

Combined Action

Aerial Imagery and the Urban Landscape in Interwar Palestine, 1918–40

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The introduction of aerial photography in the early twentieth century revolutionized not only the nature of warfare, as it became apparent in the First and Second World Wars, but also the representation and interpretation of the landscapes depicted in these photographs. In Palestine, a place that had long been represented by Orientalists and biblical scholars as the Judeo-Christian Holy Land, the advent of aerial photography with the Great War was an opportunity for the emergence of new frameworks for the exterior and distant interpretations of the landscape. From the Great War onwards, the major campaigns for the aerial documentation of the country's landscape were a product of either the war effort or sustaining British imperial aspirations in Palestine during the Mandate period. Although Orientalist descriptions of Palestine as the biblical Holy Land persisted, they were supplemented by a new warfare-induced and technically and scientifically oriented imageries that accounted for the topographical, geographical, and built features of the landscape and its urban built environment.

With this in mind, and following Jeanne Haffner's assertion that the view from above provided by aerial photographs brought with it a "new science of social space,"¹ this study assesses some of the major applications of aerial power in Palestine, specifically aerial photography in the period between the Great War, when aerial photography in Palestine was first introduced, and the 1936–39 Arab revolt, known as the Great Revolt, in the British Mandate period. It is divided into three main sections: the first, traces the early experimentations in aerial photography by both the

Bavarian-Ottoman and Australian-British sides of the Great War on the Palestine Front and some of the innovations in the sciences of cartography and geography that accompanied these experimentations; the second, locates British counterinsurgency operations during the Arab revolt in Palestine within the emergence of British imperial “air control” strategies after the Great War; and finally, examines the case of the destruction of the Old City of Jaffa in May–June 1936 through demolition operations that had been documented in a series of aerial photographs, showcasing an example of one of the most drastic imageries and, to some extent, consequences of the view from above.

The study primarily relies on archival research and collections at the Australian War Museum, Bavarian State Archives, British Library, and Israel State Archives, where many of the aerial photographs of Palestine’s urban landscape in the interwar period are located. It also relies on a series of publications from this period including, most notably, the works of Captain H. Hamshaw Thomas and Gustaf Dalman, who contributed a great deal to extending the usages of British and Bavarian wartime aerial photographs on the Palestine Front into purposes that included, but also exceeded, direct warfare operations. Especially important for the study of British activity during the Great Revolt in Palestine is a British government report titled “Military Lessons of the Arab Rebellion in Palestine” published in 1938, which has rarely been examined in academic scholarship on the revolt. Taking into consideration the colonial nature of most of these sources and archives, this article follows Ann Laura Stoler’s call for reading colonial archives “along the archival grain” to unpack and tap into the “colonial common sense” that appears in their aerial views and their shifting imageries and alterations of Palestine’s landscape.²

“Reality Seen from Above”

As it did elsewhere, the Great War brought to Palestine a plethora of advancements in warfare technology. Among the most significant of these technologies was the development of aerial imagery, combining the most recent innovations in airplane technology and photography. Although earlier iterations of aerial photography had appeared years before the war, it was in the Great War that their most systematic use to date materialized. In Palestine, from 1915 onwards, as the confrontations between the British-Australian and Ottoman-Bavarian forces began to intensify, and as the battles began to shift from Beersheba and Gaza in the south toward Palestine’s northern districts, Bavarian and Australian air squadrons began to play an instrumental role in the war effort. While this role also included direct aerial bombing, as with the heavy bombing campaign conducted by the No.1 Squadron of the Australian Flying Corps (AFC) on Ottoman forces along the Gaza-Beersheba line in March 1917 and other similar operations, the squadrons’ primary role was aerial reconnaissance for purposes of tracking enemy movements and the study of enemy camps to inform strategic planning.³

By the end of the war, Bavarian and Australian airplanes had captured thousands of aerial photographs of Palestine, which are currently located in the Bavarian State Archives and the Australian War Museum (figure 1). These photographs were often overlapping and, at least for the Bavarian aerial photographs as evident from their geolocation, mainly concentrated along Palestine's coastal and central regions, and the territories surrounding the Jaffa-Jerusalem railway line passing through Lydda and Ramla, which was one of the most strategic connections and sites of battle during the war. On some of the photographs, simple hand-drawn markings appear, indicating the locations of enemy camps and facilities. The more refined analysis of the aerial photograph's content, however, was conducted by consulting military guidebooks, which enabled the approximation of enemy facilities and numbers in each encampment by including guidelines on enemy tents and their capacities, communication networks, and infrastructure networks.⁴ Hence, unlike previous wars where the enemy was only visible from the ground and in the battlefield, military operations and strategies during the Great War largely depended on the dual ability of exerting aerial power and taking aerial photographs, and the ability to interpret them and use them to approximate enemy size and predict their movements.

