

[ROSAPAT 12]



PRECIOUS WATER

Paths of Jordanian civilizations
as seen in the Italian archaeological excavations.
Proceedings of the International Conference
held in Amman, October 18th 2016

Edited by

LORENZO NIGRO - MICHELE NUCCIOTTI - ELISABETTA GALLO



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«LA SAPIENZA» EXPEDITION TO PALESTINE & JORDAN

ROME «LA SAPIENZA»



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ARCHAEOLOGY
OF
PALESTINE &
TRANSJORDAN

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On the cover: The bathing lady represented in the central scene of the west aisle in the Umayyad Castle of Qusayr 'Amra (courtesy of ISCR; De Palma - Sobrà in this volume, fig. 12).

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WATER AND POWER.
EARLY CITIES IN JORDAN AND WATER CONTROL
IN THE 3RD MILLENNIUM BC: THE CASE OF BATRAWY

Lorenzo Nigro*

The rise of an urban society in Early Bronze Age Jordan is characterized by the capability of new territorial polities to control the access and use of freshwater. Early cities (or “walled communities”) arisen in the Jordan Valley or along the eastern tributaries of the Jordan River in the Jordanian Highlands exploited the rivers for their waters and as tracks for interregional trade. Their power was extended over a territory marked by wadis, which bordered respective catchment areas. The earliest territorial polities of 3rd millennium BC Jordan, thus, exercised a direct control on waters also because intensive agriculture and grazing, the basis of their economy, were only possible in a riverine environment. From this perspective, the walled town of Khirbet al-Batrawy in the Upper Wadi az-Zarqa may thoroughly epitomize such phenomenon, its peculiarities, development, and successive crisis.

Keywords: Early Bronze Age; urbanism; water management; Upper Wadi az-Zarqa; Khirbet al-Batrawy

1. PREMISE: WATER & INCIPIENT URBANISM

Whatever is the label attributed to the phenomenon reflected in the archaeological record by huge settlements encircled by massive fortifications during the Early Bronze Age (3400-2000 BC), ‘urbanism’¹, ‘walled-towns’² or simply ‘fortified sites’³, they do represent the extraordinary achievements of a restricted but meaningful number of communities spread over the Jordan Valley and the Jordanian Highlands during the time elapse of about a millennium.

Material culture (including copper manufacture⁴), architecture⁵, international trade⁶, demographic growth⁷, social organization and exchange system⁸ exhibited by such

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¹ Kempinski 1978; Esse 1989; 1991. Urbanization in the Southern Levant of the 3rd millennium BC is a widely discussed phenomenon, and most recently studies have levied criticism at this interpretative model (Greenberg 2003: 32-33; Savage - Falconer - Harrison 2007; Kafafi 2011). For sure, EBA urbanism in Southern Levant, and especially in Transjordan, should be considered as a distinct historical-archaeological phenomenon, with its “own characters and cantonal features” (Nigro 2012, 610).

² Schaub 1982.

³ Philip 2001; 2003; Chesson 2003; Chesson - Philip 2003; Schaub - Chesson 2007.

⁴ Nigro 2014; 2015.

⁵ Kempinski 1992.

⁶ Esse 1991.

⁷ Brishi - Gophna 1984; Harrison 1997.

⁸ Esse 1989, 90-93.

sites (Tell esh-Shuna North, Tabaqat Fahl/Pella, Tell Abu al-Kharaz, Tell Handaquq North, Tell es-Sa'idiyeh, Khirbet ez-Zeraqon, Khirbet al-Batrawy, el-Lehun, and Bab edh-Dhra': fig. 1) point to a distinguished shift in human life, which marks the advent of a more complex and developed society in Early Bronze II-III.

