easily contemplated. Military maps not only facilitate the technical conduct of warfare, but also palliate the sense of guilt which arises from its conduct: the silent lines of the paper landscape foster the notion of socially empty space.¹⁴

The cartography of the Japan air raids throws this point into sharp relief. Cartographically and linguistically reduced to targets, industrial sites, and urban systems, Japanese cities were stripped of their corporeality. Such spatial abstractions informed decisions about the destruction of urban Japan along every step of the so-called 'kill chain': the sequence of intelligence gathering, strategic research, logistical planning, and tactical implementation that culminated in each attack. The topographical maps, target charts, aerial photographs, damage assessment reports, and other cartographic materials produced as a result of this bombing campaign thus stand as illuminating windows into the ways in which changing spatial and linguistic definitions of what constituted enemy space animated the military–industrial–academic complex and its eventual embrace of the targeting and wholesale destruction of urban areas.¹⁵ Maps, after all, are rhetorical; they convey the assumptions, worldviews, and values of their creators.¹⁶ It is thus imperative that we broaden the gaze of the map-reader beyond the confines of the map itself to include the various groups of men who collectively made and used those maps to destroy Japan's cities. The changing forms of intelligence gathering, the shifting prerogatives of military planners, the decaying ethics of conventional warfare – all of these facets and others are etched into the map. Teasing out their provenance and critically engaging with their rhetorical

⁵ For further assessments of map usage in the context of WWII see Army Map Service, *The Army Map Service: Its Mission, History, and Organization*, Washington D.C., 1960; J. Garver, The President's map cabinet, *Imago Mundi* 49 (1997) 153–157; J. Kries (Ed.), *Piercing the Fog: Intelligence and Army Air Forces Operations in World War II*, Washington D.C., 1996.

⁶ 'Air Estimate and Plans for Twentieth Air Force Operations, November 1944–January 1945,' 3 November 1944. Source: U.S. National Archives, Record Group 18, Entry UD21, Box 126.

⁷ J. Carroll, *House of War: The Pentagon and the Disastrous Rise of American Power*, New York, 2006, 95.

⁸ This conservative estimate is derived from the Japan Economic Stabilization Agency, *Taiheiyōsensō ni yoru wagaguni higai sōgō hōkokusho* [Overall report of damage sustained by the nation during the Pacific War], Tokyo, 1949.

⁹ See M. Selden, A forgotten holocaust: U.S. bombing strategy, the destruction of Japanese cities and the American way of war from World War II to Iraq, in: Y. Tanaka, M. Young (Eds.), *Bombing Civilians: A Twentieth-Century History*, New York and London, 2007, 77–96. While our focus here is on the role of the map in carrying out and conveying the destruction of Japan's cities, this article may be read in part as a contribution to the literature that deals with the military applications of air power as directed against or involving civilians throughout the twentieth century. See, for example, A.C. Grayling, *Among the Dead Cities: The History and Moral Legacy of the WWII Bombing of Civilians in Germany and Japan*, New York, 2006; D. Omissi, *Air Power and Colonial Control: The Royal Air Force, 1919–1939*, Manchester, 1990; T. Biddle, *Rhetoric and Reality in Air Warfare: The Evolution of British and American Ideas about Strategic Bombing, 1914–1945*, Princeton, 2004; P. Satia, The defense of inhumanity: air control and the British idea of Arabia, *American Historical Review* 111 (2006); M. Sherry, *The Rise of American Air Power: The Creation of Armageddon*, New Haven, 1987.

¹⁰ For the clearest articulation of what is meant by a 'culture of war' in the context of World War II see the Introduction to J. Dower, *Cultures of War: Pearl Harbor: Hiroshima: 9–11: Iraq*, New York, 2010.

¹¹ For an exhaustive treatment of the technological fanaticism that characterized WWII as it relates to air power see Sherry, *The Rise of American Air Power* (note 9).

¹² See Selden, A forgotten holocaust (note 9).

¹³ The classic treatment of the race hates fueling World War II is J. Dower, *War without Mercy: Race and Power in the Pacific War*, New York, 1986.

¹⁴ J.B. Harley, *The New Nature of Maps: Essays in the History of Cartography*, Baltimore, 2001, 60.

¹⁵ For detailed treatment of the origins of this complex see S. Leslie, *The Cold War and American Science: The Military–Industrial–Academic Complex at MIT and Stanford*, New York, 1993.

¹⁶ See, for example, B. Harley, Deconstructing the map, *Cartographica* 26 (1989) 1–20; J. Crampton, *Mapping: A Critical Introduction to Cartography and GIS*, Malden, MA, 2010; D. Wood, *Re-thinking the Power of Maps*, New York, 2010.

coding will do much to enhance our understanding not only of the inner-workings and spatial sensibilities of the wartime intelligence and strategic planning community, but also of the ways in which Japan-related maps made during World War II bear the imprint of total war.

Mobilizing the map and its makers

'War has been one of the greatest geographers'¹⁷

America's entrance into World War II precipitated an unprecedented mobilization of the nation's resources – economic, military, and geographic. No event provided a catalyzing jolt to this mobilization more than the Japanese attack on Pearl Harbor. Although concerns about the woeful state of military intelligence services well predate the events of December 7, 1941, the attack made all too clear the fact that, as John Kries writes, the U.S. military 'had no effective central organization responsible for collecting, analyzing, and disseminating data about enemies or potential enemies.'¹⁸ The task of creating such an intelligence organization fell to the Office of the Co-ordinator of Information (re-configured as the OSS the following year), commissioned by Presidential Order on July 11, 1941 and put under the direction of Bill Donovan. It was within the ranks of the COI/OSS nexus that American geographers, intelligence experts, and scientific specialists (in addition to a small contingent of émigré contributors), worked to overhaul spatial intelligence to meet the geographical demands of the war effort.¹⁹ By 1943, Chauncy Harris, a geographer under the employ of the OSS, could remark that 'there are probably more geographers now working for the government in Washington D.C. than have ever before in the world's history been assembled in any one city.'²⁰

The Map Division of the OSS Research and Analysis unit constituted the hothouse for wartime map production. With work parceled out among four sub-sections (cartography, map intelligence, topographic models, and special photography), and information compiled from a network of geographers, cartographers, draftsmen, and intelligence operatives across the globe, a staff of 150 men led by Arthur Robinson produced some 8000 maps over the course of the war.²¹

As Bill Donovan's aforementioned radio address suggests, the acquisition of cartographic materials constituted a high priority at the beginning of the war. This is especially true of Asia in general and Japan in particular, for which the OSS Map Division found it more difficult to secure maps and other spatial intelligence than for the countries in Europe.²² The division hunted down maps in the

Department of State, National Archives, Army Map Service, Hydrographic Office, and other government agencies. On occasion it stumbled upon troves in unexpected places, such as the discovery in 1942 of over 1200 topographic maps of Japan stashed away in a vault within the Department of Agriculture. According to Leonard Wilson, former head of the Map Division, this represented a doubling of 'the combined holdings of the Army Map Service and the Hydrographic Office.'²³ They also turned to university libraries, 'bookdealers specializing in foreign publications,' and the private map collections of scholars.²⁴ Globally, regional divisions of the OSS – Europe/Africa, Latin America, Far Eastern, and others – dispatched operatives into the field to collect map sheets and other forms of spatial intelligence. Such map collection measures alleviated the initial concerns regarding the poverty of spatial information on Japan and allowed cartographers to cobble together the materials required to produce their own representations of Japanese space.

The OSS's Geography Division eventually had at its disposal a patchwork of cartographic sources, among which Japan-produced maps and atlases featured prominently. In this sense, the Japanese Government, which for decades had dispatched surveyors to carry out land surveys across its empire, played a role in its eventual destruction.²⁵ Particularly useful were Japanese Imperial Land Survey maps produced between 1890 and 1940, especially those later editions that included dozens of up-to-date city plans.²⁶ The finely detailed 1944 OSS Map *City Plan of Tokyo* (Fig. 1), for example, could only be drawn because cartographers had numerous Japanese maps of the capital at their disposal.²⁷

From Japanese and other sources, OSS cartographers produced many maps of Japan. Outline maps showed Japan within the context of Asia and by its individual prefectures. Thematic maps focused on areas such as Japan's aircraft, petroleum, aluminum, and rubber industries. In addition to the Tokyo City Plan map mentioned above, cartographers created many maps that focused on Japan's cities. They highlighted road networks (OSS Map no. 357); the Japan-wide urban network (no. 854); cities based on functional type – diversified, manufacturing, government, trade, transportation, mining, fishing, and shrine (no. 5297); and the location of power generating facilities and distribution of water supplies for select cities. Some maps focused on cities with populations of over 100,000 people for the years 1870, 1900, 1930 and 1940 (nos. 341–343, 767). The OSS also mapped out the plans for cities ranging in terms of population from the Tokyo metropolis, mentioned above, with its millions of residents to Japan's northernmost town, Wakkanai, located on a peninsular tip of Hokkaido that juts above 45° north and served as the home to just a few thousand people (no. 5269).

¹⁷ G. Goldie, *Geographical ideals*, *Geographical Journal* 29 (1907) 8.

¹⁸ Kries, *Piercing the Fog* (note 5), 2–3.

¹⁹ For a more fine-grained analysis of the composition of this group of geographers see T. Barnes and M. Farish, *Between regions: science, militarism, and American geography from world war to cold war*, *Annals of the Association of American Geographers* 96 (2006) 807–826; T. Barnes, *Geographical intelligence: American geographers and research and analysis in the Office of Strategic Services, 1941–1945*, *Journal of Historical Geography* 32 (2006) 149–168.

