Water at the Top of the Hill: the Second Temple Period Water Systems at the Top of the City of David Hill

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Introduction

Between 2016 and 2018 an archaeological excavation was carried out at the northern part of the City of David hill, near the entrance to the visitors center (Fig. 1).[1] The excavation site is located east of the Givati Parking Lot excavation (Ben-Ami and Tchekhanovets 2013) and west of E. Mazar's excavations at the top of the City of David hill (Mazar 2015). The current dig is the continuation westward of J. Uziel's excavation at the entrance to the City of David Visitors Center (2013). It uncovered eight settlement strata: Stratum I: an agricultural terrace from the Mamluk–Ottoman periods; Stratum II: a refuse pit from the Abbasid period; Stratum III: a terrace wall and garden soil from the late Byzantine–early Islamic periods; Stratum IV: Remains of installations from the Byzantine period; Stratum V: a large structure with a mosaic floor from the Late Roman period; Stratum VI: remains of water installations from the Early Roman period; Stratum VII: remains of a quarry; and Stratum VIII: a rock-hewn reservoir. In addition, the eastern end of the trench excavated by the K. Kenyon expedition in the 1960s was uncovered in the excavation (Fig. 1) which had been covered at the time by earth, rocks and construction refuse.

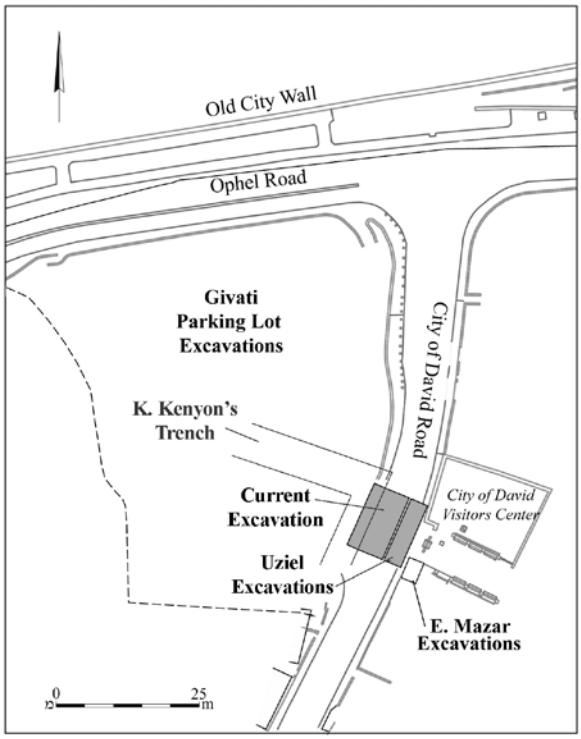

Fig. 1. The excavation area (Israel Antiquities Authority. Drafting and surveying: V. Essman)

1 The excavation, carried out by the Israel Antiquities Authority and funded by Elad, was directed by S. Dan-Goor and Y. Tchekhanovets with the assistance of N. Nehama (administration), V. Esman and Y. Shmidov (surveying and drawings), A. Peretz (field photography), D. Tanami (metal detector) and N. Zack (plans).

This article will discuss mainly an installation discovered in Stratum VI – a large water cistern (L.243–244) from the Second Temple period. We will present the various remains, which have been preliminarily dated to the end of the Second Temple period, while focusing mainly on this large water cistern – its function, users and the reason for its construction in that particular area.

Stratum VI: Remains from the Early Roman period

After dismantling the remains from the Late Roman period a number of impressive installations were found from the Early Roman period (Fig. 2). In the northern part of the excavation area are two installations. One, (L.242), which is square, plastered and rock-cut, continues westward to the Givati Parking Lot excavation (not yet published). The other (L.234) is a vault, the southern part of which has remained intact in situ (Fig. 3). The vault has an interior dividing wall as well as rock-cut channels and a cupmark for water drainage, which means that this installation was for underground storage area and not a

Fig. 2. Plan of Stratum VI (Israel Antiquities Authority. Drafting and surveying: V. Essman)

Fig. 3. Vault L.234 (Israel Antiquities Authority. Photo by: A.Peretz.)

water cistern. Since these installations are at the top of the hill, where settlement was continuous and the bedrock is high, it seems that structures once stood above them that did not survive.

In the southern part of the excavation area is another installation featuring a number of layers of white plaster (L.229, Fig. 2). A cupmark, c. 40 cm deep, was incorporated into one of the lower plaster layers. The floor of the installation slants toward the cupmark, apparently to drain water. Removal of the plaster layers revealed the installation's foundation layer, consisting of small stones set directly on the bedrock. The stones leveled an earlier quarry in order to construct the base of the installation. Here too, the presence of drainage elements indicates it was not used as a water cistern.

Fig. 4. Reservoir L.173 (Israel Antiquities Authority. Photo by: A.Peretz.)

Fig. 5. Intact cooking pots from Reservoir L.173 (Israel Antiquities Authority. Photo by: A.Peretz.)