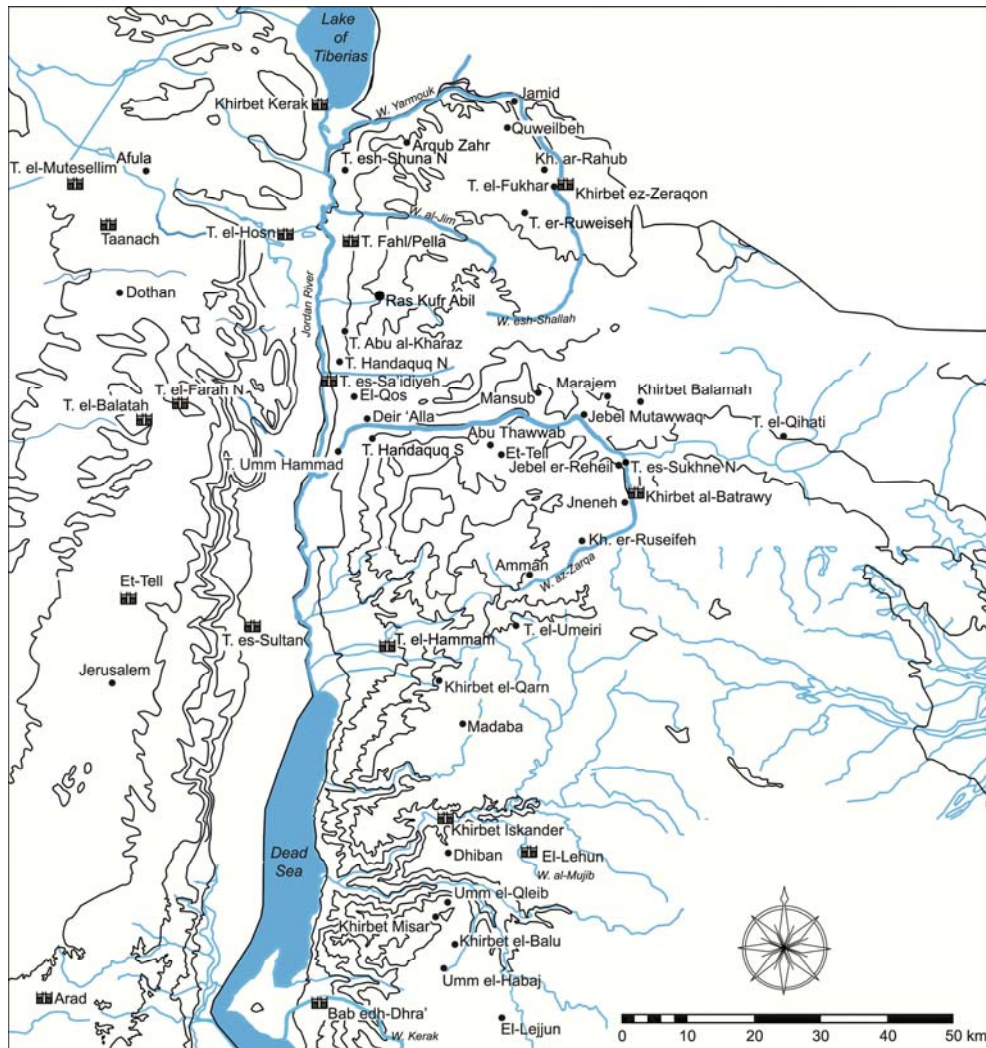


Fig. 1 - Hydro-geological basins and major wadis in Northern and Central Jordan with the Early Bronze Age sites.

2. THE WATER RESOURCE AND EARLY CITIES IN JORDAN

A basic factor in this early urban experience is water. Its catchment, accumulation, distribution, and, above all, a full control over it as a life resource are elements strictly

connected with the possibility for a settlement to reach the rank of town or city⁹. From the one hand, a large availability of freshwater descended from the earliest territorial control exercised by these pristine cities. On the other hand, the construction and maintenance of hydraulic systems capable of gathering riverine and rain waters, and to store them during the dry season, were a decisive skill for communities living at the eastern fringe of the 200 ml per year isohyet¹⁰. An easy and protected access to a regular river can be in fact noticed in all the settlements involved in this process. Tell esh-Shuna North¹¹, Tell Abu al-Kharaz¹², Tell es-Sa'idiyeh¹³, Tell Handaqq North¹⁴, and Tell al-Hammam¹⁵ (like possibly other centres still to be clearly identified underneath later superimpositions) arose in the Jordan Valley, just at the edge of the wide cultivated western strip of the valley, and built up their historical parable on a multi-factorial exploitation of the irrigated plain. Conversely, Khirbet ez-Zeraqon¹⁶, Tabaqat Fahl/Pella¹⁷, Khirbat al-Batrawy¹⁸, el-Lehun¹⁹, and Bab edh-Dhra²⁰ were mostly top-hill heavily-defended sites, each dominating a major wadi²¹ (respectively: Wadi esh-Shallah, Wadi al-Jirm, Wadi az-Zarqa, Wadi al-Mujib, and Wadi Kerak) and a dimorphic county where agriculture and grazing could be equally or alternately practiced. Moreover, their location upon rocky streams, all eastern tributaries of the Jordan or of the Dead Sea, was strategic from the point of view of communications (as they controlled fords across and tracks along the rivers) and, of course, for water supply along trade routes.