²⁰ C. Harris, *Geographers in the U.S. government in Washington, DC, during World War II*, *Professional Geographer* 49 (1997) 246.

²¹ In addition to Robinson, others geographers attached to the OSS who would later rise to prominent academic positions included Richard Hartshorne, Edward Ullman, Kirk Stone, Joe Spencer, J.B. Appleton, and Leonard Wilson. See J. Crampton and T. Barnes *Mapping intelligence: American geographers and the Office of Strategic Services and GHQ/SCAP* (Tokyo), in: S. Kirsch, C. Flint (Eds), *Reconstructing Conflict: Integrating War and Post-war Geographies*, Burlington, 2011, 234.

²² Harris, *Geographers in the U.S. government in Washington, DC, during World War II* (note 20), 253–254.

²³ Wilson, *Lessons from the experience of the map information section*, OSS (note 4).

²⁴ For further discussion of the ways in which the intelligence community gathered spatial intelligence see Wilson, *Lessons from the experience of the map information section*, OSS (note 4); Expert offers 1500 Maps for War Use; Product of 300,000 Miles of Travel, *New York Times*, 26 July 1942, 16; Librarians' Ammunition; Specialists Provide the Government with Much Valuable Material for War, *New York Times*, 20 June, 1943, 10.

²⁵ For a thorough analysis of the land survey in Japan see K. Takagi, *Nihon ni okeru chizu sokuryō no hattatsu ni kan suru kenkyū*, Tokyo, 1966. For a broad treatment of land surveys conducted across the Japanese empire and the production of maps by the Japanese military see S. Kobayashi, *Gaihōzu: Teikoku nihon no ajia chizu*, Tokyo, 2011.

²⁶ Joint Army-Navy Intelligence Studies, *Chapter XV, Joint Army-Navy Intelligence Study of Central Japan: Central and Northern Honshu Gazetteer and Map Appraisal*, Joint Intelligence Study Pub. Board, Washington D.C. October 1944.

²⁷ These maps included a detailed 1:10,000 scale 1932 Imperial Land Survey map of the city, a 1935 *Map of Tokyo and Yokohama*, a 1936 *Map of Greater Tokyo* by Ward, and a 1940 *New Model Map of Greater Tokyo*.



Fig. 1. City Plan of Tokyo, October 1944 – OSS Map no. 5279. Source: U.S. National Archives, Cartographic and Architectural Section, Record Group 226: 330/20/8.

The OSS, however, did not have a monopoly on geographers or the creation of Japan-themed maps. The War Department housed the second largest group of geographers, while the Army Map Service (AMS) hosted seventeen of them.²⁸ The AMS in particular produced highly professional maps of Japan, along with atlases, gazetteers, and other map-related publications focused on the country. In December 1943, for example, it reprinted its own 1910 *Beattie's Gazetteer of Japanese Ken, Gun, O-aza and Ko-aza Names*, as well as the 1934 *Shin Nippon Zuchō* (New Atlas of Japan). For the latter, the AMS included a romanization of the map index and translated editor Motoharu Fujita's introduction, which thoroughly reviewed Japan's long cartographic history. A few months later, it printed a lengthy *Glossary of Terms on Maps of Japan* by referring to prewar Japanese Imperial Land Survey maps.

Soon after production, couriers delivered prints of these maps and atlases to the Pentagon, which housed the United States Army Air Forces' Twentieth Air Force. This dramatic expansion of spatial knowledge about Japan was wholeheartedly welcomed, given that as early as September 1941 the Air Corps (predecessor to the Army

Air Forces) voiced grave concerns about whether it could meet 'demands for maps and other forms of terrain intelligence for the use of combat units in active operations.'²⁹ As Commanding General of the Army Air Forces, General Henry Arnold himself was acutely aware of the need for spatial intelligence:

When it came to establishing the Target Folders that would give us the size, location, general characteristics, special distinguishing marks, the type of construction, and other details necessary for bombing operations against a target....such data did not exist in the United States. Accordingly, the Air Force had no recourse but to go to other sources for its information. ...General 'Wild Bill' Donovan, who was running the OSS would always give us the data in time.³⁰

Target charts produced for the USAAF by the Army Map Service in 1942 reflect the U.S. intelligence community's ability to obtain and map significant information about Japanese industries. They also convey the Army Air Forces' initial approach toward the aerial bombing of targets within an enemy country. The explicit policy of

²⁸ Harris, *Geographers in the U.S. government in Washington, DC, during World War II* (note 20), 247.

²⁹ War Department, Office of the Chief of Engineers, 23 September 1941, Memorandum for the Chief of Staff, Subject: Maps and Terrain Intelligence in the Theaters of Operations. Source: U.S. National Archives, Record Group 18, Entry 7, Box 3494, Folder: 1st Mapping Group, Reports 1941–1946.

³⁰ H. Arnold, *Global Mission*, New York, 1949, 534–535.

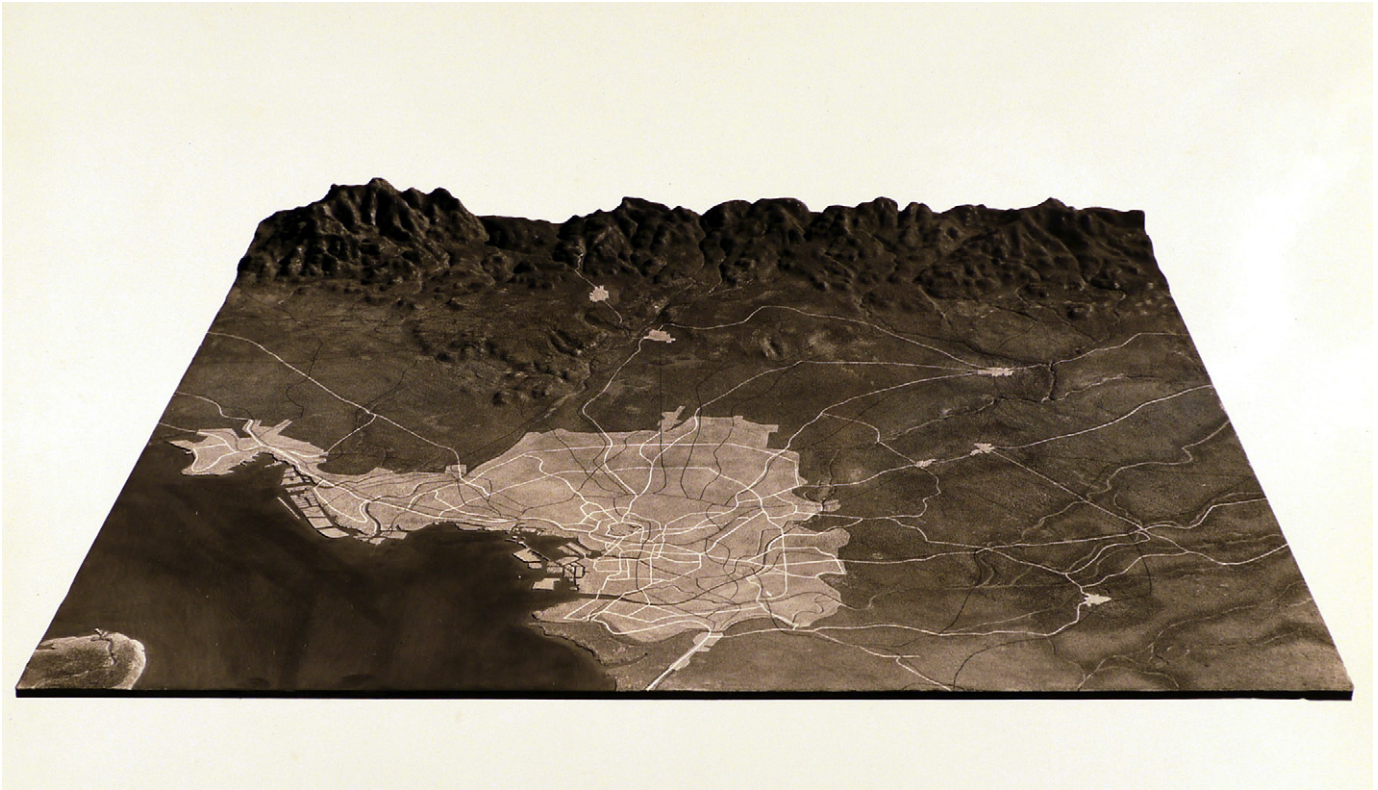


Fig. 3. A topographic model of the greater Tokyo region. Source: U.S. National Archives, Record Group 243, Series 59, Box 6.

well out of reach of anti-aircraft defense, crewmembers of the 3rd Photographic Reconnaissance Squadron took about 7000 photographs. F-13s would return to Japan seventeen more times before the first B-29 air raid originating from the Mariana Islands occurred in late November 1944.³³

When the reconnaissance planes returned to the Mariana Islands with their thousands of aerial photographs per mission, a photo-tech unit stationed in Guam interpreted them and used some as the basis for the production of maps.³⁴ 'The pictorial story of Japan's devastation,' boasted a yearbook created by the group, 'emerged in our developing trays, on our presses, on the maps and under the stereoscopes of the 35th.'³⁵ Perhaps no one was more enthusiastic about the contribution of these photoreconnaissance flights than the man initially at the helm of the XXI Bomber Command, General Haywood Hansell, who wrote in an early December 1944 memo, 'Thank God for the 3rd Photo Recon Squadron, without it we would have had no data on which to operate,'³⁶ and who described the squadron's first photoreconnaissance flight over Japan on November 1, 1944 as 'probably the greatest...single contribution...in the air war with Japan.'³⁷