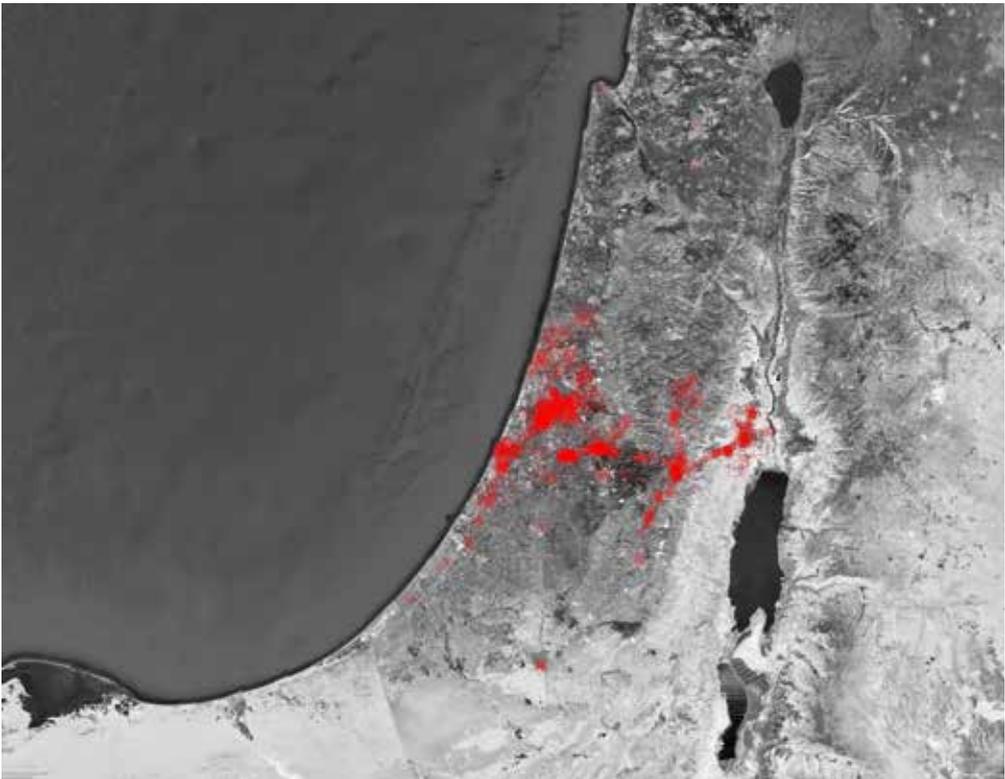


Figure 1. Mapping of locations of Bavarian aerial photographs in Palestine during WWI, 1916–18. (Mapping by author. Sources: data – Bavarian State Archives; base map – Google Earth, 2019.)

In addition to their use for locating and assessing enemy troops, wartime aerial photography was also instrumental for devising new methods of cartographic production. The Palestine Front was among the earliest sites where these innovations appeared during the Great War. It did not take long for the British, following their advancement into central Palestine, to realize the significant shifts in the nature of the front. Unlike in Sinai and the Naqab, where they were faced with an open and largely uninhabited landscape, in central Palestine, the British had to face defense lines in the main towns and to adjust to new forms of trench-based warfare, built-up obstacles, and populated areas.⁵ The Palestine Exploration Fund (PEF) pre-war maps that the British had been using since the start of the war were inadequate for this kind of warfare and, as a result, they decided to carry out new cartographic initiatives which, due to the inaccessibility of the enemy-controlled regions they wanted to cover, had to rely heavily on aerial photography.

With the start of 1918, important innovations in cartographic practices based on aerial reconnaissance on the Palestine Front began to materialize. These innovations were led by Captain H. Hamshaw Thomas who utilized the supply of Bristol Fighters and five well-trained No.1 Squadron AFC pilots who risked flying at low altitudes, and devised new cartographic methods that catered to the hilly nature and dense urban habitats of Palestine's central region. These methods involved new techniques both in taking overlapping photographs in air that aimed to minimize distortion, and in their compilation by the survey officer on the ground who aligned the aerial photographs with the reference of fixed points from previous maps (figure 2).⁶ More than three thousand square kilometers of the country were mapped using this new technique of map production in both 1:20,000 and 1:40,000 scale series.⁷ Upon returning to his academic position at Downing College Cambridge after the war, Thomas published several academic papers on the "valuable lessons"⁸ in mapping learned on the Palestine Front, and suggested that the aerial photography and mapping techniques developed during the war, including on the Palestine Front, possessed "great potentialities as an instrument of scientific research,"⁹ particularly in the fields of geography, geology, botany, meteorology, and archaeology.

