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NOTES HISTORIQUES

A NOTE ON THE POPULATION SIZE OF JERUSALEM IN THE SECOND TEMPLE PERIOD

BY

Ronny REICH

Zinman Institute of Archaeology, University of Haifa
ronny@research.haifa.ac.il

Abstract

The article re-examines the parameters which are used for an estimation of the population of Jerusalem in the late Second Temple period, *i.e*. the population of the big Temple City. The outcome of the changes in these parameters (population density; defining the area devoted to private housing), a new figure for the population of the city of that period is suggested – around 30000 people (see Fig. 1 and Table), based on a coefficient of 500 persons per hectare.

A second issue discussed is the reason to the construction of the Second Wall described by Flavius Josephus (*Ant*. 4, 146, 158). The construction project of the Temple Mount required a large working force of many thousand of people (*Ant*. 15, 390; 20, 219), for a considerably long time. These people were brought from the countryside and other towns, and resided in the city. It is the author's opinion, that this influx of people required the addition of a new quarter to the city, which was also soon fortified with Josephus' Second Wall. The population density in this quarter was high, and as it increased another fortified quarter was added, under Agrippa 1st, fortified by the Third Wall.

Another source of people who might have been housed in the newly fortified part of the city, are those who lost their houses which happened to be located in the areas into which the Temple Mount was extended, as attested by the newly found remains along the western and southern Temple Mount walls.

Introduction

A city is a dynamic entity in what pertains to its physical size and its population. A city might grow and extend its perimeter due to one of two main causes,

or both. On the one hand is the extension due to natural growth. In ancient times, when life expectancy, was low, this was a slow process. On the other hand, demographic changes occur which result in a significant growth of a city's population, which might result from external immigration. Such a growth might occur as a continuous, gradual movement of people from rural areas to the city, but such a process typifies later periods and is not of our concern here. Against this, an artificial growth might be the outcome of a single immigration wave which was triggered by a crisis which happened elsewhere, which forced people to leave their place, in villages or cities, and to seek another place to live in.

In this way I suggested two extension processes which occurred in Jerusalem in the Iron Age II period (8th century BCE). Of these processes one of a modest size, and the other of a large magnitude. Each one of these processes was caused due to one of the reasons specified above: One, was the modest extension to the east of the city, due natural growth; while the other, to the west, was of a large size, due to a massive immigration to the city which arrived from afar (Reich and Shukron 2003; Reich 2011: 311-314).

An artificial growth of the city's population can be the outcome of a planned action taken by the central regime, carrying out a population transfer. For example, after the conquest of Gezer by Simon (Macc. I 13: 43-48), he drove out the pagan population and resettled the place with an observant Jewish population brought from another place. The place of origin of this population is not given, but it is reasonable to assume they were brought in from Judaea. This action was a step in extending the Jewish hold in the recently established Hasmonaean Kingdom. This process is corroborated by the archaeological record exposed on site (Reich 1981).

Jerusalem's population: Methodology

A frequently debated topic concerning Jerusalem in general, and the Early Roman (=Second Temple) period in particular, is the size of its population. The historical records do not contain reliable figures such as those which might have been obtained by a census. Population estimation are mainly based on the size of the built-up and fortified area of a city, which is thought to be proportioned to the size of the population living in it. In the past, for cities of the Iron Age II, parameters of 250-500 persons per hectare of fortified built-up areas, were used to estimate their populations. Most scholars, including the author, tend to use the lower figure mentioned above. This figure stands for a population a greater part of which was living on agriculture in the rural area around the city. The houses in these cities contained installations for storing food surpluses, agricultural implements and household animals (sheep, poultry, animals of burden and the like).

Recently, Hillel Geva (2008: 57-58) summarized the topic concerning Jerusalem's population through the ages. Geva opted for the lower figure of 250 persons per hectare also for the city of the late Second Temple period. He estimated the city at this period with 20000 persons, and even less. I accept Geva's minimal attitude concerning Jerusalem's population in the various periods of the city's existence except for the late Second Temple period. The reason lies in the nature

of that city. Jerusalem, the temple city, of the late Second Temple period, was a metropolis with an urban nature which resembles the cities of the modern era. This is manifested in various aspects, such as: more densely built-up areas; the absence of agricultural installations made for household animals and for storing agricultural commodities; evidence for the existence of a second floor (*Aliya* in the Rabbinic literature) over part of the houses, which were used for living; by the fact that also the slopes, and even the eastern steep slopes of the Upper City were used to construct houses (Greenhut 2006).

