



RESOURCES

Forgotten Battles, Forgotten Maps: Resources for Reconstructing Historical Topographical Intelligence Using Army Map Service Materials

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Topographical intelligence is the information gathered about terrain, facilities, and transportation networks in enemy territory.¹ This information, collected to aid in military operations, remains a noble cartographic resource that historical geographers can use in a variety of ways. One map collection based on topographical intelligence languishes underused and underappreciated in many university map libraries. Falling somewhere between the glorious old maps and the newest digital cartographic products are the venerable United States Army Map Service (AMS) materials.

This essay will briefly discuss the history of the AMS and how its materials became available in library collections. This essay also will explain topographical intelligence's importance and present the results of a survey of an AMS map collection that identified map series with high potential as research sources. Finally, it will present the locations of AMS map collections and working aids for interpreting the material.

Army Map Service—Background

Although the American military did not have a centralized system for producing and distributing maps at the time of the Pearl Harbor attack, the U.S. Army was addressing wartime map requirements before 1941. During 1940 and 1941, the Engineer Reproduction Plant, the AMS's predecessor, concentrated on printing topographic maps depicting Army camps and maneuver areas. Construction of a new building to house the Engineer Repro-

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duction Plant received authorization in 1941.² Also during this time, the U.S. made cooperative agreements with the British to exchange mapping data. In further preparation for war, the directors of several U.S. civilian agencies—including the Tennessee Valley Authority, the Forest Service, the Geological Survey, and the Coast and Geodetic Survey—agreed to support the domestic mapping program of the War Department (now the Department of Defense).³ In May 1941, the Army Air Corps and the Army Corps of Engineers received orders to establish a system to produce large-scale photomaps at a rate of 10,000 square miles of coverage per day.⁴ Originally, topographic battalions and companies assigned to the armies and corps, respectively, would do the mapping using aerial photography supplied by Air Corps photographic squadrons.⁵ A test of this arrangement came during the large Army maneuvers conducted in October and November 1941.⁶ During the 1941 maneuvers, this arrangement proved impractical, especially for mapping enemy-held territory, and resulted in too many unused maps at too many scales. Further, the Army realized that it did not have sufficient foreign-country map coverage; therefore, it would have to rely on libraries for existing maps of territories. This topographical intelligence would be a base for later updates with information from aerial photography and other sources.⁷ Thus, the AMS began its reliance on university and public map collections for wartime map production before the U.S. entered World War II.

The Engineer Reproduction Plant became the AMS in May 1942 when it occupied its new building.⁸ The AMS made extensive use of university and public library map collections to support the massive wartime map production effort. In fact, the New York Public Library allowed intelligence organizations extraordinary access to its map collection during the war.⁹ Partly in gratitude to the libraries that allowed the AMS to use their collections and partly to create map depositories to meet any possible future need, the AMS instituted a college depository program in 1945.¹⁰ The program initially distributed 5,000 maps to each of 45 libraries. The number of libraries in the program later grew to nearly 200 by 1967.¹¹ The college depository program operated with the understanding that the military could borrow from the participating libraries' other holdings and that libraries would inform the AMS about new maps as they became available.¹² Program libraries continued to receive maps produced by the AMS after World War II. Additionally, the depository program distributed captured foreign maps to selected participating libraries in 1950.¹³ Although map libraries have acquired AMS maps through other sources, notably through special projects at the Library of Congress Geography & Map Division, they acquired the majority of the AMS material through the college depository program.

Importance of Topographical Intelligence

While it is important to understand that knowledge is power, knowledge is a matter of life or death during wartime. This knowledge—or intelligence—

includes the composition and disposition of the enemy's forces, the enemy's intentions, details on supporting industries, and on internal political conditions. Equally important is topographical intelligence on the terrain, facilities, and transportation network that friendly forces would encounter. In the era before satellite imagery, such diverse sources as aerial photographic reconnaissance, refugee aliens, family beach photos, and reports from foreign travelers—businessmen, miners, engineers, and even geographers—provided this information.¹⁴ Topographical intelligence, similar to a map, is available in different scales. Detail can range from general landforms and cultural features to the location of a specific building. Topographical intelligence in all its scales is essential for conducting military operations ranging from the strategic movement of ships and armies down to the smallest raid by commandos.