Around the same time Thomas was publishing his papers on the scientific uses of aerial photography based on British wartime activity on the Palestine Front in Britain, in Germany, Gustaf Dalman was preparing his book *Hundert deutsche Fliegerbilder aus Palästina* (One Hundred German Aerial Photographs from Palestine) which he published in 1925, based on the Bavarian wartime aerial photographic collection. Like Thomas, Dalman was also interested in the potentials of aerial photography beyond warfare and military operations. As someone with a profound interest in biblical archaeology and a long experience working in Palestine, however, Dalman was mostly interested in how wartime aerial photography could be used to geographically interpret Palestine's landscape and urban development. This consideration was not entirely new for the Germans,

as some of the Bavarian aerial photographs captured during the Great War had been intended to serve the archaeological work of Theodor Wiegand in Sinai and southern Palestine.¹⁰ But Dalman also sought to move beyond archaeology. In his book, Dalman dismisses the pre-photographic representations of Palestine's landscape as overtly romanticized, biblified, and based on ideological distortions rather than historical and geographical study. Further, while he celebrates the works of early professional photographers in the region, like the Bonfils studio in Beirut, he is critical of their tendency to cater their photography to tourist and market demand for selective photography of specific "antiquities" and monumental sites rather than to the geographical and historical study of the landscape.¹¹

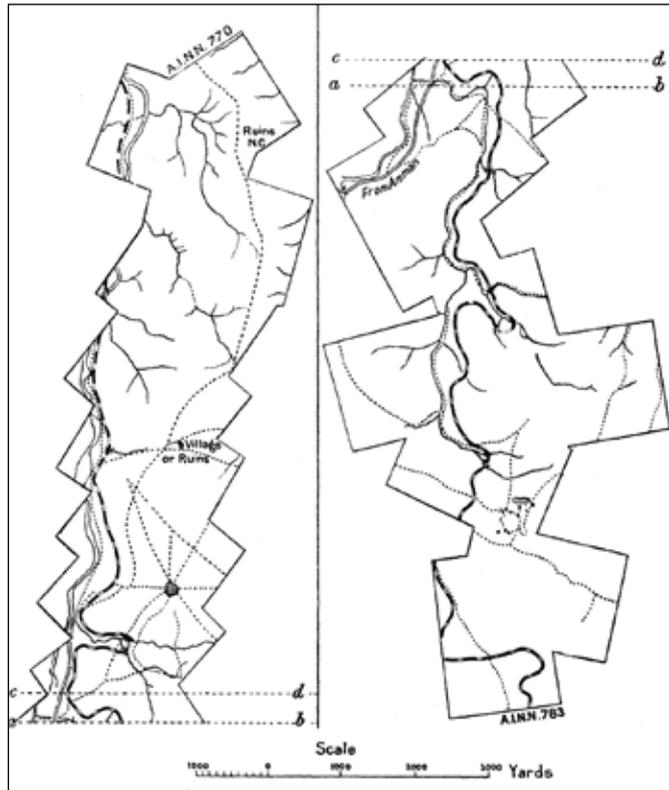


Figure 2. "Example of reconnaissance map worked up from a strip of overlapping photographs," from Captain H. Hamshaw Thomas, "Geographical Reconnaissance by Aeroplane Photography, with Special Reference to the Work Done on the Palestine Front," *Geographical Journal* 55, no. 5 (May 1920): 349–70, online at doi.org/10.2307/1780446 (accessed 19 February 2020).

Dalman saw in the aerial photographs of Bavarian Air Squadrons 300 and 304 on the Palestine Front an opportunity to move beyond these trends. To him, "only aerial photographs could replace the artificial assembled images [of the landscape], with reality seen from above, including the site alongside its surroundings, the exterior conditions of its existence, its traffic potentials, and the actual traffic routes until today."¹² For each Bavarian aerial photograph Dalman included in his book, he added a textual description of their visible topographical and geographical features, neighborhoods, road networks, and important buildings and sites. Unlike the biblical accounts of Palestine's physical landscape common among his contemporary Orientalists and biblical scholars, or the photographic albums of the Holy Land sold to tourists, Dalman's "scientific" descriptions acknowledged the features of urban modernity and urban change that the

country had been witnessing since at least the mid-nineteenth century. His descriptions of the main urban centers, including Jerusalem, Jaffa, and Haifa highlighted their physical transformations and their modern urban developments in the form of wide boulevards, railway networks, new ports, and *extra muros* neighborhoods. For each of these features, Dalman's textual description included a numerical reference of its precise location on the photograph (figure 3).