Photo interpreters in the Mariana Islands and the United States studied the images for military targets, which in turn were plotted on a variety of maps that Army Map Service and other agencies

compiled. Henry Arnold ensured that the photographs served as the basis for the creation of not only maps but also a variety of 3D models – some small and others spectacularly large – to be used for aerial bombing preparations (Figs. 3 and 4). 'Miniature replicas of Japan, laid out on the floors of sound stages in Hollywood and Washington D.C.,' stated an early postwar *Popular Mechanics* article, 'helped B-29 crews in the Pacific recognize almost every bump, stream and industrial target in the Nipponese homeland.'³⁸

Mapping the destruction of urban Japan

Some accounts of the USAAF air raids against Japan maintain that the turn to incendiary bombing of Japan's cities came at the behest of General Curtis LeMay, who took over as head of the Mariana-based XXI Bomber Command in January 1945. Certainly, his predecessor Haywood Hansell had held firm to a commitment to a precision bombing strategy that sought to eliminate Japan's capacity to produce aircraft engines and frames, to be followed by concentrating on other 'war-making targets.'³⁹ For a few months, Hansell did his utmost not 'to waste our bombs on large city areas' even as his superior Henry Arnold pressed him on the need to quickly 'show the results so the public can judge for itself as to the effectiveness of our operations.... I hope that you will send back

³³ H. Hansell, *Strategic Air War against Japan*, Alabama, 1981; W. Craven, J. Cate (Eds), *The Army Air Forces in World War II, Vol. 5, The Pacific: Matterhorn to Nagasaki June 1944 to August 1945*, Chicago, 1953; D. Morse, Eye in the sky: the Boeing F-13, *Journal of the American Aviation Historical Society* 26 (1981) 150–168.

³⁴ An illuminating treatment of the on-site production of wartime maps and the institutional history of professional mapmaking in the Pacific War is Office of the Chief Engineer, *Engineer Intelligence: Engineers of the Southwest Pacific, 1941–1945*, Washington, D.C., 1947.

³⁵ 35th PhotoTech Unit, *35th PhotoTech Unit*, 1945. No date. Source: U.S. Library of Congress, Curtis LeMay Papers.

³⁶ Letter from Hansell to Brig. General Lauris Norstad, 2 December 1944. Source: U.S. National Archives, Record Group 18, File 201, Hansell Folder.

³⁷ As cited in Kries, *Piercing the Fog* (note 5), 80.

³⁸ Mapping Japan for the bombers, *Popular Mechanics* 84 (6) (December 1945) 24–25.

³⁹ Hansell, *Strategic Air War against Japan* (note 33), 50.

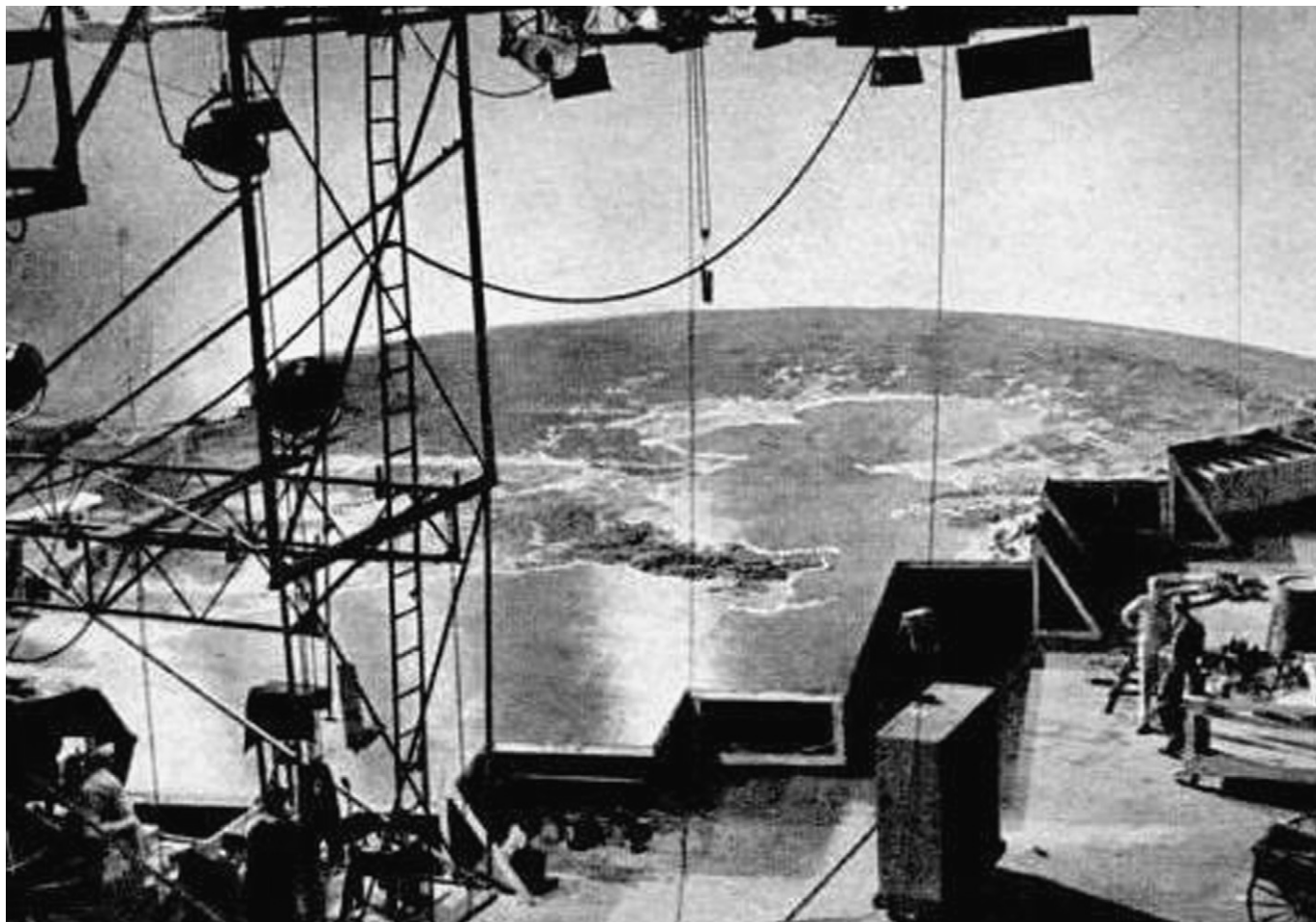


Fig. 4. A large-scale model of greater Tokyo region constructed in Los Angeles, California. To gain a sense of the scale, note the two men standing to the right. Source: Library of Congress, Henry Arnold Papers, Box/Reel 57.

an increasing number of pictures of increasingly interesting subjects.⁴⁰ Hansell's inability to send enough images, due in part to inclement weather and high altitude jet stream winds that hobbled efforts to cripple aircraft manufacturing plants to the west of Tokyo, played no small role in his replacement.⁴¹ And yet, while LeMay undoubtedly played a central role in the burning of Japan's cities (as he did in the destruction of targets in North Korea and Vietnam), this narrative fails to account for the persistent interest in and exploration of incendiary bombing that predates 1945. In the early 1930s, for example, William 'Billy' Mitchell, a pioneering proponent of U.S. air power, observed that 'an air offensive against Japan itself would be decisive because all Japanese cities are congested and easily located. In general, their structure is of paper or wood or other inflammable substances. It makes their country especially vulnerable to aircraft attack.'⁴² And in 1939, the predecessor to the USAAF noted that 'large sections of the great Japanese cities are built of

flimsy and highly flammable materials. The earthquake disaster of 1924 [sic] bears witness to the fearful destruction that may be inflicted by incendiary bombs.'⁴³ These, of course, may be attributed to mere observations. The Army Air Forces, however, began to investigate urban Japan's vulnerability to fire in full beginning in May 1943 when its Plan Section requested a report on the topic, which the USAAF's Intelligence Section completed that October.⁴⁴

The result, *Japan, Incendiary Attack Data, October 1943*, writes Searle, 'analyzed twenty key cities and divided each into zones based on the flammability of its structures. For the ten most important cities, it provided overprinted maps which indicated the locations of the various zones.'⁴⁵ As one example of the maps found in this report, consider the OSS Map no. 877, *Tokyo, Inflammable Areas* (Fig. 5). Cartographically speaking, it is a classic value map which shows the level of inflammability for each of Tokyo's thirty-five wards.⁴⁶ This value is based mostly on the percentage of each

⁴⁰ Letter from Hansell to Arnold, 16 December 1944. Source: U.S. National Archives, Record Group 18, Numeric File 201, Arnold Folder; Letter from Arnold to Hansell, 24 December 1944. Source: U.S. National Archives, Record Group 18, Numeric File 201, Arnold Folder.

⁴¹ See, for example, Craven, Cate, *The Army Air Forces in World War II, Vol. 5, The Pacific* (note 33); E. Kerr, *Flames over Tokyo: The U.S. Army Air Forces' Incendiary Campaign Against Japan 1944–1945*, New York, 1991; Ralph, *Improvised destruction* (note 31), 495–522.

⁴² W. Mitchell, *America, Air Power and the Pacific*, 1928, William Mitchell Papers, Washington, Library of Congress.

⁴³ As quoted in C. Crane, *Bombs, Cities, and Civilians: American Airpower Strategy in World War II*, Lawrence, 1993, 126.

⁴⁴ Kerr, *Flames over Tokyo* (note 41); T. Searle, 'It made a lot of sense to kill skilled workers': the firebombing of Tokyo in March 1945, *Journal of Military History* 66 (2002) 103–133.

⁴⁵ Searle, *It made a lot of sense to kill skilled workers*, (note 44) 117.

