The Cadastral Mapping of Palestine, 1858–1928

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The development of the cadastral system and land mapping of Palestine is a domestic issue of land administration whose early development took place primarily in Europe. Twentieth-century Palestine saw the transition from land registration, without proper reference of location, to statutory maps which became indispensable for land settlement and registration. This paper considers the introduction of cadastral mapping in Palestine in the years 1858-1928, and discusses the relative contribution of the Ottomans (1858-1914), the British Mandate authorities (1920-1928) and Christian and Jewish settlers (1869-1928), to the establishment of modern Land Books based on statutory maps. The British administration opened up a new era in which cadastral plans satisfied the demand for quality mapping and an advanced system of land registration. However, by 1948, the Mandatory Government of Palestine had completed the land settlement of only about five million metric dunams, which represent just 20 percent of the 26,300 square kilometers of Palestine’s total land area. This settled area is almost identical to the boundaries of the northern part of the State of Israel recognized by the United nations in 1947. The fact that land settlement was not completed under the cadastral project, had remained ever since the focus of disputes over land ownership in areas of conflict between the Israeli government, Jewish settlers and Palestinian Arabs.

The research of Baigent and Kain (1992) has shown that from the Renaissance until the late nineteenth century the cadastral map was, in many areas, an established adjunct to effective government monitoring and control of land. They have identified a number of uses to which cadastral maps have been put by state agencies, including evaluation and management of state land resources, land reclamation, land re-distribution and enclosure, colonial settlement and land taxation. Maps also served as symbols of state control over land and as tools of enlightened government. According to Baigent and Kain, cadastral mapping constitutes an instrument of control which both reflects and consolidates the power of those who commission it, whether economic, social or political.

The first half of the nineteenth century was something of an age of cadastral surveys throughout the whole of Europe (Kahn and Prince 1985). These included the Townland Survey of Ireland and cadastral surveys of France, Austria and Bavaria. In the United States the Original Land Survey was conducted, and in England and Wales a large and detailed survey was carried out under the Tithe Commutation Act of 1836.

During this same period processes of Westernization and modernization began to fain momentum in the Ottoman Empire. From mid-century onwards these found expression in agrarian legislation, among other spheres. The Ottomans sought to make land laws more orderly and systematic in order to enhance their legal control in land-relate issues and to tighten the collection of land tithes. For this purpose, a series of laws reflecting considerable European influence were enacted, but no systematic cadastral survey was undertaken, despite the fact that one of their main objectives was to increase exploitation of the territory. Among these laws were the Ottoman Land Law of 1958, additions and amendments to the ottoman civil code in 1876 and the 1912-1913 laws.

This paper will attempt to analyze the changes that took place in surveying and mapping in Palestine, which culminated in the establishment of a modern cadastre based on statutory maps in the years 1858-1928. This development transpired under two different political regimes; the multi-ethnic Ottoman Empire, in which Palestine was
peripheral, although of increasing importance, and which ruled during the nineteenth and early twentieth century: and the British Mandate, from the end of World War I until the establishment of the state of Israel in 1948. Unlike the Ottomans, the British made an attempt to institute an enlightened and liberal rule, based on colonial reform and introduced a regular legal and economic base for the improvement of local conditions. With these concerns in mind the Mandatory authorities attempted to formulate equitable legal guidelines for land tax and land settlement, in order to provide a clear cut legal basis for control of landowners and their titles to land.

Someone inspecting a sample of Palestine's early land survey maps and cadastral plans is bound to be confused by the various individuals and bodies involved in the making of these maps. The Maps shared no common guidelines, lacked any uniformity with regard to cartographic method, legal status, quality and appearance. Only through a study of the cadastral history of Palestine can one hope to dispel some of the confusion.