Reservoir L.173 was discovered in the western part of the excavation. The reservoir was hewn to a depth of 6 m into the bedrock and coated with two layers of plaster (Fig. 4). Large quantities of pottery sherds were found together with miniature complete vessels and about 55 intact cooking pots (Fig. 5), into some of which small holes were bored. All the cooking pots were dated to the end of the Early Roman period. A few fragments of "Gaza Ware" pottery, dated to the second century CE, were found in the reservoir. In the bottom of the reservoir is a

narrow natural space, c. 1.5 m high, which faces east and was also coated with layers of plaster (L.247, Fig. 2). The reservoir and the natural space were both hewn into strata that predated the Early Roman period stratum. It is unclear whether the intact vessels fell into the reservoir when it held water and therefore did not break, or whether the installation served as a hiding place during the final days before Jerusalem's destruction.

The Large Water Cistern

Fig. 6. The large water cistern, L.244, with signs of quarrying, L.245 (Israel Antiquities Authority. Photo by: A.Peretz.)

A very large water cistern was found in the center of the excavation area, half rock-cut and half built, with a narrow passage between its two chambers, L.243 and L.244 (Figs. 2, 6). It was coated with three layers of thick gray and white plaster. As can be seen in the plan (Fig. 2, dotted line) the lower part of the cistern is wider than the upper part. Judging from the convex shape of the upper part of the bedrock and the carved rectangular stones found collapsed into the cistern, it was apparently roofed with a barrel arch that was not preserved. Part of the cistern plastered floor was preserved in the southern part of Chamber L.243, to a height of 694.54 m above sea level.

The measurement and height of the cistern indicate that it contained at least 92 cu m of water. The average annual rainfall in Jerusalem at present is 537 mm.[2] However, this average is based on a number of recent drought years in Israel. According to scholars,

2 According to the Israeli Meteorological Service, May 2018, www.ims.gov.il/IMS/CLIMATE/LongTermRain

the climate in the Second Temple period was wetter than it is today (Neumann et al. 2009: 762) and thus, during rainy years, water draining into the large water cistern from the surrounding area would have filled it completely after two or three years.

Fig. 7. Pillars incorporated into the cistern, L. 243, L.244 (Israel Antiquities Authority. Photo by: A.Peretz.)

Two plastered pillars about 1 m wide found in the center of the cistern apparently supported its roof. Their height, from the bedrock to the top is c. 4.3 m. In the eastern chamber (L.244) signs of quarrying and partially quarried stone blocks were found as far down as 693.45 m above sea level (L.245; Figs. 2, 7). The builders may have intended to hew it to greater depth, but stopped when they realized that they were dangerously close to the natural space, L.247, which would have put the entire cistern at risk. The cistern was hewn into an earlier quarry, whose remains can still be seen in the upper part.

Discussion

Public Water Cisterns

The pools and cisterns of Jerusalem are very different from those in the Roman and Hellenistic world. There are no swimming pools, large fish ponds or decorative pools in Jerusalem (Gurevich 2015). All the water systems were built to store water for two purposes only: drinking and ritual purification[3] (Gurevich 2015: 17). According to some

3 Apparently Sultan's Pool was used for agricultural purposes as well as for drinking.

scholars, some ritual immersion baths were also used for recreation and swimming (Grossberg 2017: 62); but in any case their main purpose was purification.

During the Second Temple period Jerusalem had to be ready to host large numbers of visitors during the three pilgrimage festivals. The Upper City received its water from the upper aqueduct via the present-day Jaffa Gate area, while the Temple Mount received its supply from the lower aqueduct, which entered the city in the area between today's Zion Gate and Dung Gate (Mazar 2002). Near the Temple Mount (Ben-Dov 1982) a number of rock-cut water cisterns were found which would have held the water from the aqueducts. In the City of David, the large water cistern is half hewn and half built upward. Apparently the intent was to hew it entirely from the bedrock, as was common in Second Temple times, but the builders realized they were dangerously close to an earlier underground space (found about 1 m below the bottom of the reservoir). They therefore decided to complete construction by building walls upward (Figs. 2, 7).

The largest water cistern discovered near the Temple Mount, which received its water from the lower aqueduct, had a capacity of 12,000 cu m. The lower and the upper aqueducts together channeled approximately 42,000 cu m of water to the city annually (Tsuk 2011: 276). In addition to these impressive reservoirs, a number of pools have been found throughout the Old City (among them Hezekiah's Pool, the Struthion Pool, the Pool of Israel and St. Anne's pools). These pools had a total capacity of between 7,440 cu m and 100,320 cu m (Gurevich 2015); they were intended for rainwater storage, since it was more convenient to draw large quantities of water from above-ground installations. According to Gurevich (2015:167). These pools stored drinking water only. Why, we may ask, were huge pools and large rock-cut water cisterns both needed, if the city was receiving water via the aqueducts? The answer has to do with Jerusalem's climate: 99% of the rainfall in Jerusalem occurs between November and April, which would have filled these pools for Passover and Shavuot, serving both the residents of Jerusalem and pilgrims. But by Sukkot this water would have either run out or have no longer been potable, and therefore the inhabitants turned to the full, aqueduct-fed, hewn water cisterns.