⁴⁶ For a detailed explanation of the aesthetic and cartographic qualities of a value map see M. Monmonier, *Mapping it Out: Expository Cartography for the Humanities and Social Sciences*, Chicago, 1993.

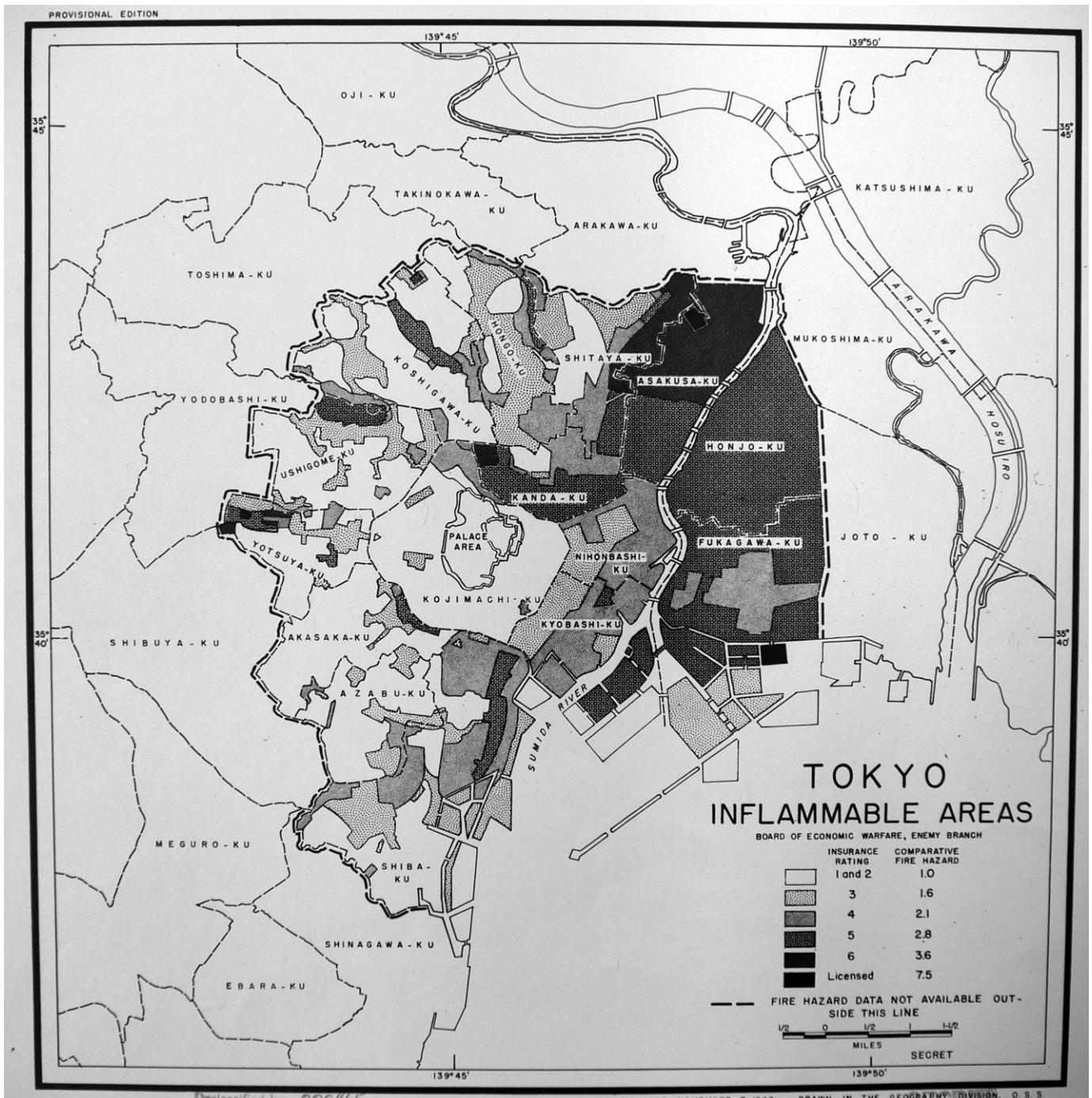


Fig. 5. OSS Map no. 877, Tokyo – Inflammable Areas, November 1942. Source: U.S. National Archives, Cartographic and Architectural Section, Record Group 226: 330/20/8.

ward covered with wooden buildings and correlated with insurance ratings and comparative fire hazards. The white value – least flammable – is attributed to Tokyo's outer wards, still sparsely populated and largely agricultural. The darkest values of the map largely correspond to those wards that straddle the Sumida River, traditionally designated as the city's working class and artisan 'Shitamachi' district, the same area that fires destroyed as a result of

the Great Kantō Earthquake less than two decades before the map was created.

Although strategists within the USAAF debated the efficacy of putting Japan's 'urban areas' high on the target list, the final COA report, along with the accompanying maps produced by OSS geographers, amount to an embrace of urbicide as a legitimate form of warfare against Japan.⁴⁷ While acknowledging debates regarding

⁴⁷ For a brief discussion of these internal debates, see Kries, *Piercing the Fog* (note 5).

the appropriateness of urbicide as an analytical term and the particular ways it may be applied to systematic violence that approaches the level of genocide, in this paper we use a more plastic meaning of the term.⁴⁸ Urbicide as we define it involves two simultaneous acts: the intentional large-scale destruction of a built-up urban environment and the indiscriminate targeting of the inhabitants of a city with the goal of inflicting terror, injury, and/or death. Kenneth Hewitt's discussions of area bombing during World War II stand out in the growing literature on urbicide, and merit attention here for three reasons.⁴⁹ First, Hewitt's approach to 'place annihilation' (as he originally termed it) encompasses a variety of interconnected spatial scales, from individual bodies to the urban ecology of a city. Second, it is attuned to a particular, and often overlooked, reality that when urbicide is carried out in the form of incendiary air raids, housing is 'almost always "ground zero" in the bombing of settlements,'⁵⁰ and it is usually the city's most vulnerable inhabitants who must experience the horrors and suffering particular to being caught in a conflagration. Finally, the historical focus of much of Hewitt's work on World War II continues to stand out among geographers and other academics who study urban matters in general and issues related to large-scale violence inflicted on cities and civilians in particular. While a significant body of literature on urbicide has appeared since Hewitt's first observations on the matter in the early 1980s, with some important exceptions, the majority of geographers who study violence inflicted on cities examine more contemporary instances of the phenomenon.⁵¹ Hewitt's lament that the urbicide of the World War II 'remains terra incognita for us' has been answered to some extent for the cities of Western Europe,⁵² but it continues to hold true for the burning of Japan's cities – as well as the destruction of Chinese cities by bombers attached to the Japanese Imperial Navy.⁵³

One theme that emerges from actual instances of urbicide as we define it is that the state, in order to justify the political violence inherent in the targeting of a city and its inhabitants, must conceptualize an abstract enemy space deserving of such an attack. It follows that representations of enemy space (which may be an entire country, or for the purposes of this discussion, the cities of an enemy state) are largely stripped of humans who ought to be offered some form of protection against bodily harm that would be brought about by an attack against the city as a whole.⁵⁴ One method by which U.S. military planners conceptualized cities as abstract spaces was to limit visual representations of a city to a physical morphology stripped of human beings.⁵⁵ Maps, which often give precedence to transportation and road networks, building distributions and densities, and various nodal points are obvious ways to create such abstract spaces. So are aerial

reconnaissance photographs, which, by virtue of the distance from which the camera captures the city, render its inhabitants all but invisible. Another form of denial of the city as a lived space involves the recognition of only a certain type of human presence, one that, according to one particular strain of wartime logic, constitutes a legitimate target for killing: workers who are contributing to the war effort. The presence of those too young, old, incapacitated, or otherwise unable to be enjoined in the war effort must be denied.

This reduction of the city to a 'visual field' either vacant of bodies or filled only with the bodies of 'workers' is accomplished by an interconnected set of linguistic and visual representations, some of which are circulated 'through public spheres as they prepare audiences for war and desensitize them to its outcomes.'⁵⁶ Others, often designated as 'confidential' or 'secret,' circulate only among those people actively involved in directing the course of the war effort. The destruction of urban Japan was planned out in this latter arena, where visual representations of the other (in this case the Japanese civilian body, especially as connected to ideas and actual instances of home, neighborhood, and city) were denied while simultaneously their Japanese homes and cities received more sustained attention by outsiders than at any other time in history.

While *Japan, Incendiary Attack Data, October 1943* may be read as a brief for urbicide, planners in particular began to embrace an approach to the destruction of urban Japan that may be considered 'extreme domicile,' which Porteous and Smith define as 'major, planned operations' which result in 'the deliberate destruction of home by human agency in the pursuit of specified goals, which causes suffering to the victims.'⁵⁷ One important chapter in the preparation for domicile involved the construction of a 'Japanese Village,' right next to a 'German Village' at the U.S. military's Dugway Proving Ground in Utah.⁵⁸ On commission by the Chemical Warfare Service, Standard Oil Development Company undertook research on how best to destroy by fire 'small dwellings and tenement type construction which represent the largest portion of roof area in industrial Japan.'⁵⁹ Aided by architect Antonin Raymond, who designed and managed the construction of pre-fabricated model Japanese houses made with Mountain Douglas Fir and Russian Spruce from his base in New Jersey, Standard Oil filled these dwellings upon their assembly in Utah with typical items found in a Japanese home: *tatami* straw mats, sitting pillows, low tables, futon bedding, and chests of drawers. It then ignited the structures with a variety of incendiary weapons in order to gauge their flammability (see Figs. 6 and 7). The report's description of homes – the test structures of which burned to the ground in around 15 min – as 'workers quarters' both reflected and contributed to the construction of imagined urban geographies that

⁴⁸ See in particular M. Coward, *Urbicide: The Politics of Urban Destruction*, London and New York, 2009; M. Shaw, New wars on the city: relationships of 'urbicide' and 'genocide', in: S. Graham (Ed.), *Cities, War, and Terrorism: Towards an Urban Geopolitics*, Malden, MA, 2004, 141–153.