The history of cadastral surveying and mapping in Palestine is relatively short. The era of land administration under a modern land law did not begin until 1858. In 1912-1913 the Ottoman authorities tabled a reformed law calling for a cadastral survey, but the outbreak of World War I in the following years prevented its implementation in Palestine. The British introduced official cadastral surveying on a national scale in 1921, but did not actually carry out effective wide-scale surveying until 1928. Nevertheless, despite the absence of official cadastral surveying in Palestine during the latter half of the nineteenth century and the early part of the twentieth century, a continuous effort by local initiators to carry out land surveys and maintain private, unauthorized land books throughout this period can be traced. These persistent endeavors stemmed from the need to create an alternative system, given the absence of a reliable system of land administration based on land surveying and land registration.

Regimes and settlers

The Ottoman Government In 1858 the Ottoman Government brought about a major change in land administration by consolidating various land laws into a Land Code, which was applied in Palestine as in most parts of the Empire. With the opening of three Land Registry offices in Palestine, shortly after the promulgation of the Land Code, the Ottoman Government started to develop the official system of Land Books and Records. The registration of arable land was made compulsory by the Land Code, but much land remained unregistered, since the books were based on registration of deeds and not on any preliminary systematic inland survey. There was no verification of the settlers' title to land. Moreover, since the registration documents consisted only of a vague verbal description of the boundaries of the property in question, unsupplemented by maps or plans, they did not reflect the exact geographical location of the property.

The authors' knowledge concerning the cartographic activities of the Ottoman authorities in Palestine is quite limited, following an exhaustive search in the Israel State Archives, the Survey of Israel and land offices. At first glance, it might appear as if the ottoman rulers simply did not bother to map Palestine, leaving this to zealous French,
British and German teams of surveyors and explorers. However, persistent and protracted searches in libraries and archives have, in fact, uncovered maps drawn by Ottoman officials. Although it is still difficult to understand, at times the circumstances under which these cartographic products were created, a few large-scale Turkish land maps, were found and more such maps are known to exist from well-documented lists of maps which may have been part of a system of land inventory (Kark and Gerber, 1984).

The subjects presented in the Turkish maps belong to three major categories: jiftlik lands (Ottoman land held by the Sultan); major blocks of state land earmarked for sale and purchase; and reclamation, improvement or engineering projects, such as swamp drainage and railway or building construction-the last category falling largely beyond the scope of this paper. The common denominator of these maps is their individual nature, detached from each other or any standard reference system similar to a triangulation network, and none were part of any cadastral system.

Nevertheless, the maps of Jiftlik lands do offer a type of cadastral inventory. For example, 48 tracts of land held by the Sultan were recorded and mapped at the beginning of this century, possibly as part of an agricultural development project. Later on, after the Young Turks revolution in 1908, these lands became state domain and in 1910 the property maps were transferred from Palestine to Beirut by the Chief Clerk of State Lands. After the First World War, the British were able to trace a few of these maps in Beirut and Damascus (Bennett, 1922). Unfortunately, none of them is in the possession of the authors, but there are several certified copies of these maps, produced later by the French and the British authorities.

Lake Huleh Concession Map, for instance is an authentic copy of one of the maps mentioned in the Sultan's list (Fig. 1). A concession over Lake Huleh lands, in northern Israel, was granted by the Ottoman Government in 1911 to Arab landlords of Beirut, in order for them to drain its swamps and develop the valley lands. After World War I, the Huleh valley was the subject of territorial negotiations between the British and French mandatory governments of Palestine and Lebanon respectively. According to an agreement they reached in 1923, regarding the demarcation of the border of the valley was included within the territory of Palestine, though the concession remained in the hands of Arab landholders in Beirut, whose rights were guaranteed by the British High Commissioner. The original map, which had been drawn in April 1889, was copied by the French Topographic Service of Syria and Lebanon in 1922—one year prior to the demarcations of the boundary—at the request of the Government of Palestine (Huleh Land Concessions files, Public Record Office London, 1925).