3. ACCESS TO WATER AND STORAGE

Daily life within these earliest fortified settlements, with an average of 1.000-1.500 inhabitants, needed large quantities (6.500-9.750 liters = 1.717-2.575 gallons per day) of drinking water and an easy access to this resource. This was pursued in the Early Bronze Age by connecting the towns to the rivers through paths usually cut in the rocky cliffs dominating the rivers, or with canals and drains diverting waters to underground reservoirs.

⁹ Lovell - Bradley 2011; Finlayson *et al.* 2011, 208-209.

¹⁰ Philip 2008, 170-171.

¹¹ Baird - Philip 1994.

¹² Fischer 2008, 329-330.

¹³ Tubb 1998, 41-48; Tubb - Dorrell 1994, 59-66; Tubb - Dorrell - Cobbing 1996, 18-24; 1997, 55-66.

¹⁴ Mabry *et al.* 1996.

¹⁵ Collins *et al.* 2009, 405-407; Collins - Aljharrah 2011, 597-598, figg. 3, 19-20; Collins - Kobs - Luddeni 2015, 2-5, figs. 1.2-1.3.

¹⁶ Douglas 2011, 4.

¹⁷ Bourke 1997, 100-103, fig. 8; Bourke *et al.* 1994, 98, figs. 8-9.

¹⁸ Nigro 2009, 660-662; 2010, 434; 2011, 62-63, figs. 2-4; 2012, 610; 2014, 40.

¹⁹ Homès-Fredericq 1989; 1997.

²⁰ Schaub - Chesson 2007, 246, 250; McCreery 2003, 457.

²¹ Ibrahim - Sauer - Yassine 1988, 171.

In some cases, like Arad, on the opposite side of the Dead Sea, a dam and a connected Water Reservoir of the Early Bronze Age II are known²². The location of the Water Reservoir in the lowest part of the site to collect rainfall from a wide fan-shaped area, however, made it complicated to distribute it, so that the existence of cisterns was surmised for supplying buildings on acropolis.

Actually, the karst limestone of the Jordanian Highlands made it possible to exploit sinkholes and cavities as cisterns where to collect rainfall, and this was the easiest way of drinking water procurement²³. Drains are thus common in top-hill sites, as well as underground chambers mostly used to store rainfall water. Such devices, usually had a domestic dimension and function, as they served each single living unit. The existence of communal water reservoir is attested to only in some individual case.

4. THE “RIVER GATE” AT BATRAWY

The 3rd millennium BC city of Batrawy (fig. 2) is a major example of a polity controlling a territory, namely Upper Wadi az-Zarqa²⁴, with its basic resources, including the two main East-West and North-South tracks which crossed by the ford through the river²⁵ - just at the foot of the hill upon which the city was erected - the verdant cultivable land on the river banks, and the river itself for its precious waters (fig. 3)²⁶.

The Zarqa River in the flat stretch between Ruseifeh and the joint with its affluent Wadi edh-Dhulayl (fig. 4) flew slowly and in antiquity generated a lake, which was a major resource for the inhabitants of this district. As it was submitted to a unique authority established on the new-born fortified town on the top of the hill of Batrawy at the beginning of the Early Bronze II, this major water resource felt under the direct control of one of the earliest territorial states of Southern Levant. By the ford of Jneeh (fig. 5)²⁷, which was directly overlooked from Batrawy, a small dam may regulate the lake extending in the upper branch of the Zarqa River²⁸. Hamlets and rural villages were under the administration of the city²⁹, as ceramic finds from the palace of Batrawy suggested (fig. 6)³⁰.

²² Amiran *et al.* 1978, 13-14; Amiran - Ilan 1996, 105-126, pls. 96-97.

²³ A depression for water storage was found within the site of Tell Handaquq North (Mabry *et al.* 1996, 124, fig. 2).

²⁴ Sala 2008, 362, fig. 3.

²⁵ Nigro 2016, 135-136, fig. 1.

²⁶ Nigro 2013a, 490-491.

²⁷ Douglas 2006, 50-51; Nigro ed. 2006, fig. 1.4, map. 5.

²⁸ Jneeh and Batrawy are located in central positions in the Upper Wadi az-Zarqa Valley, controlling a relatively wide area of arable land (Nigro 2009, 658-660; 2012, 612).

²⁹ Nigro ed. 2006, 4-8; Sala 2008, 363-370.

³⁰ Nigro 2016, 150-152.



Fig. 2 - Aerial view of Khirbet al-Batrawy at the end of 2015 season of excavations with major urban features highlighted.



Fig. 3 - Reconstruction of the fortified town of Batrawy dominating the ford through the Zarqa River, from west.



Fig. 4 - Upper Wadi az-Zarqa Valley at the junction with Wadi edh-Dhulayl, and Khirbet al-Batrawy in the background, from north.