⁴⁹ See K. Hewitt, Place annihilation: area bombing and the fate of urban places, *Annals of the Association of American Geographers* 73 (1983) 257–284; K. Hewitt, The social space of terror: towards a civil interpretation of total war, *Environment and Planning D: Society and Space* 5 (1987) 445–474; K. Hewitt, 'When the great planes came and made ashes of our city...': towards an oral geography of the disasters of war, *Antipode* 26 (1994) 1–34; K. Hewitt, Proving grounds of urbicide: civil and urban perspectives on the bombing of capital cities, *ACME: An International E-Journal for Critical Geographies* 8 (2009) 340–375.

⁵⁰ Hewitt, Place annihilation (note 49), 73.

⁵¹ R. Bevan, *The Destruction of Memory: Architecture at War*, London, 2006; D. Campbell, S. Graham and D. Monk, Introduction to urbicide: the killing of cities? *Theory and Event* 10, 2 (2007); S. Graham, Cities as strategic sites: place annihilation and urban geopolitics, in: S. Graham (Ed.), *Cities, War, and Terrorism: Towards an Urban Geopolitics*, Malden, 2003, 31–53; D. Gregory, Defiled cities, *Singapore Journal of Tropical Geography* 24 (2003) 307–326; D. Gregory, Doors into nowhere: dead cities and the natural history of destruction, in: P. Meusburger, M. Heffernan, E. Wunder (Eds.), *Cultural Memories*, Dordrecht, 2011, 249–282.

⁵² See in particular C. Baldoli, A. Knapp and R. Overly, *Bombing, States and Peoples in Western Europe*, London and New York, 2011; Gregory, Doors into nowhere (note 51).

⁵³ Hewitt, Place annihilation (note 49), 259. For a more detailed analysis of Japanese bombing of Chinese cities see M. Peattie, *Sunburst: The Rise of Japanese Naval Air Power, 1909–1941*, Annapolis, Maryland, 2001.

⁵⁴ Graham, Cities as strategic sites (note 51); S. Graham, Lessons in urbicide, *New Left Review* 19 (2004) 63–78; Gregory, Defiled cities (note 51).

⁵⁵ D. Gregory, American military imaginaries and Iraqi cities, in: C. Linder (Ed.), *Globalization, Violence, and the Visual Culture of Cities*, London and New York, 2010, 67–84.

⁵⁶ Gregory, American military imaginaries and Iraqi cities (note 55), 71.

⁵⁷ J. Porteous and S. Smith, *Domicide: The Global Destruction of Home*, Montreal, 2001, 12.

⁵⁸ For further discussion of this episode see M. Davis, *Dead Cities and Other Tales*, New York, 2002; Kerr, *Flames over Tokyo* (note 41).

⁵⁹ Standard Oil Development Company, *Design and Construction of Typical German and Japanese Test Structures at Dugway Proving Grounds*, Utah, 1943, 11.



Fig. 6. Interior of 'Japanese house' constructed in Utah. Source: Standard Oil Development Company, *Design and Construction of Typical German and Japanese Test Structures at Dugway Proving Grounds*, Utah, 1943.

envisioned Japanese cities populated solely by legitimate military targets.⁶⁰

If by 1943 the U.S. military was exploring the combustibility of Japanese cities in the abstract, by early 1944 it began actual preparations to exploit this weakness. The clearest articulation of this tactical logic is perhaps a 155-page report entitled *Economic Effects of Successful Area Attacks of Six Japanese Cities*. Submitted on behalf of the Committee of Operations Analysts (COA), an intelligence branch of the USAAF created by Henry Arnold, this report makes the case for destroying a significant percentage of all housing in six of Japan's most populous cities: Tokyo, Osaka, Yokohama, Kawasaki, Nagoya, and Kobe. The subcommittee (comprised of individuals from the OSS, the Navy, the Army's A-2 intelligence section, the Foreign Economic Administration, and the Twentieth Air Force) advised that as soon as enough B-29s could be gathered on the Mariana Islands, which American military forces wrested from Japan that summer, the USAAF should carry out massive fire-bombing raids against the densest population concentrations of each city. The subcommittee estimated that by destroying 70% of all housing in the above-mentioned cities — where a combined

population of almost 15 million people lived — Japan's industrial output would decrease by 15%.⁶¹

While investigating how to destroy housing in Japan's main cities, the authors of the report surely had laid out before them a series of maps, which likely included those from the 1943 report along with other OSS maps. One may have been *Tokyo, Density of Population 1940* (Fig. 8), produced by the OSS's Geography Division in October 1942. In addition to deducing where in each city the most 'congested residential areas' were located, the authors of the report estimated the specific demographic breakdown of urban Japan by turning to a number of Japanese-language publications, including 1930 census data, *Nippon Toshi Nenkan* (Japan Municipal Yearbook), and 1941 issues of *Toshi Mondai* (Municipal Problems), published from 1925 by the venerable Tokyo Institute for Municipal Research.⁶²

Noteworthy as well are the two precedents to which the analysts repeatedly refer in their attempt to surmise the destructive potential of incendiary attacks on Japan's cities: the conflagration that followed the Great Kantō Earthquake of 1923 and the tactics employed by Royal Air Force (RAF) fighters in the air war against

⁶⁰ A. Raymond, *An Autobiography*, Rutland, Vt. and Tokyo, 1973; Standard Oil Development Company, *Design and Construction of Typical German and Japanese Test Structures at Dugway Proving Grounds* (note 59).

⁶¹ Committee of Operations Analysts, *Economic Effects of Successful Area Attacks on Six Japanese Cities*, 4 September 1944. Source: U.S. National Archives, Record Group 18, Entry 57, Box 8.

⁶² Committee of Operations Analysts, *Economic Effects of Successful Area Attacks on Six Japanese Cities* (note 61), 62.



Fig. 7. A Japanese house aflame in the U.S. Source: Standard Oil Development Company.

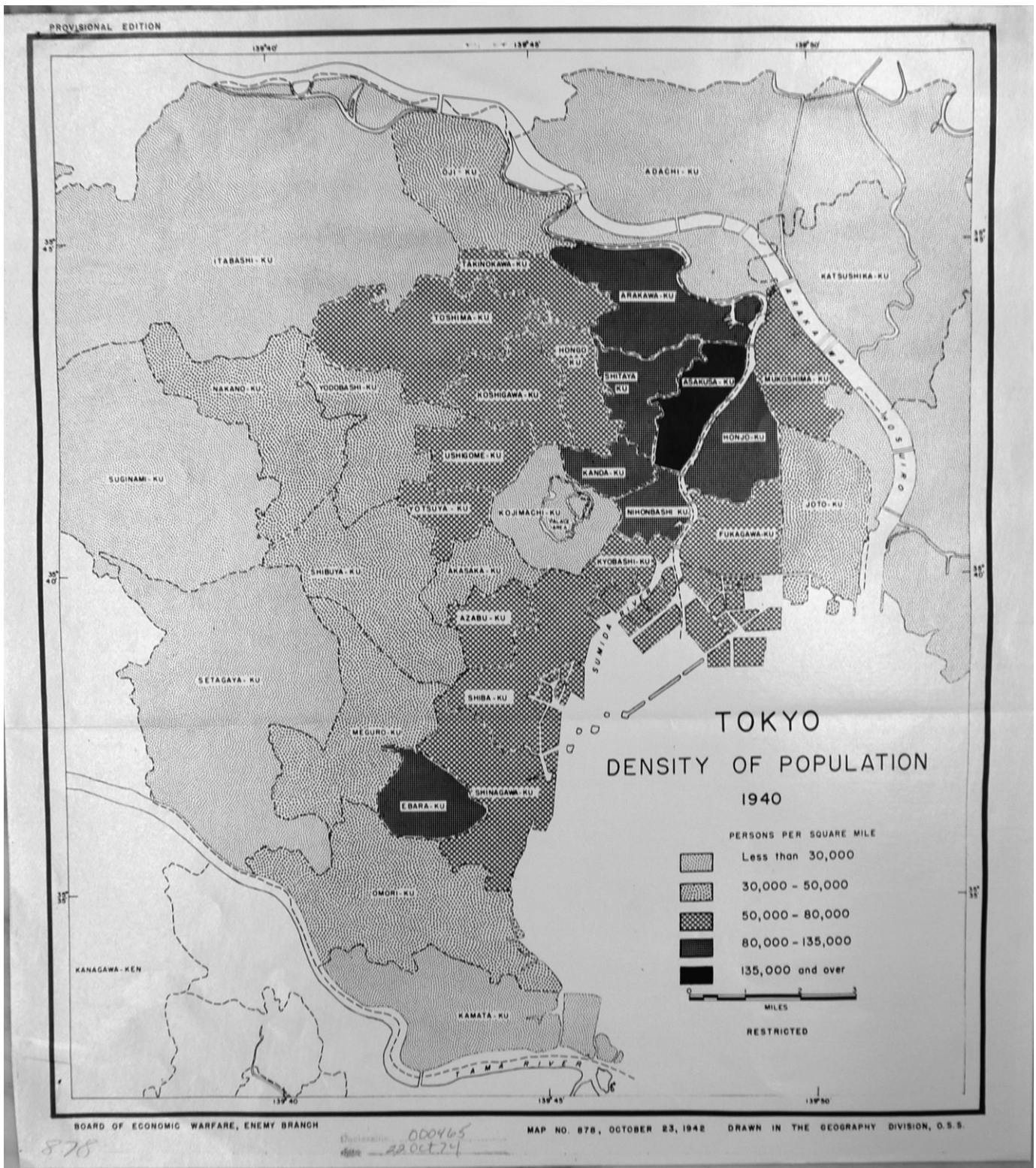


Fig. 8. OSS Map no. 878, Tokyo: Density of Population, 1940. Source: U.S. National Archives, Cartographic and Architectural Section, Record Group 226: 330/20/8.