Inadequate topographic intelligence could result in troops encountering impenetrable terrain, amphibious assaults landing on impassable beaches, or airborne assaults dropping into water. The U.S. Army's plan to provide photographic mapping support to advancing troops illustrates topographical intelligence's importance to the Western Allies. Further, the British developed the Inter-Service Topographic Department (ISTD) in October 1940.¹⁵ The ISTD responded to the British topographical intelligence shortage before the April 1940 German invasion of Norway. In fact, the paucity of topographical intelligence on Norway resulted in Royal Air Force Bomber Command pilots relying on 1912 revised Baedeker's guides—commonly used by foreign travelers—for navigation when attacking airfields in Norway. This lack of intelligence also caused Royal Navy carrier pilots to rely on contourless Admiralty charts during their attack on Narvik's port.¹⁶ Later, the topographical intelligence produced by the ISTD proved invaluable to the Royal Navy midjet submarine attack and the Royal Navy torpedo aircraft attack during September 1942 and late 1944, respectively, on the German battleship *Tirpitz* based in Norway. It was also invaluable during the November 1942 Allied North African landings, and the St. Nazarre commando raid in March 1942.¹⁷ In tribute to the ISTD's effectiveness, the department received compliments from General Dwight D. Eisenhower for its support to the allied landings in French North Africa.¹⁸

Identifying Historical Topographical Intelligence Sources

The most easily identified topographical intelligence source is a map series produced by a belligerent power prior to the outbreak of hostilities. Edition and publication dates identify such pre-conflict series. Special designations may identify maps reproduced from existing plates for particular uses, such as an invasion. Nazi Germany, for example, issued maps with the marginal notation "*Sonderausgabe*." Although this can be translated several ways, the nature of the map edition information on the original map suggests that the German term should be translated as "special distribution." Some of the

maps marked with *Sonderausgabe* have no date information associated with the annotation, but the edition information indicates that these map sheets were issued prior to World War II. Correspondingly, German map sheets distributed immediately prior to and after the start of World War II bear special distribution notations that include a month and year. These maps with dated special edition notations are an excellent source for reconstructing topographical intelligence.

In addition to the *Sonderausgabe* notation, the Germans also added information to foreign and indigenous maps by overprinting or adding information to existing printing plates. These overprints include German translations of foreign toponyms and map legends, locational grid systems,¹⁹ magnetic declination diagrams, border changes, and information reflecting the current “*Stand*” or situation of facilities and troop dispositions. These overprints can often be dated by the corresponding information source dates in the same typeface and ink color. However, when using a map with a situation overprint, the researcher should be careful to properly identify the date of the information. While one excellent source depicts the status of roads and bridges in the Balkans as of July 1, 1944,²⁰ another source depicts the French Maginot Line fortifications as of September 1, 1939, but it is unclear if this intelligence was known prior to the start of the war or gained after Germany overran France in 1940.²¹ Further, Germans dated the magnetic declination diagrams they added to foreign-produced maps and these provide a probable date for their topographical intelligence.

During the course of the war, belligerents improved their topographical intelligence while invading a country by ground-truthing the terrain and by capturing indigenously produced map stocks. Although maps captured can be attributed to a conquering country, it is important to distinguish between what topographical intelligence was known before the invasion and what was gained as a result of the invasion. The proprietary stamps on AMS map sheets indicate when topographical intelligence was available to a country. In true bureaucratic and librarian fashion, various national mapping agencies stamped accessioned foreign maps with proprietary stamps that often also include a date. As result, it is possible for the researcher to establish when topographical intelligence became available. For example, proprietary stamps with dates on indigenously produced maps of Latvia indicate that the Germans had copies of large-scale maps of Latvia as early as 1936, five years before this topographical intelligence was needed for the invasion of Soviet-held territory.²² By using similar logic, the researcher can date the Western Allies’ topographical intelligence through the proprietary stamps on indigenously produced large-scale maps of Italy to between 1937 and 1944.²³ Additionally, the AMS library also used date stamps on maps of India received in 1942 and 1943.²⁴ Since armies captured large stocks of foreign maps as countries were overrun or liberated, the presence of undated stamps, such as the German office stamps and the AMS library stamps on captured foreign maps, cannot be taken as proof that this topographical intelligence was available prior to the invasion. Interest-