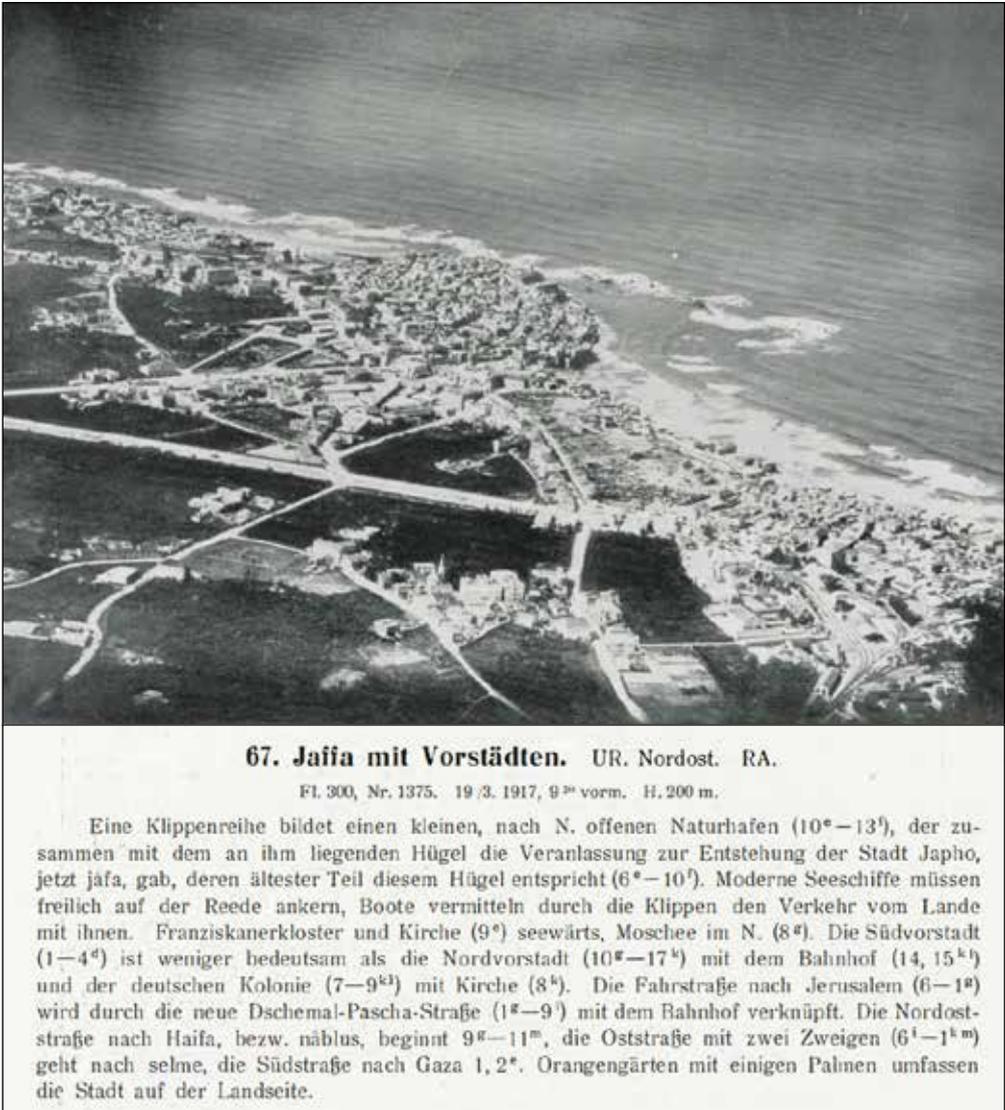


Figure 3. Bavarian aerial photograph titled “Jaffa with Suburbs” and Dalman’s textual description of it, with numerical references to the location of key sites that appear on the photograph, including the Franciscan monastery, rail station, German colony, excursion to Jerusalem, Djemal Pasha Boulevard, and the southern street to Gaza among others. Gustaf Dalman, *Hundert deutsche Fliegerbilder aus Palästina* (Gütersloh: Bertelsmann, 1925), 76 and 77.

In a sense, post-war publications like those authored by Dalman and Thomas indicate that the role of aerial photography both throughout and following the Great War had far exceeded its uses for military operations. One of the major effects of the wartime advent of aerial photography was in the shifts it influenced in representing and interpreting the urban landscape through new apparatuses of estimation and calculation. The Palestine Front was a primary site where some of these key shifts materialized, particularly with the British-led innovations in cartographic production using aerial photographs and the German utilizations of aerial photographs for archaeological surveys and for leading new “scientific” forms of interpreting physical geography and the urban built environment. In the two instances, the distance of aerial photographs enabled the objectification of the landscape below and its abstraction into a series of recognizable features which allowed for both its study and conquest. While highly significant in World War I and its immediate aftermath, these aerial objectifications and abstractions proved to have more radical usages in the Mandate period, as the British administration sought to tame the 1936–39 Great Revolt in Palestine.