Germany's cities. Noting that 58,000 Tokyoites died in the 1923 conflagration, analysts estimated that incendiary attacks on the Japanese capital would 'produce many times the number of uncontrollable fires' and most likely kill many more when taking into account population increases in the Japanese capital over the ensuing two decades.⁶³ If, moreover, the Army Air Forces were to apply just 'a fraction of the effort' expended by the RAF in 1943 (when 4.5 million Germans became homeless following seventy-four air raids on two dozen German cities), the damage to Japanese industry and housing would be far greater.⁶⁴

If all went according to the subcommittee's plan, the attacks would 'effect a degree of destruction never before equaled' by burning 221 square miles of urban fabric to the ground, killing a half-million people by 'suffocation, incineration, and heat,' and making 7.75 million homeless.⁶⁵ 'Should the attack have the favorable circumstances of high winds conducive to the rapid and effective spread of the flames,' the authors continued, 'should a regular bombing pattern occur with full saturation of the attack area, should exit arterials be quickly blocked by conflagrations, should mass entrapment of people occur, the resulting casualties will probably be substantially higher.'⁶⁶

Fire-fighting efforts, dehousing, the impairment of transportation, burying the dead, caring for the wounded, and overall social disorganization, analysts estimated, would create an aggregate worker absenteeism equal to 26,550,000 days of skilled labor. Such precise figures and employment of terms such as man-months of labor, decreases in productive output, and rates of absenteeism belie a bottom line fact: strategic planners of the air war against Japan had embraced the intentional targeting of civilians.

Sitting in their Washington D.C. offices and looking at the various OSS maps laid out before them, they saw Japanese cities as spaces filled with workshops, factories, and 'productive workers' living in 'billeting facilities.' Yet this very report provides glimpses of cities as lived spaces full of a variety of individuals and groups. Working from 1940 Japanese census data, for example, the subcommittee determined that a majority of the 6.8 million civilians living in Tokyo were female once extracting for adult males conscripted into the Japanese military. The report also separates Tokyo's population into distinct groups: 684,000 mothers, 400,000 individuals over fifty years of age, and 1.7 million children up to nine years of age. Even if one provisionally accepts that 'it made good sense to kill skilled workers' as argued by a high-ranking member of the Army Air Forces when justifying the firebombing of Tokyo, the pressing question which remains is whether it made sense to kill and injure those many citizens who could not remotely be included in such a category.⁶⁷ The conflation of entire cities – including their elderly, female, and infant inhabitants – with industrial output and economic productivity is telling of the ideological blinders used to create the abstract spaces of Japan as outlined in the reports and maps under discussion. The visual and linguistic rendering of Japan's cities into abstract spaces had up to this point occurred mainly in the minds and on the maps of the planners in Washington D.C. Beginning in March 1945, however,

those plans would be implemented to the point where Japanese cities were, quite literally, wiped off the map.

Blackened cities, blackened maps

After the XXI Bomber Command established its headquarters on Guam following the seizure of the Mariana Islands in the summer of 1944, it took a few months for local map production of targets to get into full swing. As he waited for the arrival of military cartographers in transit from India and the United States, Commander Haywood Hansell relied on other maps when drawing up mission plans for air raids on Japanese military targets. A regular source was an April 1944 *National Geographic* map – *Japan and Adjacent Regions of Asia and the Pacific Ocean* – on which planners drew flight paths between the Mariana Islands and western Tokyo, the location of the Nakajima Aircraft plant that served as a main target in late 1944.⁶⁸ At the very moment that the XXI Bomber Command carried out high altitude raids against this target, the Washington-based Joint Target Group (JTG) in Washington – which had taken the lead in planning how to attack Japan with B-29 bombers – continued to put urban Japan high on the USAAF target list.⁶⁹ Devastating strikes against the six cities originally targeted in the COA report discussed above, advised the JTG, should occur only once enough B-29s had amassed on the Mariana Islands. In the meantime the XXI Bomber Command should carry out a limited, trial incendiary air raid against a Japanese city.⁷⁰

With Curtis LeMay at the helm, and after trial small-scale fire bombings of districts in Nagoya and Tokyo in February 1945, the USAAF began to destroy Japan's largest cities the following month. This shift to attacking 'urban areas' is registered cartographically in many of the XXI Bomber Command's 'Target Charts.' Compiled by the 35th Photo Technical Unit from aerial photographs taken by the 3rd Photographic Reconnaissance Squadron, the Target Charts first rolled off the 949th Engineering Aviation Topographical Company's Guam-based reproduction presses beginning in January 1945. The professional nature of these maps (complete with topographic details, precise and proper labeling of locations, adherence to cartographic conventions such as italicizing bodies of water) is a sure indication of trained cartographers embedded within the photo technical unit. While the first Target Charts mirrored those produced in 1944 by the Army Map Service for the USAAF by focusing explicitly on military targets, those produced in 1945 regularly featured concentric rings centered on entire cities.

Tokyo Area – Target 90.17 Urban (Fig. 9) marks another step in the cartographic fade to black. Using an aerial reconnaissance photograph taken by the XXI Bomber Command of Japan's capital, the planners of Tokyo's destruction imbued the image with a few map-like qualities by establishing a north arrow and scale bar, and assigning four large yellow circles, each overlaid with red arrows pointing in the same direction. The circles indicate the aiming points into which the B-29s crewmen were instructed to drop their full load of incendiary weapons, with the arrows orienting the flight approach. The inclusion of 'Target Zone 1', the densely populated

⁶³ Committee of Operations Analysts, *Economic Effects of Successful Area Attacks on Six Japanese Cities* (note 61), 31.

⁶⁴ Two parallel matters regarding the development of U.S. policy of air war as directed against Japan warrant mention: the experience that the AAF's Eighth Air Force gained in its air attacks coordinated with Britain's Royal Air Force against Germany, and the late 1944 incendiary air raids that the China-based XX Bomber Command carried out against Japan-occupied cities in Asia.

⁶⁵ Committee of Operations Analysts, *Economic Effects of Successful Area Attacks on Six Japanese Cities* (note 61), Exhibit X.

⁶⁶ Committee of Operations Analysts, *Economic Effects of Successful Area Attacks on Six Japanese Cities* (note 61), Exhibit IV, 3–4.

⁶⁷ As quoted in Searle, *It made a lot of sense to kill skilled workers* (note 44), 118.

⁶⁸ XXI Bomber Command, *Tactical Mission Plans*, 31 October 1944. Source: U.S. National Archives, Record Group 18, Entry UD 21, Box 122.

⁶⁹ For a more detailed exploration of the JTG see G.P. Gentile, *How Effective is Strategic Bombing? Lessons Learned from World War II to Kosovo*, New York, 2000.

⁷⁰ Joint Target Group, *Estimate No. 1, Strategic Air Employment Suitable to the Current Strategy of the Japanese War*, December 1944. Source: U.S. National Archives, Record Group 18, Entry UD21, Box 116.



Fig. 9. Tokyo Area – Target 90.17 Urban. Source: U.S. National Archives, Record Group 243, Series 59, Box 6.

Shitamachi district of the capital lying within these four points, stands as an ominous moment in the planning of urbicide.

After mapping the target area, Curtis LeMay sent hundreds of long-range bombers to destroy it. With the first projectiles dropping shortly after midnight on March 10, 279 low-flying B-29s collectively released 1665 tons of incendiary bombs over 'Target

Zone 1'.⁷¹ 'As initial fires spread rapidly before a stiffening wind,' write the official biographers of the Army Air Forces during World War II, 'the B-29's fanned out, as briefed, to set off new fires which merged to form great conflagrations.'⁷² By dawn, the fires created by the air raid had killed at least 83,793 people (and most likely well over 100,000), injured 40,000, and made one million

⁷¹ USAAF, *Tactical Mission Report, Mission No. 40, Target: Urban Area of Japan, 10 March 1945*. Source: U.S. National Archives, Record Group 18, Entry 7A, Box 3224.

⁷² Craven, Cate, *The Army Air Forces in World War II, Vol. 5, The Pacific* (note 33), 614.

homeless.⁷³ Analysts in Washington and mission planners based in the Marianas were elated upon reviewing the post-strike photographs that provided visual evidence that they had destroyed more of the city than expected. 'Your determination, skill and guts,' commented Curtis LeMay to his crewmen after their return from Tokyo, 'have delivered a stunning blow to the empire of the rising sun. You took to him and dumped upon him the greatest bomb load ever carried over great distances. Today over sixteen square miles of his capital is in smoking ruins and is ravaged by still burning fires.' In a congratulatory message sent to LeMay, USAAF Commanding General Henry Arnold expressed that he was 'exceptionally well pleased' with the results.⁷⁴

Maps and surveillance photographs after this air raid and the many others to follow played a central role not only in the conduct of the incendiary raids on Japan's cities, but also in the analysis and propaganda efforts that followed these attacks. After each raid, the XXI Bomber Command's CIU (Central Interpretation Unit) inspected post-strike photos taken by the 3rd Photographic Reconnaissance Squadron, whose F-13 planes would either accompany B-29 sorties or depart within a day of the raid to photograph the smoldering cities. The CIU then printed out Damage Assessment Reports, copies of which were sent to the Twentieth Air Force and Joint Target Group in Washington D.C. for further analysis, which aided deliberations on future air raids. In addition to post-strike photographs, the reports included mosaic maps (aerial photographs with cartographic information overlaid on top) and plan drawings in order to visually communicate the extent of the damage inflicted on each city.