ingly, undated stamps used by the U.S. Office of Strategic Services (OSS), the forerunner of the Central Intelligence Agency, indicate that topographical intelligence may have been available to the clandestine operations planners. When this intelligence was available cannot be established without dates. By using dated belligerent-produced maps; overprinted captured maps; and proprietary, date-stamped, foreign-produced maps, a historical geographer has multiple sources for reconstructing stages in historical topographical intelligence acquisition.

World War II German Sources

Maps attributed to Germany, including German map products and maps captured by the Germans, comprise most of the foreign-produced AMS maps in the Louisiana State University Cartographic Information Center—a division of the LSU Department of Geography and Anthropology in Baton Rouge, Louisiana. One of the most common among these is the German-produced, small-scale “*Weltkarte*” series.²⁵ There are also two medium-scale companion series with edition dates of 1941 and 1943.²⁶ By checking the special distribution dates and edition dates on map sheets in these series and the large-scale tactical series, the researcher can reconstruct the historical topographical intelligence available to the Germans (Table 1).

In addition to these sources, German topographical intelligence on its border regions with France, Poland, Belgium, and Luxembourg, in addition to the Polish-Czech frontier, is available using the large-scale, pre-war Map of the German Empire series.²⁷ Several interesting individual map sheets include large-scale maps of key cities including Metz (dated May 1940), Moscow (dated February 1942), Kursk—the site of the largest tank battle of the war—(dated February 1941), and maps depicting Oslo and Trondheim (dated February 1940) in Norway.

Although the Germans abandoned their plans to invade Great Britain, their aerial assault on the British Isles was a major effort. To support this attack, the Germans produced medium-scale aeronautical charts by overprinting British Ordnance Survey maps with navigational information dated November 1937 and April 1939. In addition, the Germans also produced large-scale maps depicting the Faroe Islands (dated June 1940) and Iceland (dated August 1941), along with medium-scale aeronautical charts of Ireland (dated 1940). Although Germany did not invade these areas, it conducted air, surface, and subsurface operations around them throughout the Battle of the Atlantic.

In addition to reconstructing pre-invasion topographical intelligence, the researcher can use updated map editions depicting countries occupied by the Axis issued during 1943 and 1944 to reconstruct topographical intelligence during the Axis retreat from occupied territories in 1944 and 1945. Significant among the wartime-produced German map series are the “Northwest Balkans” large-scale series dated 1943²⁸ and the previously mentioned Balkans

Table 1. Foreign-Produced AMS Maps in the LSU Collection

Area	Special Distribution Dates	Map Scales	Date Invaded by Axis Forces
Africa	January-October 1941	Medium	September 10, 1940
Algeria	February-August 1941	Large	November 8, 1942
Bulgaria	December 1940	Large	Joined Axis on March 1, 1940
Denmark	March 1940-January 1941	Large	April 9, 1940
Egypt	April 1940-January 1942	Large	September 10, 1942
Estonia	July-October 1940	Large	June 22, 1941
Finland	May 1941	Medium	Allied with Germany against the Soviet Union on June 26, 1941
France	May 1940-July 1941	Medium, Large	May 10, 1940
Greece	July 1940-April 1941	Medium, Large	April 6, 1941
Hungary	September-November 1940	Large	Joined Axis on June 27, 1941
Italy	April 1940	Large	Joined Axis on June 10, 1940
Latvia	July-October 1940	Large	June 22, 1941
Norway	February-September 1940	Medium, Large	April 9, 1941
Poland	September-December 1940	Large	Soviet occupied part invaded on June 22, 1941
Romania	December 1940	Large	Joined Axis on June 22, 1941
Soviet Union	August 1940-June 1941	Medium, Large	June 22, 1941
Tunisia	October 1941-February 1942	Medium	November 1942
Yugoslavia	February 1941	Large	April 6, 1941

street map series. These maps depict the available topographical intelligence during the German campaign against Tito's Yugoslav partisans. Another interesting German map series produced during the occupation of Eastern Europe is a medium-scale series with an overprint of building material sources.²⁹ The categorization and depiction of quarries, rock types, processing plants, and even destroyed processing plants illustrate the Germans' intended long-term occupation and exploitation of the area.