“Combined Action”

For the British, the Great War was the start, not the end, for experiments in exerting aerial power in the Middle East. The most radical operations carried out by the British immediately after the war took place in Iraq, where they devised a new strategy of “air control” that was primarily intended to serve their imperial interests against the 1920 Iraqi revolt. In her vital work on British counterrevolutionary activity in Iraq, Priya Satia shows that the explanation of why these new strategies of the Royal Air Force (RAF) were deemed by British experts as specifically suitable for Mesopotamia lie not only in financial reasons (as air power was more economical to operate than ground action), but also ideological motivations based on their conviction that “aircraft could rule the desert.”¹³ Satia explains:

These various experts deemed Mesopotamia peculiarly suitable for air operations, better than Europe, for aesthetic as much as topographical reasons: its presumed flatness promised many landing grounds, little cover to insurgents, and the possibility of “radiating” British power throughout the country from a handful of fittingly spartan bases, while the reality of its varied and protean topography, when acknowledged, was held to offer ideal training for the RAF, exposing it to every sort of terrain – mountains in Kurdistan, marshes in the south, riverain territory in between, and so forth. The difficulties of communication in Iraq made “the idea of using aircraft” “extremely tempting”; they could annihilate distance in hours.¹⁴

The specificity of British “air control” operations to Mesopotamia meant that they were not translatable to other contexts of counterrevolutionary activity in densely populated urban environments in Britain, Ireland, or even for the purpose of suppressing the 1936–39 Arab revolt in Palestine.¹⁵ In his memoirs, Sir Arthur Harris, whose role as the RAF Air Officer Commanding-in-Chief during World War II acquired him the epithet “Bomber” Harris, and who briefly joined the RAF in their operations in Palestine during the Arab revolt following his service in Iraq, asserts that “it had never been proposed to exercise the same kind of air control over Palestine as over Irak [*sic*].”¹⁶

This, however, did not mean that aerial operations were not important for the British in the duration of the Arab revolt in Palestine. It meant rather that these operations had to operate differently, taking into consideration not only the hilly and densely populated nature of Palestine’s topography but also the nature of the revolt itself and British policy in Palestine at the time which, in the context of an established civil administration, had to balance between civil and military considerations. This latter consideration was an issue of major tension among the British military and civil forces in Palestine, as elucidated in an encounter between Harris and Bernard Montgomery (“Monty”), who was in charge of an infantry division during the Arab revolt, upon the latter’s arrival at the headquarters in Haifa. Recalling the encounter, Harris reports that Monty greeted him with “aircraft, aircraft, this is no job for aircraft. It’s a job for policemen.”¹⁷ To which Harris responded that “while [he] recognised that it was a job for policemen and not for aircraft, or for soldiers for that matter, the strength and determination of the rebels and the weakness of the police in arms and numbers were in themselves sufficient reason for using all the few military and air resources available.”¹⁸

For the duration of the revolt, especially with the organization of Arab armed bands, most British engagements operated in close cooperation between aircraft and ground troops, or as the British called it, “combined action.”¹⁹ The nature of British confrontations in Palestine during the Arab revolt was very distinct from what they had to deal with in World War I. Unlike the Ottoman-German troops, Arab armed bands in Palestine had no headquarters or key communications that could be targeted. The armed bands were always on the move and their activities depended on maintaining a high degree of elusiveness and unpredictability. For the British, the challenge was to concentrate their forces as quickly as possible and to strike the Arab bands before they were able to move. Aircraft were regarded as the “most suited weapon”²⁰ to carry out such an operation. Nonetheless, the ability of aircraft to target the bands could not be achieved unless efficient organization and communication with the ground was successfully realized – two concerns that were at the heart of the strategies the British devised to tame the Arab revolt in Palestine. Among these strategies was dividing the country into four aircraft zones, where each zone is primarily the commitment of one squadron or detachment, and the installation of a number of RAF mobile wireless sets in trucks (known as “Rodex” vehicles) and distributed widely among army detachments. As soon as contact was made with the Rodex or the aircraft, conforming to the frequency of the aircraft zone, a call for air support to that zone would be made immediately by the central Air Striking Force (figure 4).²¹