Many of the same maps and images were geared toward the XXI Bomber Command crewmembers in the Mariana Islands and Army Air Force members stationed throughout the world. Numerous examples may be found in USAAF reports and internal publications, many of which convey a sense of spectacular accomplishment in the destruction of Japan's cities. An *Air Intelligence Digest* article, for example, features an oblique photo taken on March 10th following the incineration of the Shitamachi district, overlaid with thick lines tracing the extent of destruction (Fig. 10). 'Tokyo the morning after!' declares the explanatory text. 'Less than 15 percent of the No. 1 Incendiary Zone remains standing. Beautiful!' *IMPACT*, an internal publication modeled on *Life* magazine and designed to show by way of photographs and maps the results of bombing operations to the 2.3 million men attached to the USAAF, also featured numerous maps of destroyed cities. These images were accompanied by text that all but that erased the presence of civilians within them: Japanese cities are reduced to 'Night Burn Jobs' full of 'home factories' and 'home industries' that contained 'skilled workers'.⁷⁵

The same Tactical Mission Report featuring LeMay's commendation for a job well done featured the first of many maps related to damage assessment. Produced within a day of the firebombing, *Damage Assessment Report No. 20* represents the next step in the mapping of the destruction of urban Japan by superimposing the perimeter of the original target zone, along with diagonal parallel

lines to mark the extent by which the conflagrations extended beyond it, over a pre-strike aerial photograph. In addition to communicating visually the tremendous swath of destruction achieved by the USAAF, the image is of particular interest in that some of the individual targets (out of many hundreds designated for Tokyo) that had been selected for possible attack are shown (see Fig. 11).

Immediately following the March 9–10 firebombing of Tokyo, Curtis LeMay sent B-29 squadrons to attack Nagoya, Osaka, and Kobe in quick succession. Disappointed that the first raid on Nagoya destroyed only 20% of the city – which amounted to the destruction of 65,000 homes – LeMay sent the B-29s back to exact more damage. By the end of the initial March 1945 bombing campaign, the USAAF incinerated thirty-two square miles of Japan's largest four cities. Impressed with the results, the Joint Target Group in Washington recommended further firebombing raids on the six cities designated for destruction the previous year: Tokyo, Osaka, Yokohama, Kawasaki, Nagoya, and Kobe. These raids continued until the middle of June 1945, by which time the USAAF had obliterated 105 out of a total of 257 square miles.⁷⁶ The maps generated from such large-scale place annihilation show that individual targets had been subsumed under the city as a whole, with large swaths of black taking over many city regions that had been destroyed (Fig. 12).

With Japan's larger metropolises in ruins and most of their populations made homeless, operations analysts attached to the XXI Bomber Command suggested that Curtis LeMay unleash his weapons on twenty-five medium-sized cities. Soon thereafter, write Cate and Craven, 'the terror which had earlier been confined to a few great cities was spread throughout the country.'⁷⁷ From then until the eve of Japan's capitulation, the leaders of the Twentieth Air Force largely turned their backs on precision bombing of military targets in order to focus on urban Japan, which received 70% of all bombs dropped on Japan from early March onward.⁷⁸ Twice a week, masses of B-29s took off from the Mariana Islands of Guam, Saipan and Tinian toward Japan, where they burned down four separate cities at a time. Altogether, the men given the responsibility of carrying out the air war against Japan destroyed with incendiary bombs sixty-five cities in the archipelago.

The USAAF often masked the destruction of larger cities by listing specific military targets within them. This justification for area bombing could not as easily be applied once the analysts turned their attention to Japan's smaller cities, however. The target chart for Yamanashi prefecture's Kofu City, which the XXI Bomber Command attacked in the first week of July 1945, provides clear evidence of this: no military targets within the entire urban area are listed, and the central focus of the map is on the built-up center of the city (Fig. 13). In fact, operations analysts admitted in the Target Information Sheet distributed to B-29 crews before they flew off to destroy the city that Kofu had no actual targets. The raid, however, would 'cause a severe housing problem' as well as have

⁷³ The United States Strategic Bombing Survey, *Effects of the Incendiary Bomb Attacks on Japan: A Report on Eight Cities*, 1947. The Survey adopted these conservative figures from reports by the Home Ministry and the Tokyo Metropolitan Police Department. It is not unreasonable to agree with those who conclude that at least 100,000 people died. The nature of death for many (including high-temperature incineration that confounded the ability to count some of the dead and the drowning of many who threw themselves into canals and rivers, only to be swept out into Tokyo Bay and beyond) complicated an accurate body count. For a discussion of the figure of 100,000 dying in the 'Great Tokyo Air Raid,' along with the experiences of those who survived the conflagration, see Tōkyō Kūshū o Kiroku Suru Kai, *Tōkyō Daikūshū Sensaishi, Dai Ikkan*, Tōkyō, 1972. For a discussion of the politics of memory as related to the firebombing, see C. Karacas, Place, public memory, and the Tokyo air raids, *Geographical Review* 100 (2010) 521–537. Interviews of air raids survivors may be watched at japanairraids.org.

⁷⁴ XXI Bomber Command, Tactical Mission Report, Mission No. 40, Target: Urban Area of Tokyo, Japan, 10 March 1945. Source: U.S. National Archives, Record Group 18, Entry 190, Box 5446.

⁷⁵ Air Victory over Japan, *Impact*, July 1945, 54, 78.

⁷⁶ Craven, Cate, *The Army Air Forces in World War II*, Vol. 5, *The Pacific* (note 33).

⁷⁷ Craven, Cate, *The Army Air Forces in World War II*, Vol. 5, *The Pacific* (note 33), 658.

⁷⁸ Craven, Cate, *The Army Air Forces in World War II*, Vol. 5, *The Pacific* (note 33).



Fig. 10. Tokyo — the morning after! Source: Library of Congress, Curtis LeMay Papers, *Air Intelligence Report*, Vol. 1, No. 2.



Fig. 11. Damage Assessment Report No. 20. Mosaic map showing target area and extent of damage to Tokyo caused by 10 March 1945 raid — Source: U.S. National Archives, Record Group 243, Series 59, Box 6.





Fig. 13. Target Chart 52A, Kofu Area. Source: XXI Bomber Command Target Charts, U.S. National Archives, Cartographic and Architectural Section, Record Group 18: 330/6/9/3-8.

the ‘psychological impact of destroying the prefectural capital and one of the largest inland cities of that region of Honshu.’⁷⁹

By the end of the incendiary bombing campaign in early August 1945, after the atomic bombing of the cities of Hiroshima and Nagasaki, and as Curtis LeMay lobbied for Tokyo to be struck with another nuclear weapon simply for the ‘psychological effect’ it would have on Japan’s leaders, the USAAF had assembled a series of city maps that, we argue, completes the cartographic fade to black.⁸⁰ Focusing once more on Kofu City (Fig. 14), we are presented with the crudest of maps, meant to convey the percentage of urban destruction by way of two values, with black representing the portion the city destroyed by incendiaries. Portraying nothing but the outlines of the city and how much within it had burned to the ground, and transmitting no information other than its population, the map is as clear a visual representation of urbicide – and its wholesale embrace as a legitimate wartime tactic – as any. Gone are the details, flourishes, and craftsman-like qualities of the earlier charts. Emptied of any indication of human life or other features that indicates the city as a lived space, this map evinces, more than any other, the intensification and expansion of systematic destruction that became an acceptable result of aerial warfare as practiced by the USAAF in its air war against Japan during World War II.

These dozens of urban area maps of Japan’s dead cities mirror the visual ‘inventory of destruction’ related to Germany’s destroyed cities that filled the multi-volume *Blue Book*, which Arthur Harris, head of the Royal Air Force’s Bomber Command, compiled and proudly showed after the war’s conclusion.⁸¹ Similarly, these maps of Japan, eventually declassified and laid to rest in the U.S. National Archives, constitute in part a series of what we term ‘trophy maps’ through which the XXI Bomber Command could visually convey its accomplishments.

Conclusion

In his important work that traces the limits and possibilities of realizing a ‘natural history’ of the destruction of cities during World War II, Derek Gregory mentions, in the context of the Allied aerial bombing campaign against Germany, how maps contributed to the construction of a kill-chain that ‘extended from the identification of targets to their destruction.’⁸² As we show in this article, city maps were a vital component of the kill-chain that led to the firebombing of Japan’s cities and the ways in which the destruction was represented thereafter. We submit that various maps of Japan and its cities – coupled with linguistic devices that served to deny the presence of civilians in the cities being destroyed – both during the war and after the country’s official surrender served to perpetuate the official logic of the kill-chain by projecting two forms of representation. The first involves the logic that ‘area bombing’ of cities and civilians constituted a legitimate form of warfare; the second involves the turn toward representations of Japan that work to deny the extent of destruction.