World War II Japanese Sources

The Japanese had an intelligence advantage resulting from their occupation of a large area of the Pacific Ocean after the League of Nations mandate at the end of World War I. Thus, the Japanese had intimate knowledge of the islands in the Marshall, Mariana, and Caroline Island groups. With this in mind, the researcher can reconstruct historical topographical intelligence on areas the Japanese invaded during their initial victories in 1941 and 1942. A broad overview of strategic-level topographical intelligence is available in the four small-scale aeronautical chart series produced in 1941. These series have hypsometric tints and contours to depict elevations and topography. Areas covered by these series include Korea and Manchuria (dated 1939 to 1941); the Pacific Ocean; and northwestern North America (dated 1942) including Anchorage, the Aleutians (invaded by the Japanese in June 1942), Fairbanks, and Juneau in Alaska, along with Seattle in Washington and Whitehorse in the Yukon Territory. In the South Pacific, these chart series dated 1941 depict New Guinea, the Philippines, Timor, the Celebes, French Indochina, Malaysia, Sumatra, and Singapore. Aeronautical chart coverage of New Caledonia and the Coral Sea followed in 1942. Interestingly, the Japanese also produced a 1941 small-scale aeronautical chart series of Europe.

In order to provide topographical intelligence detail sufficient for tactical operations, the Japanese produced large-scale maps depicting China from 1913 through at least 1938. Similarly, large-scale Japanese maps of Malaysia dated 1940, the Thai coast along the Gulf of Thailand dated 1941, the Dutch East Indies dated from 1940 to 1943, and the Philippines from 1938 to 1941, can indicate Japanese aspirations that were achieved during their rapid sweep through the East Indies and the Philippines in late 1941 and early 1942. Surprisingly, the Japanese also produced city plans of Siberian cities dated 1939.

World War II Western Allied and Other Sources

As noted earlier, the Western Allies, particularly the U.S., had a paucity of topographical intelligence sources at the war's outbreak. Prior to the war, totalitarian regimes further compounded this shortage by denying access to much of the area where the Allies expected to fight. Notable exceptions were the medium-scale, pre-war maps of China in the hands of the Allies.³⁰ The proprietary stamps on several sheets show that the AMS had accessioned them between July 1942 and August 1943, indicating that the intelligence was available for air operations during the "Over the Hump" aerial supply operations over the Himalayas to China. In addition, large-scale, pre-war map sheets depicting Burma bear undated OSS stamps although there is insufficient proof that the intelligence service possessed the maps during the war.³¹

In their effort to produce updated material, the Western Allies relied on indigenously produced maps. One such series available to the Allies was a

large-scale set depicting Italy.³² Several sheets in the Italian series bear proprietary stamps from the British Army Intelligence Division dated between February 1937 and May 1940 while other sheets bear AMS library stamps dated from August 1943 through August 1944. Allied mapmakers combined information from the pre-war maps and the indigenously produced maps with new information to create new maps for its operational forces. These wartime-produced map series are excellent sources for reconstructing topographical intelligence (Table 2).

Map series depicting the same area produced by both the British Geographical Section, General Staff (GSGS), and the AMS illustrates the two countries' mapping cooperation. Often, the AMS produced later editions of GSGS series and many maps carry series designators from both originators. Notable among the Allied wartime products are the city plans from French, Moroccan, and Italian ports along with photomaps of German cities. These products also include an interesting Rome city plan dated 1943, that includes an index to the military and police barracks, government buildings, factories, hospitals, and Vatican City buildings portrayed in detail.³³