Through the aerial partitioning of Palestine and the system of air-ground communications that the British devised during the Great Revolt, they were able to carry out four forms of “combined action”: first, offensive action against armed bands, which was mostly a result of a call sent from the ground and answered by the Air Striking Force. An operation carried out on 28 July 1936 in Bab al-Wad which resulted in the killing of eleven Arabs, and an even greater action carried out on 24 September 1936 in the Nablus hills which resulted in more than fifty Arab casualties, forty-one of which were caused by air action, and the dropping of thirty-three bombs, both illustrate the drastic nature of these actions²²; second, aerial reconnaissance, which included reconnaissance to locate the enemy, ground reconnaissance, and reconnaissance to detect sabotage on main communication lines; third, the use of aircraft for the escort of military vehicle convoys and, less frequently, of trains carrying troops and equipment; and finally, the use of aircraft for intercommunication and supply of troops, which was necessary in only one or two cases throughout the duration of the revolt. For the British, these forms of “combined action” were especially important for carrying out their imperial counterinsurgency strategies during the Great Revolt, to the extent that they reported in 1938 that “there can be few operations on record in which co-operation between aircraft and small military detachments were clearer and more effective than they were in Palestine.”²³

“Operation Anchor”

A duality of construction and destruction characterized the physical effects of British counterinsurgency strategies during the Great Revolt on Palestine’s landscape. On the one hand, the British built enormous reinforced concrete police stations and posts in and around the major urban centers – later known as “Tegart Forts,” after Charles Tegart, a police officer who was transferred from India to Palestine in December 1937 to serve as the Inspector General on security matters.²⁴ These expensive and enormous concrete fortresses, which remarkably altered the country’s landscape, were instrumental in maintaining British control over urban centers and served as strategic frontiers that hindered the movement of the Arab rebels. At the same time, the British relied heavily on building demolitions as a form of punitive action, especially in the main urban centers, allegedly targeting buildings from which fire had been detected or buildings that had harbored rebels. Demolitions were, for the most part, a military assignment alone, though police advice was usually sought as to which houses were to be demolished. In some cases, sappers were summoned and the demolition was carried out immediately, while in other cases houses were marked for destruction, by daubing them with large circles of white paint, and demolition was withheld until “such time as further punishment became necessary.”²⁵

The most drastic punitive operations of this nature were carried in a series of actions against the coastal Arab-majority city of Jaffa between 30 May and 30 June 1936, which the Zionists later referred to as “Operation Anchor.” By the 1930s, Jaffa’s

urban expansion beyond the pre-nineteenth century walled city had exceeded the early signs of growth visible in its Bavarian aerial photograph from the Great War published in Gustaf Dalman's book (figure 3). Nonetheless, in Operation Anchor, the British were specifically interested in the Old City of Jaffa, not the new neighborhoods of al-Manshiyya or al-'Ajami that had been growing alongside the city's northern and southern shores. The Old City's danger for the British had to do with its population's socioeconomic status, mostly comprised of boatmen whom they saw as "desperate men who had nothing to lose and much to gain by an appeal to force."²⁶ As they explain:

The Old City of Jaffa had long been a hotbed of lawlessness and revolt, and as such had usually set the example for rebellious activities all over the country. Its inhabitants had the reputation of being the toughest of all Arab elements, consisting mostly of boatmen of Greek descent who earned their living handling lighters in the Port of Jaffa, a difficult and dangerous occupation. Their natural dislike of authority had been greatly increased by the fact that they more than any other Arab community had suffered directly from the influx of Jews. They had seen Tel Aviv grow at their very doorstep into the biggest town in the country, and with its growth many of the commercial glories of Jaffa had departed as business tended more and more to centre in Tel Aviv.²⁷

For the British, it was not only the Old City's population that posed a problem, but also its architecture and layout:

Built upon a low hill flanked on one side by the sea, it completely dominated the Port and such buildings as the police station and barracks and the District Commissioner's offices, which lay in the New City. Moreover, its houses formed a veritable rabbit warren through which dark and narrow streets turned and twisted into a maze in which the level of one street would often be the roof of the house in the one below and where few passages were so wide that they could not be spanned by the reach of a man's arms. It represented in fact an exceedingly complicated trench system with vertical sides some thirty or forty feet high, which could readily be converted into a regular citadel.²⁸

Hence, the densely built fabric of the Old City, difficult to navigate by military troops, and its topographical advantage over the New City, were also seen as a great drawback for the British force's ability to subdue its population without an extreme and demolition-based operation.