One example of the second category is a group of maps of individual tracts that comprised part of a great block of land on the road between Haifa Bay and Nazareth. These maps were probably drawn in conjunction with negotiations for the purchase of unsettled land from Arab landowners by the Jews. The negotiations started in 1891 and were successfully concluded in October, 1920. The maps, which had been prepared by a District engineer, were drawn as contour maps, based on as yet unknown reference points. In 1921, all the individual maps were redrawn and incorporated into a key map by an eminent Jewish architect, in order to ease the transfer and registration of the land in the Land Registry Office. In the late 1930s the maps were once again officially copied, this time by the British authorities.
A further example, in this category is the map of the Ruins of Semmoune (Fig. 2). It was drawn in colour in 1902, at a scale of 1:20,000. The map shows the boundaries of the site and provides information on the owners of its neighboring lands, buildings, ruins, water sources, roads and paths, land cover and cultivation. The area is given in Turkish dunams (1 T.d = 919.3 square meters = approximately a quarter of an acre). The titles is in French, while the remainder of the text appears bilingually, in French and Turkish. A copy of this map was prepared, in 1937, by a British surveyor and was accepted as a certified copy by the Land Registry Office (Kark and Gerber, 1984). Recently the original map was located by the authors.

Representative of the third category of land map, from the period in question, are village maps incorporate into plans for engineering projects. For example, the map of the Arab village of Sejera (Sedjera) and the nearby Jewish settlement of Ilanya was prepared in 108 as part of the plan for a water conduit to run from a distant water source to both the Arab village and the Jewish settlement. The heights leveling of the topographic crossection are given, relative to the lowest point in the area.

Settlers from abroad and the Ottoman land law The Ottoman authorities imposed many administrative and economic restrictions on land purchase, registration and transfer by foreign subjects. Until 1867 foreigners could not legally possess immovable property in the Ottoman Empire. From that year the Ottoman authorities, under pressure from foreign powers, granted certain foreign citizens right to acquire land and register it in their names with the exception of land in the Hejaz. These rights were dependent on the signing of separate agreements between the Ottomans and any interested government and were subject to changing preconditions (Kark 1984). Citizens who did not enjoy the backing of such an agreement—such as Jews residing in Palestine under five years, or, in certain periods, German and American Templers—were not entitled to possess or register land. Therefore, these settlers had to resort to subterfuge, such as registering land in the name of fictitious owners.

With the absence of an official cadastral system the Christian and Jewish settlers of European origin in Palestine understood that as an alternative they would have to administer their land within their own communities. Hence, they developed unofficial land regimes in which were recorded all their land transactions. When the official Land Books ceased to reflect the true situation with regard to real estate, these private, unofficial 'Land Books' became indispensable tools for land administration within the new settlements (Goadby and Doukhan, 1935). Moreover, independent land surveys were carried out by a few architects and surveyors—some of the latter trained and licensed and others not—who helped fill the gap left by the authorities.

The German Templers The German Templers, some of them American citizens, were members of the pietistic religious movement founded in Wurttemberg, Germany, in the middle of the nineteenth century, they arrived in Palestine in 1869 and left the deepest imprint on Palestine's landscape of all the Christian groups striving to prepare the for Christ's Second Coming (Ben-Artzi, 1990). They started with the establishment of two urban colonies, in Haifa in 1869 and shortly thereafter in Jaffa. In 1871 they set up the rural colony of Sarona, which today is the center of Tel Aviv and in 1873 they settled in
the vicinity of Jerusalem. About 30 years later—in 1902, 1906 and 1907 they established three other rural colonies for their second generation.