For the Pacific Theater, a 1945 large-scale U.S. Navy hydrographic chart series depicts the Japanese coast along the islands of Kyushu and Shikoku.³⁴ Although these are hydrographic chart series, they also depict detailed topographical information such as contours and spot elevations. Further, military targets such as airfields, barracks, and bridges appear. These charts are historically significant since the U.S. Navy subjected the Honshu coast to battleship gun bombardment in July 1945. Also, the Japanese coast would have undergone amphibious assault if the invasion of Japan had been necessary. Pre-dating the hydrographic charts are U.S. Navy aviation charts depicting the Japanese home islands.³⁵ Like the hydrographic charts, the medium-scale aviation charts also have excellent topographical intelligence but the overprinted intelligence on Japanese facilities is more extensive. The sheets, dated from December 1943 to July 1944, show locations of airfields, barracks, factories, anti-aircraft batteries, shipyards, training facilities, radio stations, power plants, and railroad tunnels. The intelligence is specific enough to identify what individual factories produced.

AMS Map Collections and Aids

The AMS college depository program initially distributed AMS-produced maps to public, government, and university libraries. Among the institutions that received the first map shipments were 30 universities that currently have top-ranked geography departments. In contrast, only seven of the same libraries later received shipments of captured foreign maps from the AMS. The Library of Congress Geography & Map Division also received both AMS-produced maps and captured foreign maps.³⁶

Table 2. Wartime Map Series

Country	Producer	Edition Dates	Scales	Date Allies Invaded
Algeria	AMS & GSGS	1942	Large, City Plans	November 1942
Belgium	GSGS	1943	Large	September 1944
Burma	GSGS	1942 & 1944	Large	October 1942
French North Africa	GSGS	1942	Medium	November 1942
Europe	AMS	1943	Medium	June 1944
France	GSGS	1943	Large	June 1944
France	AMS & GSGS	1943	City Plans	June 1944
Germany	AMS	1944	Large	March 1945
Iceland	GSGS	1941	Medium	April 1941
Italy	AMS	August 1943	Medium	September 1943
Italy	GSGS	1942	Medium, Large	September 1943
Italy	GSGS	1942 & 1943	City Plans	September 1943
Japan	AMS	1943-1945	Medium, Large	Planned for November 1945
Japan	AMS	February 1942-1946	City Plans	Planned for November 1945
Java	AMS	1942	Medium, Large	Bypassed
Morocco	GSGS	1941 & 1942	Medium, Large	November 1942
New Guinea	AMS	1942	Medium	August 1942
Norway	GSGS	1941	Large	April 1940
The Philippines	AMS	August-November 1944	Large, City Plans	October 1944

A researcher can use several working aids to locate and interpret the maps. Most library catalogs have one entry for an entire AMS map series to represent dozens or even hundreds of individual map sheets. Once the map series is located, the researcher must identify which sheets in the series are important to the research. If the area of interest is known by a spatial relationship such as “Fifty miles east of Paris,” or if the research covers a large area, the researcher can identify the appropriate map sheet names and designators by consulting an index map. The index map shows the layout of the individual map sheets in the series overprinted on a much smaller-scale base map. Naturally, the AMS and GSGS created indexes for their map series and these are common in libraries. The index maps for captured foreign maps may be harder to locate or may be drawn

locally by the map library staff. Many libraries have online catalog records for their index maps and a few even have index maps viewable on their websites.

If a place name is known, the researcher can use several print and electronic sources to locate the map sheet depicting the place. Although geographers are familiar with gazetteers that list coordinates for places, the AMS—along with its successor and cooperating agencies—went a step further and produced indexes and gazetteers that included the map sheet designator. The AMS originally created these indexes and gazetteers for specific AMS map series, usually 1:250,000-scale, but added several larger-scale map series as well. If the older AMS indexes and gazetteers are not available, the service's successor, the Defense Mapping Agency, produced gazetteers that provided the map sheet designators along with the coordinates for places depicted on the Joint Operations Graphics series (1:250,000-scale) for each individual country. The current U.S. Department of Defense map producer, the National Imagery and Mapping Agency (NIMA) provides electronic access to country gazetteers on its website, which is located at <http://gnpswww.nima.mil/geonames/GNS/>. Since the Joint Operations graphic series uses the same global-wide, digraph-numeric sheet designators as the older lettered AMS series, the online database suffices to identify sheets in the older series.