The operation against the Old City was carried out in four consecutive phases. In the first phase, the British led retaliatory shootings against houses from which fire had been directed, using Vickers guns and rifle grenades, to which the Arab rebels in the

Old City responded using a variety of weapons, including automatics. In the second phase, British forces rounded up all of the city's available notable figures, shopkeepers, and householders in the affected area and forced them to work, along with municipal workers, in clearing up the outskirts of the Old City. In these two actions, the British drove the Arab rebels to their innermost hideouts in the very center of the Old City, which facilitated the implementation of the demolitions in the third and fourth phases. This included driving two roads through the Old City – from east to west in a straight line, and from north to south in a curved line – by means of demolitions.²⁹

On 16 June, RAF airplanes flew over the Old City, dropping leaflets that called upon the inhabitants of the Old City to evacuate their homes by seven o'clock to enable demolitions to take place, which were described by the government as being "for the improvement of the Old City."³⁰ The leaflets were a major source of panic among the local residents, as an Arabic article published in *al-Difa'* newspaper the following day illustrates:

The residents of Jaffa woke up yesterday morning to the sound of a plane that was hovering right above the roofs of the city. Shortly after, it began dropping a large number of leaflets on the Old City [...] The leaflet was printed in the government press in Jerusalem, and as soon as the residents read it they panicked, and the children tossed what the airplane had dropped in the Saraya square, located between the Government House and the Police Barracks.³¹

Local residents rejected the operation and considered "urban improvements" a false pretense for what was, to them, a clear instance of a politically motivated military operation. On the same day they received the leaflets, as *al-Difa'* also reported, the affected residents of the Old City decided to send letters of complaint to the High Commissioner and the Governor of the Southern District objecting to the nature of the operation and expressing its drastic consequences for the Old City's population, most of whom were poor and unable to pay the costs of their temporary rent and resettlement.³² Despite this, the British government proceeded with their operation's third and fourth phases as had been planned.

Unlike the extensive coverage of the events in Jaffa in *al-Difa'* and other local newspapers which remained close to the events on the ground and expressed the devastation of the Old City's population, official British reporting on the events barely makes mention of the local inhabitants aside from their description as "rebel elements." Rather, on the pages of the 1938 "Military Lessons" report as part of a section on "Punitive Action," the brief description of British military strategy in Jaffa is supplemented by a series of six aerial photographs. These aerial photographs were taken by RAF Squadron No. 6 which, along with documenting the operations, was also tasked with conducting aerial reconnaissance of the area east of Jaffa to detect any movements that might suggest an attempt at "outside interference."³³ The photographs, taken in bird's eye view, depict the city both before and after the demolition operations

(figure 5). In these photographs, points marked A, B, C, and D appear indicating the A-B line of demolitions for the third phase, and the C-D crescent for the fourth phase demolitions. Hence, in the aerial photographs, the action against the Old City appears as merely a technical operation – the simple mechanical drawing of a line between two points which, on the ground, translated into the strategic opening of “good wide roads through the old labyrinth of alleys.”³⁴ In reality, though, as evident from a series of ground photographs taken after the demolitions, the operation violently obliterated the physical structure and fabric of the Old City and displaced its local inhabitants (figures 6 and 7).³⁵ The operation was so severe that the British contended that it “mark[ed] the end of organized resistance in the towns” and was the main cause behind the transfer of the main rebel activities to the hills from June 1936 onwards.³⁶



Figure 5. Two aerial photographs of Jaffa that appear in a 1938 British report, captioned “Demolitions completed on 18 June between points A and B,” and “The second stage of Demolitions – The circular road C-D completed on the 20/30. June” in “Military Lessons of the Arab Rebellion in Palestine 1936,” (1938) IOR/L/MIL/17/16/16, British Library, India Office Records and Private Papers.



Figures 6 and 7. Two ground photographs of the Old City in Jaffa following the British demolition operations during the Great Revolt (1936–1939). Israel State Archives 12/4141/4.

Conclusion

The developments of aerial power and aerial photography in the interwar period were a global phenomenon, not limited to the Middle East or Palestine. Nonetheless, in examining some of the principal aerial activities of the Germans and the British in Palestine during the first half of the twentieth century, it is evident that Palestine, both as a strategic frontline during the Great War and as a mandated territory in the decades that followed, was a site where major developments had taken place in the motivations behind and science of aerial photography. These developments, which were mainly experimental and born out of situations of crisis, were crucial in serving both German and British interests in direct warfare and military surveillance and, for the latter, for maintaining imperial control and crushing attempts at anticolonial insurgency in its colonial territories. With this in mind, it is not surprising that whereas German aerial photography in Palestine had ceased with the Great War, British aerial navigation in Palestine was exacerbated in the post-war period and was instrumental to the British administration's taming of the 1936 Great Revolt.