The lower city, or the City of David, received its water from the Gihon Spring, which filled the Pool of Siloam. The Gihon Spring produced approximately 600,000 cu m of water per year at the time (Tsuk 2014: 117). The pool is believed to have measured 50 x 60 m (Reich and Shukron 2011: 244). According to Gurevich (2015:167), the inhabitants of the City of David during the Second Temple period drank directly from the Gihon Spring itself, and they immersed in the Pool of Siloam. But the spring is situated on the eastern end of the City of David hill and the pool is on the southern end. The northern part of the hill lacks its own water source; therefore the only way to provide water to this area was to store rainwater in water cisterns.

Private Water Cisterns

Private homes needed water for the same reasons everyone else did: drinking and ritual purification. According to Jewish law, a ritual purification bath (*miqweh*) had to contain water that was not drawn, such as the spring water or rainwater. If the water in the ritual bath had to be changed, new water had to be drawn, which would not have met the requirements of Jewish law (Ben-Dov 1982: 152). Thus a permanent installation was built alongside the ritual bath called an *otzar,* which held rainwater only for mixing with the water of the ritual bath by direct contact. Such installations were discovered in the Givati Parking Lot excavation (Ben Ami 2011: Fig. 2) where a number of ritual baths were found, each of which had its own small reservoir (with a volume of about 20 cu m). According to some scholars, the *otzar* was used to bathe before entering the ritual bath, or as a small reservoir to fill the ritual bath when the water level went down (Adler 2014). But even if the purpose were not to change the water in the ritual bath, the *otzar* was certainly associated with its daily use. Ritual baths found at the top of the hill in the Givati Parking Lot excavation (Ben Ami 2011) were for the private use of the inhabitants there, while pilgrims who came from the south immersed in the Pool of Siloam. In the current excavation at the entrance to the City of David Visitors Center no ritual bath was uncovered, and the volume of the large water cistern was larger than an *otzar* as it is known from the nearby excavations. It is therefore not likely that this cistern was used for ritual purification. In the Givati Parking Lot excavation, in addition to the ritual bath area, monumental remains of buildings from the end of the Second Temple period were discovered, both in the southern part (Ben Ami 2011) and the northwestern part (Ben Ami 2013). The residents of these buildings would have required a water supply, but no

water cistern was discovered in that area. Thus, the data leads me to the conclusion that the large water cistern, which was only a few meters east of these monumental buildings, at the entrance to the City of David Visitors Center, provided water for their inhabitants.

Conclusion

Cycles of drought and rainy years are typical of the climate in the Land of Israel.[4] During the Second Temple period, there were many very large water cisterns, both in and around Jerusalem. These cisterns and pools contained huge amounts of water. In years when rain was plentiful it was imperative to fill them as much as possible to ensure sufficient water for the coming drought years; hence, the need to build as many large water cisterns as possible. The need to store so much water apparently stemmed from the major increase in Jerusalem's population between the Hellenistic period and the end of the Second Temple period (Geva 2014: 143–145).

Public and private water systems were also clearly separated in terms of the source of their water. The public systems received a central supply of water from the aqueducts that met the needs of the upper city, the Temple and the pilgrims, while private dwellings had to fill their own ritual baths and large cisterns – the latter of which had to contain enough water for the entire year.

The new archaeological remains uncovered at the entrance to the City of David Visitors Center shed new light on life at the top of the hill during Second Temple times. In contrast to the Iron Age, in the Second Temple period the top of the City of David was no longer the center but rather the edge of the city, which was expanding ever farther northward. Evidence of this is also seen in the stepped street (Szanton 2016) that led pilgrims to the Temple Mount and passes through the western edge of the City of David – more than 50 m west of the monumental remains from the Iron Age (Mazar 2015). The enormous quantities of refuse left by pilgrims along the street were collected and

4 Boaz Dayan (from 3/06/2018).https://www.israelweather.co.il/page2.asp?topic_id=76&topic2_id=225&sub_topic_id=1.

disposed of on the eastern slopes of the City of David; this also shows that this part of the city had already lost its significance (Reich and Shukron 2003).

In the neighborhood known as the lower city all public efforts were invested in the welfare of pilgrims. The inhabitants, who were apparently people of means, met their own needs for ritual baths and drinking water, a very different picture than the one from earlier periods (Szanton and Zilberstein 2014). The impressive water system attests to the presence of both large water cisterns that are not associated with ritual baths, as well as the great need for water by people living in homes in southern part of the city. The new excavations, including the discoveries from the excavation of the stepped street (Szanton 2016) now allow us to more precisely reconstruct the look of the City of David in the first century CE.

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