After locating the appropriate map sheets, there are more working aids to help the researcher to interpret the maps. An often overlooked important source is the map sheet marginal information. This information describes the information presented on the map field. The marginal information has the date, edition number, map series number, sheet number, a survey reliability diagram, the scale, and an index to adjoining sheets. Additional information important to the researcher reconstructing historical topographical intelligence is in the credit legend or authorities note. Along with listing the map's producer, this section also lists the original cartographic source by series and sheet, often a foreign-produced map, as well as updates from aerial photography and intelligence reports. The source information also often appears on the AMS-produced series index maps thus eliminating the need to retrieve an individual map to determine the sources. An aid for interpreting the map sheet marginal information and understanding the AMS map indexing scheme is AMS Memorandum 443, *Notes on Map Identification*.³⁷

Although a researcher may be familiar with U.S. Geological Survey topographic map symbols and terms, they are of little value with the older AMS maps. A complete legend explaining the symbols on AMS products appears in the U.S. Army field manual FM 21-31, *Topographic Symbols*.³⁸ In contrast, using foreign-produced maps presents many additional problems involving translating and transliterating text, interpreting unfamiliar symbols, understanding foreign grid systems including converting from non-Greenwich longitude origins, local map index systems, and different measurement systems. An excellent single-volume reference book for interpreting captured maps and GSGS products is *Foreign Maps*.³⁹ This book addresses these problems with a particular emphasis on interpreting non-English terms and symbols. Specifi-

cally, the foreign map language barrier is addressed with brief map term glossaries for 33 languages in addition to non-romance languages transliteration guides. Further, it translates map terms in Chinese and Japanese characters as well as Russian and Greek words in their native alphabets. Supplementing the language aids are lists of nations and their associated languages and tabulations of areas mapped by the European powers. This allows the researcher to anticipate what language to expect on maps produced by the European powers depicting Africa, South America, Asia, and the Pacific. Although modern map symbols are similar throughout the world, *Foreign Maps* allows easier interpretation by supplying tables that compare conventional symbols used on maps from 12 major map-producing countries. The book also includes examples of foreign-produced maps as an identification aid.

The researcher requiring more extensive map terms, glossaries, and foreign map symbol explanations can use the GSGS Short Glossary series and the AMS foreign map symbols technical manuals respectively. Unlike the single volume *Foreign Maps*, these manuals explain the color symbols for a country's map series in the available scales. Interestingly, the *Greek Map Symbols* manual gives legends for maps that depict Greece produced by the British, French, Germans, and Italians.⁴⁰ The AMS manuals also provide an abbreviations list for map terms and sometimes provide an index map for the country's map series. Technical manuals for Icelandic, Polish, Portuguese, Russian, and Turkish maps also exist.

Conclusion

The AMS maps combine to present rich historical information. From basic topographic information to routes to economic activity to urban plans, they depict information compiled by indigenous sources and, in some cases, by adversaries. Further, the very areas mapped reveal long-term strategic thinking by the mapping powers. Their value is not just limited to military intelligence, but they can reveal volumes about international relations and changing landscapes in war zones.

Notes

1. Francis H. Hinsley, *British Intelligence in the Second World War: Its Influence on Strategy and Operations, Volume One* (London: Her Majesty's Stationary Office, 1979): 140.
2. Blanche D. Coll, Jean E. Keith, and Herbert H. Rosenthal, *The Corps of Engineers: Troops and Equipment* (Washington, D.C.: Department of the Army, 1958): 76-78, 442.
3. *Ibid.*, 443.
4. *Ibid.*, 77. For the purposes of this article, map scales will be categorized as: Small = 1:1,000,000 to 1:4,000,000; Medium = 1:200,000 to 1:999,999; Large = 1:20,000 to 1:199,999; City Plans = 1:5,000 to 1:19,999.
5. *Ibid.*, 78.