These German and German-American colonists were innovative and skilled pioneers who introduced into Palestine advanced systems in many spheres, land surveying being just one of them. Jacob Schumacher, a Templer architect, planned their colony in Haifa and its land parcellation. A version of the map he drew later aided the American Consul-General at Beirut in pressurizing the Ottomans into officially registering this land (Kark, in press). In 1885, his son Dr. Gottlieb Schumacher was appointed, by the ottoman Government, as Chief Engineer of the District of Acre. He also drew several maps, including parcellation maps of the Templers' colony in Haifa (Fig. 3). Theodore Sandel, another skilled surveyor, planned the Sarona German Colony, and was later commissioned by the Jewish settlers to survey and plan Petah-Tiqva, which was to become the first Jewish settlement in Palestine. By 1889 11 European or American-trained Templer land surveyors and engineers, were taking part in land surveys in Palestine.

_The Jewish Settlements (Moshavot)_ The wave of mass immigration of Jews to Palestine began in 1882. At that time Jews were permitted to acquire real estate and register it in the Land books, but these rights were, from that year onwards, subject to constantly changing restrictions. Not only were Jews from certain countries barred from registering land, but so were Jewish societies, organizations and financial institutions who suffered from the absence of juridical persons in Muslim and Ottoman law. As an example of the subterfuges employed by Jewish individuals and bodies, the first contract for acquisition of lands in Tel Aviv was signed, in 1909, in the name of a Jewish member of the Zionist Executive in The Hague (Solel, 1990).

The Hebrew Land books, that the Jewish settlements maintained around the turn of the century, contained precise records of the true ownership of land, as well as its dimensions, legal status and the obligations imposed upon it. Also included were maps of each and every lot, on which were recorded the measurements and the names of the owners of adjoining plots. The surveyors and other technical workers employed by both the settlement bodies and the local authorities prepared large-scale maps that evidently formed the basis for the registration of each community's territory (Gavish, in press) (Fig. 4).

Not until the British took over Palestine and were forced to contend with the issue for official land settlement and to conduct cadastral surveys, did the Jewish Land Books gain recognition as valuable and reliable documents. Sir Ernest Dowson, the British expert who had been brought to Palestine from Egypt to recommend some form of cadastral reform, vigorously reprimanded the government for its failure to utilize these books, and saw to it that they were incorporated into the Government Land Registry

"The third piece of immediately and permanently useful work consist in taking over the Land registers of various Colonies, for the most part Jewish, who have long complained with considerable justification that their own Land Registers though reliable and comprehensible are legally invalid, while the Government's Registers though legally valid are unreliable and incomprehensible." Dowson, 1925:23
Under British Mandate The British occupation of Palestine in the First World War brought to an end the Ottoman rule over this country. On 1 July, 1920, after two years of military administration, a civil administration took over, headed by the British High Commissioner. One of the major concerns of the British authorities, even during the military administration, was the issue of land management. The change of government provided an historical opportunity for modifying administrative procedures, including the system of Land Registry (Gavish, 1986). Anxious to improve the system, the government created from the very start the means for arranging land settlement in Palestine. Thus, the Survey of Palestine came into being the objective of performing a cadastral survey, while the Land Registry, which had ceased operation during the war and had been reopened to the public in October 1920, was expected to deal with the legal aspects of land settlement.

Facilitating the operation of these two bodies was the Transfer of Land Ordinance 1920-1921, which made the recording of all land dispositions obligatory. Furthermore, following the advice of British experts from Sudan and Egypt, various minor improvements in the handling of Land Books were adopted in 1920, such as granting the registration officer the option of requesting plans to accompany new registration (Goadby and Doukhan, 1935).

However, even though the registration officer utilized his right to demand maps, he encountered difficulties from an unexpected direction: no law had yet been passed in Palestine laying down standards of measurement and making the surveying by authorized surveyors obligatory. Not had any standard linear or area measures been agreed upon. True, the maps deposited with the Land Registry were based on a mete and bound survey, and contained various other elements of modern maps: bearing, scale, a description of the boundaries of the land and their length, a measure of the area they enclosed and the names of the neighbors on bordering lands. However, the maps were skeletal and detached from a system of coordinates, from a national triangulation network and even from one another. They were no more than sketches or plans bearing no proportionate relationship to land features or topographical vicissitudes.