For the British, the nature of aerial power and uses shifted considerably between the Great War and the Arab revolt. This was not merely due to the two decades difference that separated the two events and the technological advancements in aerial warfare that had taken place in them, despite the importance of these shifts. Rather, it was mainly due to the different type of "warfare" in the two situations, and the starkly different nature of the "enemy." In the Great War, the British were fighting against clear military targets with traceable lines of infrastructure, logistics, and communication. Hence, through aerial surveillance, the ability to study these elements and their size and position within the landscape was directly linked with the ability to target them, and gain warfare advantage. In the case of the Arab revolt, however, the main British target was the local population. While in urban settings, as in Jaffa, aerial power granted the British great advantage, this was not the case with the rural mountains. There, armed rebel bands were elusive and constantly on the move and, for the British, flying at close distance to the ground posed a high risk. It is under these conditions that the British had to devise a new strategy of ground-air intercommunication, or "combined action," as the basis for their counterinsurgency activity.

The applications of aerial photography in interwar Palestine were, undoubtedly, heavily motivated by military operations. Nonetheless, it would be inaccurate to suggest that aerial photography served military tasks alone. In this period, aerial photography was also central to the shifting imperial conceptions of Palestine's landscape that departed from, albeit not entirely replaced, its traditional representation as the biblical Holy Land. Unlike nineteenth-century paintings and ground photographs of specific historical monuments in Palestine, aerial photographs depicted the *vue d'ensemble* of the urban landscape in the present. Thomas's writings on the potential usages of aerial photography in cartography, and Dalman's use of aerial photographs in the study of

Palestine's topography, geography, and urban change exemplify the rising interest in the scientific potential of aerial photography. The scientific approach to the landscape extended beyond both warfare operations and biblical references and articulated imperial visions through new discourses centered around measurement, accuracy, and abstraction. This, however, did not mean they were any less colonial. In interwar Palestine, aerial photography was instrumental for carrying out archaeological investigations, geographical surveying, and urban planning – all of which had been carried out in service of British colonial visions.

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Endnotes

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- 2 Ann Laura Stoler, *Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense* (Princeton, NJ: Princeton University Press, 2010), 3.
- 3 Michael Molkenntin, *Fire in the Sky: The Australian Flying Corps in the First World War* (Crow's Nest, Australia: Allen & Unwin, 2010), 84–85.
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- 5 Dov Gavish, *A Survey of Palestine Under the British Mandate, 1920–1948* (Psychology Press, 2005), 13.
- 6 H. Hamshaw Thomas, "Geographical Reconnaissance by Aeroplane Photography, with Special Reference to the Work Done on the Palestine Front," *The Geographical Journal* 55, no. 5 (1920): 349–70, online at doi.org/10.2307/1780446 (accessed 20 February 2020) excerpted in this issue of *JQ*.
- 7 Gavish, *A Survey of Palestine*.
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- 9 H. Hamshaw Thomas, "Aircraft Photography in the Service of Science," *Nature* 105, no. 2641 (1 June 1920): 457–59, online at doi.org/10.1038/105457a0 (accessed 20 February 2020).
- 10 During the Great War, Theodor Wiegand published two photo albums of key archaeological sites and monuments in Sinai and southern Palestine, with prefaces written by Ahmad Djemal Pasha and F. Freiherr Kress von Kressenstein, indicating the direct involvement of the Ottoman-German leaders of the Palestine Front in archaeological affairs. The publication on Sinai included aerial photographs of Suez, Port Ibrahim, Port Said, and the pyramids at Giza, among other places, taken by Bavarian squadrons during the war. Theodor Wiegand and Ahmed Djemal Pascha, *Alte Denkmäler aus Syrien, Palästina und Westarabien: 100 Tafeln mit beschreibendem Text* [Ancient Monuments from Syria, Palestine and Western Arabia: 100 Plates with Descriptive Text] (Berlin: G. Reimer, 1918); Theodor Wiegand, Sinai, *Wissenschaftliche Veröffentlichungen Des Deutsch-Türkischen Denkmalschutz-Kommandos; Heft 1* (Berlin: W. de Gruyter, 1920).
- 11 Gustaf Dalman, *Hundert Deutsche Fliegerbilder Aus Palästina* [One Hundred German Aerial Photographs from Palestine] (Gütersloh: Bertelsmann, 1925), 3.
- 12 Dalman, *Hundert Deutsche Fliegerbilder*, 4 (translation by author).
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- 29 “Military Lessons,” 158.
- 30 “Military Lessons,” 158.
- 31 “Al-mashru’ al-lathi afza’a Yaffa,” [The Project that Frightened Jaffa], *Al-Difa’*, 17 June 1936, 4 (translation by author).
- 32 “Al-mashru’ al-lathi afza’a Yaffa,” *Al-Difa’*, 17 June 1936.
- 33 “Military Lessons,” 159.
- 34 “Military Lessons,” 159.
- 35 These photographs were part of a British post-operation assessment and were mainly provided to document progress in the process of debris removal by responsible engineers; see Israel State Archives (ISA) 12/4141/4, ISA 12/4141/5.
- 36 “Military Lessons,” 159.