6. The Eighth Corps Area Engineer Reproduction Plant for the Louisiana maneuvers of May 1940 produced the map series. The series title is *Special Photomap, Third Army Maneuvers, Texas-Louisiana, 1940*. Aerial photography for the series was provided by Edgar Tobin Aerial Surveys. The series covers from Zwolle, La., to southeast of DeRidder, La., at 1:20,000-scale. The individual sheets have a 1,000-yard grid system apparently not related to a world grid system but originating in the southeast corner of the series' coverage. The Louisiana State University Cartographic Information Center holds 24 of the 63 sheets of this series.
7. Coll, et al., *The Corps of Engineers*, 444.
8. Mary Murphy, "History of the Army Map Service Map Collection," in Richard W. Stephenson, ed., *Federal Government Map Collection: A Brief History* (Washington, D.C.: Washington D.C. Chapter Special Libraries Association, 1969): 2.
9. Alice C. Hudson, "The New York Public Library's Map Division Goes to War, 1941-1945," *Special Libraries Association Geography & Map Division Bulletin* 182 (Spring 1996): 11-13.
10. Mary Lynette Larsgaard, *Map Librarianship: An Introduction* (Englewood, Colo.: Libraries Unlimited, 1988): 90.
11. Larsgaard, 91; Murphy, 4.
12. Murphy, 4-5.
13. AMS memo dated February 27, 1950, lists the libraries that received captured foreign maps.
14. Francis H. Hinsley, *British Intelligence in the Second World War: Its Influence on Strategy and Operations, Volume Two* (New York: Cambridge University Press, 1981): 9, 483.
15. Hinsley, *Volume One*, 161.
16. *Ibid.*, 140.
17. Francis H. Hinsley, *British Intelligence in the Second World War: Its Influence on Strategy and Operations, Volume Three, Part I* (New York: Cambridge University Press, 1984): 258 and Hinsley, *Volume Two*, 192, 482-483.
18. Hinsley, *Volume Two*, 482.
19. The locational grid systems on World War II German-produced maps are an interesting topic in themselves. At least four systems appear on the maps. Two were used by the German Air Force and two by the German Army. Unfortunately, none could be directly attributed to the German Navy grid system used in Enigma transmissions and broken by the Allied cryptographers.
20. *Straßenkarte Balkans 1:500,000* [maps] 1944. The sheets in this series have the originator information blocked out by a heavy black ink overprint. The orange ink overprint dated July 1, 1944, provides detailed information on the width, number of lanes, and wet-weather capability of roads. The information on bridges provides the length, number of lanes, and nature of the bridges, whether makeshift, permanent, destroyed, or if it is a military bridge. The military bridges are further broken down into two standard types. The verso of the map sheets has multiple city plans with the direct routes through the cities also in heavy black ink.
21. German Army General Staff, *Falkenberg* [map]. Frankreich 1:25,000, 6905 (Berlin: 1939). The overprint information dated September 1, 1939, categorizes the French fortifications including bomb-proof and non-bomb-proof gun turrets, minefields, communications cables, ammunition bunkers, and radio positions.
22. Latvian Geodezijas-Topografijas Dala, *Latvija 1:75,000* [maps] 1922. The stamps on sheets in this map series in the LSU Cartographic Information Center maps indicate that they were acquired by the German Land Survey Office between May 1936 and May 1940. Interestingly, the proprietary date stamps changed during this period. The stamps dated through May 1936 incorporated the imperial German eagle while those from July 1937 onwards incorporated the Nazi eagle and swastika. If the date stamp was absent, the presence of the imperial eagle on the stamp indicates acquisition by the German Land Survey Office prior to 1937.
23. Italian Istituto Geografico Militare, *Carta d'Italia* [maps] 1:50,000. 1878 to 1922. These stamps read: "Geographic Section, Military Intelligence Division, March 27, 1937," and "Geographic Branch, Army Intelligence Division, Received, May 20, 1940."
24. Surveyor General of India, *Bengal* [maps] 1:63,360 (Calcutta: Survey of India, 1922).
25. German Army General Staff Abteilung für Kriegskarten- und Vermessungswesen, *Weltkarte 1:1,000,000* [maps] (Berlin: 1941-1945).
26. German Army General Staff Abteilung für Kriegskarten- und Vermessungswesen, *Europa 1:500,000* [maps] (Berlin: 1941-1945) and German Army General Staff Abteilung für Kriegskarten- und Vermessungswesen, *Osteuropa 1:300,000* [maps] (Berlin: 1941-1945).
27. German Reichsamt für Landesaufnahme, *Karte des Deutschen Reiches 1:100,000* [maps] (Berlin: 1940-1942).