The landowners who are, today, attempted to locate their lands in order to establish ownership find it extremely difficult to use these plans. It is not only hindsight that has revealed the defective quality of these maps; their deficiency was apparent at the time of their submission to the Land Registry. As early as 1923, the Director of the Land Registry admitted that he was unable, from the isolated plans, to locate the piece of land that a registered transaction purported to concern (Dowson, 1923: 10). A comparison between these maps and their pre-war predecessors, produced by the settlers, makes it apparent that the early stages of the British Mandate saw a significant deterioration in the quality of cadastral mapping in Palestine (Gavish and Shamir, forthcoming).

Cadastral reform and mapping
As mentioned previously, the Survey of Palestine and the Land Registry were supposed to carry out the cadastral survey and handle land settlement. However, the hasty and forced cooperation between these two bodies, which lacked coordination or joint legal infrastructure for operation, led to an almost complete dissociation between them. Despite efforts made between 1921 and 1923, failure and in experience drove the Government of Palestine to seek advice and assistance form British experts elsewhere. In
1923 the Government approached Ernest Dowson, who was about to retire from his post as head of the Survey of Egypt, for advice on how to achieve a well-regulated, proper layout of land settlement in Palestine. Dowson came to Palestine for a short visit that same year, and after presenting his report was appointed counselor for the Government in the matter of reforming the entire system of land settlement and registration.

From 1923 to 1928 Dowson exerted pressure on the Government to introduce in Palestine the land settlement system based on the registration of title to land. This system—named after Robert Richard Torrens, who first proposed it in South Australia in 1857—depends on a preliminary cadastral survey, as well as parcelation and mapping of the land. At that time over 50 governments worldwide modeled their methods, in some respects, on the Torrens system (Kerr, 1927).

The Torrens system served as the guideline for the 1928 Land Settlement Ordinance (Government of Palestine, 1928), which launched the cadastral survey in Palestine practically from scratch in its new, clearly-defined, juristic form (Government of Palestine, 1929). This survey started with the production of village maps with fiscal blocks to facilitate the taxation of rural property. These maps then served as a basis upon which registration blocks were parceled and surveyed.

1948, Termination of a period

Twentieth-century Palestine saw the transition from land registration (without any proper locational reference) to statutory maps which became indispensable for land settlement and registration. This second phase, under the British administration opened a new era in which cadastral plans satisfied the demand for quality mapping and an advanced system of land registration.

However, at the termination of British Mandatory rule in Palestine in 1948, the project of cadastral serve and land settlement was far behind any forecasted schedule. From 1928 onward, owing to the deterioration in security conditions, projects where personnel had to function in the open landscape, were subject to obstructions. The disturbances caused by the Arab community in 1929, the Arab revolt of 1936 that lasted over three years and the outbreak of World War II hindered the impetus and advancement of the project (Salmon, 1937; Loxton, 1988). During these years, the British authorities decided to work in safer territories, such as the plains and valleys. Here the Jewish settlers, appreciative of the benefit of their settlements, welcomed the land surveyors and settlement officers.

Therefore, by 1948, the Mandatory Government of Palestine had completed the land settlement of only about five million metric dunams, which represent just 20 per cent of the 26,300 square kilometers of the total and area of Palestine (Fig. 5) (Gavish, 1991). This settled area is almost identical to the boundaries of the northern part of the state of Israel recognized by the United Nations in 1947. Judea and Samaria, which were occupied by the Hashemite Kingdom of Jordan from 1948 until 1967, were not surveyed under the cadastral project and, therefore, have remained ever since the focus of constant disputes overland ownership. The fact that land settlement was not undertaken in Judea and Samaria under the Ottoman, British and Jordanian regimes, may have played a role not only in the relatively undeveloped level of agriculture in these regions, but also in current conflicts between the Israeli government, Jewish settlers and Palestinian Arabs, which as times result from lack of clarity as to ownership.


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