The Allied Occupation of Japan officially commenced on September 2, 1945, following the signing of the instruments of surrender aboard the Battleship Missouri anchored in Tokyo Bay as hundreds of B-29s flew overhead to affirm the might of U.S. air

power. Soon thereafter, members of the United States Strategic Bombing Survey (USSBS) began to arrive in order to gauge the efficacy of the air war waged against Japan. Over the course of a few months, survey members attached to the USSBS Urban Areas Division toured a number of cities to analyze the effects of the incendiary and atomic bombings. Maps, not surprisingly, were instrumental to the handful of final reports that the division released over the next two years. The vast majority of the maps, both pre- and post-strike, are reproductions of the OSS and USAAF maps. Infused with the same sanitized language that rendered entire cities into targets, the images serve to re-inscribe – indeed naturalize – the kill-chain imagery and language used during the war. In turn, as American historians of the bombing campaign began to turn to the eventually-declassified USSBS reports to write about the ‘strategic bombing’ of Japan, they themselves adopted similar language embedded within the kill-chain.

So, too, did reporters, who did much to set the tone of American representations of Japanese cities in the early postwar period. An August 31, 1945 *New York Times* article, for example, featured a low-lying aerial photograph, provided by the USAAF, of ‘the capital as it appears today,’ showing a destroyed section of Tokyo with a U.S. plane flying overhead.⁸³ Written by George Jones, a reporter who managed to arrive to the capital ahead of the first garrison of occupation troops, the article gave Americans their first close-up view of the targeted city and its people. Stuffed into a 1937 Ford sedan with a group of his fellow reporters, Jones describes seeing ‘block after block’ of empty space, repeating the same language used by the 20th Air Forces by stating that ‘most of this damage was concentrated in the industrial area.’ This is just one example of the ways in which the language related to the planning and prosecution of the American air war and the status of civilians found itself replicated and transmuted over the following months, years, and decades as air power emerged in the post-World War II era as a mainstay of American military strategy.

The cartographic enterprise of the U.S. military did not, of course, shut its doors with Japan’s surrender. The new tasks of administering the occupation of Japan and cementing America’s hegemony over much of East Asia and the Pacific sent the cartographers back to their drafting boards, many of which had been set up in the Isetan Department Store in Tokyo, where the 64th Engineer Base Topographic Battalion established its occupation headquarters. In the early years of the occupation, American cartographers produced a wide range of maps, some of which augmented the cartographic sources mentioned above with post-strike mosaic photographs and postwar on-the-ground observations. The Army Map Service, for example, reduced the destruction of sixty-five Japanese cities by ‘conventional’ firebombing to a mere symbol on the map legend: diagonal parallel lines indicating ‘ruins’ or ‘bombed area’; on some map sheets, these lines dominate the map’s surface.⁸⁴

In certain cases, postwar maps also performed something of a cartographic whitewash. We close with a map in which even the barest trace of destruction is absent, one created for the roughly 350,000 American occupation forces to be stationed in Japan (Fig. 15). Featured in the U.S. Army’s *Guide to Japan*, the map was

⁷⁹ XXI Bomber Command, Target Information Sheet, Kofu Urban Industrial Area, 5 July 1945. Source: U.S. National Archives, Record Group 243, Series 59, Box 5.

⁸⁰ XXI Bomber Command, AAF POA Outgoing Message to COMGENAIR written by Curtis LeMay, 10 August 1945. Source: U.S. Library of Congress, Carl Spaatz Papers, Box 21, Folder: Spaatz Diaries. LeMay’s embrace of nuclear weapons as simply another weapon in a military’s arsenal also led him to promote their use during the 1962 Cuban Missile Crisis. See R. Rhodes, *The General and World War III*, *The New Yorker* (June 19, 1995).

⁸¹ Gregory, *Doors into nowhere* (note 51), 254.

⁸² Gregory, *Doors into nowhere* (note 51), 266.

⁸³ Tokyo presents battered aspect, but Americans find people polite, *New York Times* (31 August 1945).

⁸⁴ See, for example, the 1:50,000 scale 1945 A.M.S. L774 map ‘Ichikawa, Central Honshu’ and the 1:12,500 scale 1946 A.M.S. L902 city plan map for ‘Honjo, Tokyo.’ Source: New York Public Library, Cartographic Division, A.M.S. Maps.

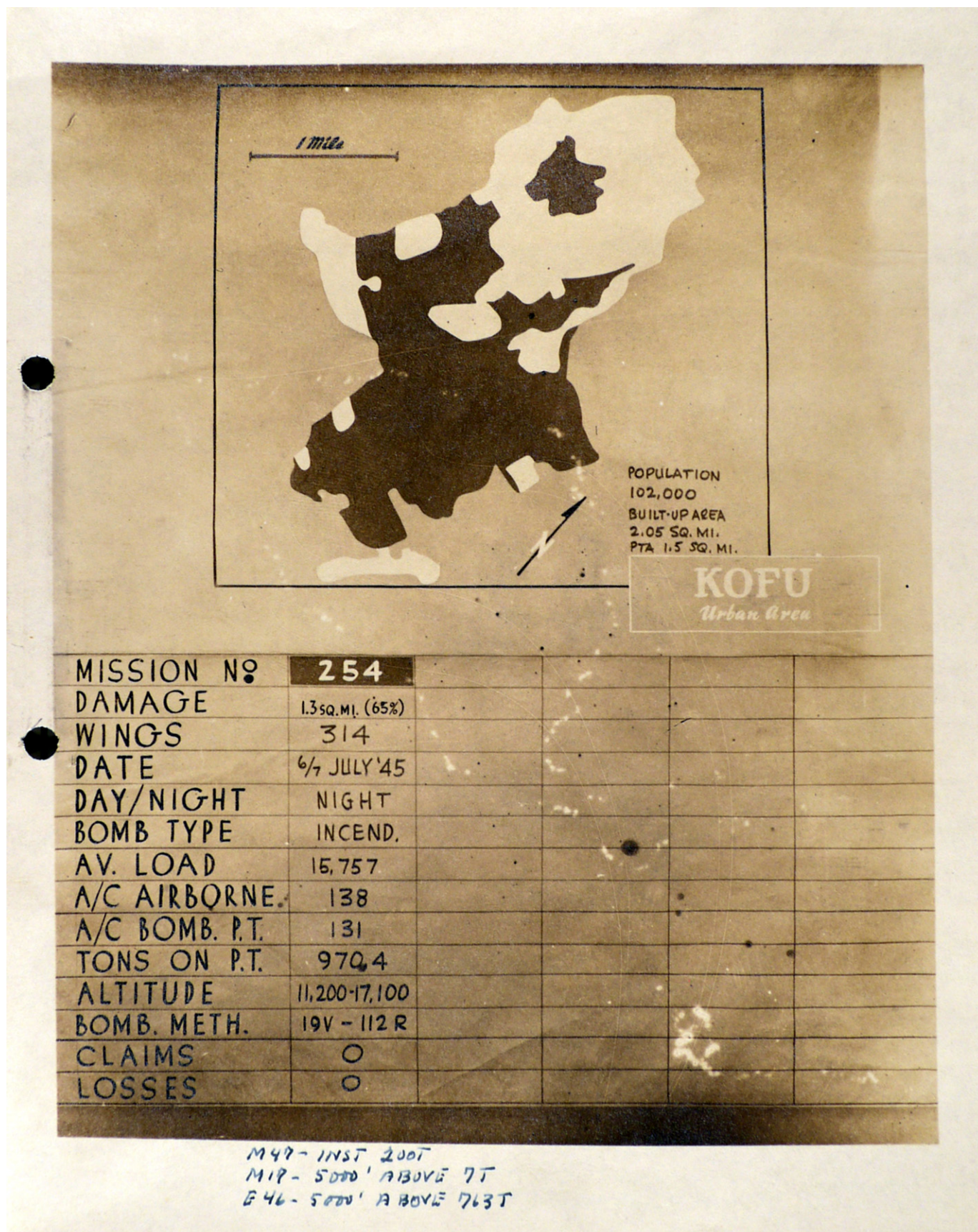


Fig. 14. Damage Report Map of Kofu City, July 1945, XXI Bomber Command, U.S. National Archives, Record Group 243, Series 59, Box 5.



Fig. 15. Map of Honshu, Japan. Source: *Guide to Japan*, U.S. Army, September 1945.

distributed to troops beginning in September 1945, just weeks after the destruction of urban Japan had come to a close. Gone are the blackened spaces of destroyed cities that represented the handiwork of the USAAF. Instead, Japan is re-cast as a land of geisha and rice farmers, silk and tea. Following John Dower's observation that 'the eroticization of defeated Japan in the eyes of the conquerors took place almost immediately,' we note that this happened cartographically as well, with the country being visually transfigured into a delicate, feminine landscape.⁸⁵ Here we have the traditional, Oriental Japan that welcomes the soldier-tourist. Nowhere to be found are the scenes of total destruction, the urban wastelands that figured so prominently in the early postwar landscape of the country.

This absence of destroyed cities, even as 'occupationaires' would witness them firsthand upon entering cities and requisitioning key buildings and areas from which they would administer the Allied Occupation, we suggest, is no mere oversight. Rather, it involves a looking away from the destruction that was wrought. Maps, then, depending on their original purpose and intended audience, enabled, proclaimed, or obscured this destruction. They also

provided a visual means through which to circulate ideas about enemy space, the ethics of warfare, and newly realized capacities for destruction. While in various ways the legacy of these bombings is inscribed upon Japan's cityscapes and the memories of the countless individuals who survived them, it can also be located in the cartographic conventions, spatial intelligence, and territorial abstractions that remain essential components of aerial bombardment strategy to this day.

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Most of the primary sources - and all of the maps - referenced in this article can also be accessed online at japanairraids.org <<http://japanairraids.org>>.

⁸⁵ J. Dower, *Embracing Defeat: Japan in the Wake of World War II*, New York, 2000, 137.