28. German Army General Staff Abteilung für Kriegskarten- und Vermessungswesen, *Karte des Nordwestbalkan 1:50,000* [maps] (Berlin: 1943).
29. German Reichsamt für Bodenforschung, *Baustoffkarte des europäischen Rußland* overprint on *Übersichtskarte von Mitteleuropa 1:300,000*. [maps] July 1942. (overprint edition November 1943).
30. Surveyor General of India, *Chinese Turkistan and Kansu* [maps] 1:500,000 (Dehra Dun: Survey of India, 1918-1922).
31. R. Harris Smith, *OSS: The Secret History of America's First Central Intelligence Agency* (Berkeley: University of California Press, 1972): 248 and Surveyor General of India, *Burma* [maps] 1:126,720 (Dehra Dun: Survey of India, 1923).
32. Italian Istituto Geografico Militare, *Carta d'Italia* [maps] 1:50,000, 1878 to 1922. Interestingly, sheet number 96, titled *Minucciano*, in the LSU Cartographic Information Center also has a proprietary date stamp from the British War Office Intelligence Division from November 25, 1897.
33. Army Map Service, *Town Plan of Roma (Rome)* [map] Second AMS Edition. 1:10,000 (Washington, D.C.: Army Map Service, February 1944).
34. The LSU Cartographic Information Center has scattered sheets from these nautical charts. They indicate that at least the following series were produced:
 - U.S. Navy Hydrographic Office. *Japan-Shikoku-West Coast* [hydrographic charts]. 1st Edition. 1:72,000 (Washington, D.C.: U.S. Navy Hydrographic Office, July 1945).
 - U.S. Navy Hydrographic Office. *Japan-Kyushu-East Coast* [hydrographic charts]. 1st Edition. 1:36,000 (Washington, D.C.: U.S. Navy Hydrographic Office, July 1945).
 - U.S. Navy Hydrographic Office. *Japan-Kyushu-East Coast* [hydrographic charts]. 1st Edition. 1:72,000 (Washington, D.C.: U.S. Navy Hydrographic Office, July 1945).
 - U.S. Navy Hydrographic Office. *Japan-Kyushu-South Coast* [hydrographic charts]. 1st Edition. 1:72,000 (Washington, D.C.: U.S. Navy Hydrographic Office, July 1945).
 - U.S. Navy Hydrographic Office. *Japan-Kyushu-West Coast* [hydrographic charts]. 1st Edition. 1:36,000 (Washington, D.C.: U.S. Navy Hydrographic Office, July 1945).
35. The series in the LSU Cartographic Information Center include:
 - U.S. Navy Hydrographic Office. *Japan-Aviation Chart* 1st Edition. 1:328,320 (Washington, D.C.: U.S. Navy Hydrographic Office, individual sheets are dated either July 15 or August 1, 1944).
 - U.S. Navy Hydrographic Office. *Japan-Aviation Chart* 1st Edition. 1:218,880 (Washington, D.C.: U.S. Navy Hydrographic Office, individual sheets are dated from October 1943 to July 1944).
36. Geography & Map Division, *Map Collections in the United States and Canada* (New York: Special Libraries Association, 1954): 155-160 and an AMS memo dated February 27, 1950, that lists the libraries that received captured foreign maps.
37. Army Map Service, *Notes on Map Identification*, Memorandum No. 443 (Washington, D.C.: War Department, 1945).
38. U.S. Department of the Army, *Topographic Symbols*, Field Manual FM 21-31 (Washington, D.C.: Department of the Army, 1961).
39. Everett C. Olson and Agnes Whitmarsh, *Foreign Maps* (New York: Harper & Brothers, 1944).
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