If the coefficient of 250 persons per 1 hectare built-up area is used for the calculation of an Iron Age II town like Lachish, Megiddo and even Jerusalem (the City of David), it seems that Herodian Jerusalem, that of the 1st century BCE and the 1st century CE down to its sack by Romans, was more densely populated. These considerations bring me to opt for the higher figure of 500 persons per hectare for this particular period. This density is attributed to the Upper City fortified by the 'First Wall' and to the extension fortified by the 'Second Wall'. For the extension fortified by the 'Third Wall' I used a smaller figure of 100 persons per hectare, since this area was less populated, as the city was destroyed a short time – a generation long, since the days of Agrippa 1st – after it was constructed.

A support to these figures one can get by examining the houses themselves, vis-à-vis the two figures given above, that is of 250 and 500 persons per hectare. The house excavated by Nahman Avigad (1983: 95-120) in the Jewish Quarter of the Old City, today dubbed "the Palatial Mansion" measure *c.* 600 m^2 (20 × 30 m). Above half of its area, so I estimate, were living quarters in a second floor. According to the smaller coefficient chosen by Geva, of 250 persons per hectare, this house would have accommodated 15 persons. According to the figure which I use, it would have accommodated 30 persons. In a building containing some 10 living rooms in the main floor, and few more in the second floor, five ritual baths (*mikwa'ot*) in its basement, the figure of 15 persons for such a house seems far too small, whereas thirty persons seem appropriate.

Geography and Archaeology

Not all the fortified area of the city of Jerusalem was populated. The Temple Mount and the public area around it were void of houses and not populated. The area attached to the city by the Third Wall, was most probably loosely populated as said above. I opt for the possibility that the Third Wall coincides with today's Ottoman Wall and Damascus Gate, and not with the Sukenik-Mayer wall. My arguments are simply that this vast area, between Damascus Gate and the Sukenik Mayer wall, which is some 80 hectares in size, is much too large for a planned extension of the city's boundaries. The remains of domestic architecture in this area are nil, and even the stray finds and dumped pottery shards of the late Second Temple period are very scanty.

The densely populated areas in the city were the Upper City and Lower City, both within the boundaries of the First Wall, and the area added through the addition of the Second Wall. All these amount to about 64 hectare. Also in these areas one has to subtract a certain percentage for public areas such as streets,

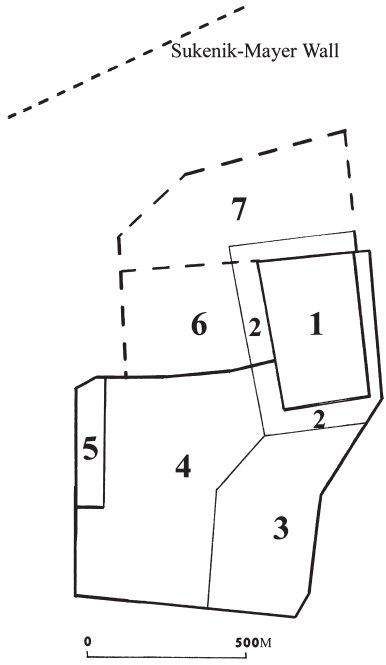
piazzas, markets etc. If one estimates these areas at c. 20 % of the total, than the calculated built up area is 51.2 hectares. Multiplying this figure with the higher population coefficient of 500 persons per hectare, the population amounts to 25600 persons. Adding to it a thousand persons for the palace and the citadel in the west, and some two thousands for the additional area of the Third Wall, we can round up the population of Jerusalem at the late Second Temple period at about 30000 persons.

The population of Jerusalem in the Early Roman (=late Second Temple) Period (Fig. 1)

	Region	**Area (in hectars)**	**Population coefficient (persons per hectare)**	**Estimated population (area times population coefficient minus 20%**
1	Temple Mount	14	–	–
2	Public area around Temple Mount (50 m wide average)	1	–	–
3	Lower City (incl. City of David and slopes from upper city)	21	500	8400
4	Upper City, surrounded by First Wall (western hill and Mt. Zion, excl. king's palace)	29.5	500	11800
5	Palace and citadel in western part of city	4.5	–	1000
6	Area of Second Wall extension	13.5	500	5400
7	Area of Third wall extension	~20	100	2000
	Total	**103.5**		**28600**

A central issue required to be solved for the determination of Jerusalem's area and population size relates to the location of the Second Wall and Third Wall. This issue was extensively debated among scholars. I will not relate to previous discussions. Unfortunately, this part of the city is covered entirely by the densely built-up and populated northern part of the Old City of Jerusalem (the Christian and the Moslem Quarters), and the archaeological data from these areas is extremely scant.

For the determination of the course of the Second Wall, the most important clue is the course of the Third Wall. Recently, J. Magness (2003) published a detailed study in which she claims that the Sukenik-Mayer wall, which was accepted by most scholars to represent Josephus' Third Wall, was indeed



constructed by Herodian stones, but these were in fact *spolia* stones reused by Roman masons for the Roman city of Aelia Capitolina. An archaeological support to this view was present by G. Avni (2004), who has demonstrated the linkage between the spatial distribution of the late Roman cemeteries north of Jerusalem and the Sukenik-Mayer wall. Late Roman tombs are abundant north of the Sukenik-Mayer wall, and are absent south of it. The author accepts these views. There is no escape from locating the Third Wall with the northern current line of the Old City and Damascus Gate.

From these supposition emerges a fact that the northern line of the Second Wall must have been more to the south of Damascus Gate, under the central part of the Christian and Moslems Quarters. Of course, only the rigid remains of a fortification line, and private houses located within this wall, might corroborate such an assumption.

As for the Second Wall it seems that some segments which were reported by Kloner (1999), and onto which the Amygdalon Pool (known better by the anachronistic name Hezekiah's Pool), is abutting to its western face, is a true archaeological holding point to identify the wall. According to Flavius Josephus' account, the Second Wall terminated at the Antonia fortress, that is, at the northwestern corner of the Temple Mount. If the northern line of the Second Wall was aligned with the northern wall of the Temple Mount, then the Second Wall, in this outline, added a fortified area of c. 300 × 450 m, which equal 13.5 hectare (Fig. 1).

As for the area protected by the Third Wall, in case it coincides in the north with Damascus Gate, that is the line of contemporary Ottoman city-wall, the following remarks should be added: On the one hand we have no knowledge where did this wall connect, on its eastern end with the Temple Mount, and on its western end with the First Wall. For this reason the size of the area circumscribed by it seems to be more difficult to determine than that of the Second Wall. My tentative suggestion can be seen in Fig. 1. As for the population housed in this area I accept the supposition (made in the past for the rather huge area added by the Sukenik-Mayer wall when it was identified with the Third Wall) that it was rather loosely populated. I estimate this area to have a density of only 100 persons per hectare.

History

Jerusalem possessed three city-walls during the Second Temple period, as described in detail by Flavius Josephus, in his account on the eve of the Roman siege and destruction (*War* 5, 136-159). It is accepted by all that the Old Wall or First Wall was erected by one of the Hasmonean kings, and the Third Wall– by Agrippa 1st. The construction of the Second Wall is attributed by many to King Herod, although an explanation how the need for a new wall came into being at this particular time was not suggested.

Concerning Jerusalem and its population, two figures mentioned by Josephus should be given. Flavius states that with the beginning of the construction works on the Temple Mount and the Temple, Herod recruited 10000 workers (*Antiquities* 15, 390). At face value this is a rounded figure, and probably slightly exaggerated for the beginning of the works, or at least rounded upwards. It seems that several thousand workers were recruited. In the days of Agrippa 2nd, that is some 70 years later, Josephus states that a problem of unemployment was created for 18000 persons (*Antiquities* 20, 219). This happened as the construction works at the Temple Mount came to an end.

These worker Herod had to recruit from the rural areas around Jerusalem and from other towns. As we deal here with a long lasting episode, three generations long, these people who moved to the city had to be settled somewhere. Where in the city could they settle? Such a large addition of people certainly could not find lodging, as tenants, among the Jerusalem population. I assume that for this working force, of several thousands persons, the northern region of the city was annexed to it with the Second Wall.

Another source of displaced people were settled here as well. The excavations adjacent to the western wall of the Temple Mount and Robinson's Arch carried out recently (Reich and Shukron 2011), have clearly demonstrated that for the extension of the Temple Mount westwards, a neighborhood of private houses was destroyed, leaving behind only those parts which were cut in bedrock. One should assume that the extension of the Temple Mount southwards and northwards caused similar actions. From the confiscated and destroyed houses several hundreds of people must have looked for a new place to build a new home. These too might have found a solution in the Second Wall neighborhood.

We have no clear archaeological evidence of the nature of construction of this area, which is located entirely under the densely built-up areas of the Muslim and Christian quarters of the Old City of Jerusalem. We have to assume that the nature of this built up area was different from the spacious wide villa-like houses of the Upper City which were excavated in the Jewish Quarter of the Old City. It is more likely that this area, of some 13.5 hectare in size, was planned and parceled in a more efficient and dense way, into more crowded living quarters, most probably of more than a single floor.[1] The population density in this new quarter gradually increased as the two figures of 10000 and 18000 from Josephus' account show. This seems to be the main cause for another extension of the city's fortified area and perimeter. This additional extension, in the days of Agrippa 1st was planned to be fortified with the Third wall.

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[1] In Table 1 the calculation for the 'Second Wall' area was done by taking the coefficient 50 which was used for all other areas of the city, although the figure might have been even slightly higher.

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