Fig. 5 - General view of the site of Jneneh on the western bank of Wadi az-Zarqa, from south.



Fig. 6 - Finds from the Palace at Khirbet al-Batrawy.

A direct connection with the river, the lake and the ford was made possible by the opening of a dedicated gate in the continuous and massive defensive line of the city. The main gate was in fact on the northern site (Area B North), where an easiest approach to the rocky hill was possible (fig. 7)³¹.

However, too steep cliffs hampered on this side the descent to the river. For this reason a gate was opened to the south (Area G), with ramp on the hill flank, connected with the valley descending to the ford of Jneneh (fig. 8)³².



Fig. 7 - General view of Area B North with the EB II gate (L.160) and EB III gate (L.860) opened through the massive fortification system, from north (2016).



Fig. 8 - General view of Area G with remains of the so-called "River Gate", from north-west.

³¹ Nigro 2007, 349-352; 2009, 663-667; 2010, 438-440; 2011, 65, fig. 5; 2013a, 495, fig. 7; 2013b, 197; 2016, 136-139, fig. 4; Nigro - Sala 2009, 374-375; Nigro ed. 2006, fig. 1.18; 2008, 83-101; 2012, 32-52.

³² Nigro ed. 2006, 32, figs. 1.37-1.38; 2008, 7.

The gate was built by regularizing a natural ravine cutting the rocky cliff of the mound as to create a series of steps climbing up the slope from south-west to north-east. It was opened in the Main City-Wall on the edge of the cliff (without other outer defences, due to the steep slope and vertical cliffs of the mound), and, for this reason, the inner space inside the gate was enclosed by a second line of fortification dominated by an Inner Tower, located north-west of the gate upon a higher terrace (up to 3.5 m higher than the gate threshold).

The Main City-Wall (W.1306), proceeding from the west to the east along the edge of the cliff, slightly turned counter clockwise around 12 m far away from the gate, in correspondence of a spur protruding over the track approaching the gate. A huge cornerstone (W.1301; 1.05 × 0.5 m) marked this point (fig. 9), where the joint of the two diverging stretches (W.1304-W.1302) of the city-wall reached a thickness of 3.85 m. Eastwards the structure became relatively thinner up to 2.4 m, in the stretch where the door opened. The passage (L.1300), thus, was 1.6 m wide and 2.4 m long. The gate western doorjamb consisted of a L-shaped wall (W.1307), letting entering people turn to the right (fig. 10).



Fig. 9 - Cornerstone W.1301, from north-west.

On the opposite eastern side, conversely, the doorjamb was reinforced by two huge orthostates displaced on two different elevations. The lowest one (W.1305) was found glided down, while the upper one (W.1303) was preserved still *in situ*, aligned with the inner face of the Main City-Wall (W.1304). The proper entrance, L.1300, was at the top of a turning ramp (L.1308), climbing the hill from the south-west to the north-east, passing underneath a protruding spur of rocks (W.1309), which might have served as defensive outpost. A wall built in order to regularized the cliff edge to support this outpost was found collapsed. Just inside the gate the street bifurcated, and one branch turned to the west (L.1311), flanking the Inner Tower, while the other (L.1312) turned towards the east, reaching the sacred area of the Broad Room Temple (Area F)³³. The South-East Gate was presumably too steep to be approached by animals (donkeys and onagers), however, it was the nearest entrance for people arriving from the southern and eastern tracks, as well as, the only one entrance suitable for who climbed the hill upwards from the river ford to the city (instead of circumventing the whole mound). For this reason, it was called the “River Gate”.



Fig. 10 - Reconstruction of the “River Gate”, from south.

The acropolis of Batrawy also provided an example of a large water cistern, which was discovered in the 11th season (2015) in Area C East. A relatively huge underground cave, located in one of the highest point of the hill, was excavated in the

³³ Nigro 2007, 338-339; 2009, 665-666; Nigro - Sala 2009, 381-383; Nigro ed. 2008, 270-316.

limestone bedrock and had at least two shaft entrances (or wells), one to the east (the lowest one), and on the south (the upper one). The cave, which possibly resulted by the union of some flanking natural cavities, has roughly oval shape, with a maximum axis of 9 m and a short one of 6.8 m (fig. 11). It was used as cistern, collecting water from overlying buildings, by means of drains. Up to now it was not possible to reach the bottom of the cave, however, an estimation of his capacity is around 85 cubic meters (around 80.000 liters required for just one week of subsistence of the whole city). It seems possible that such a device was intended to supply water only for small areas of the city, such as the north-western defensive system and the nearby palace. The rock roofing of the reservoir was cut through by a modern pit, which shows its thickness of around 1 m.



Fig. 11 - View of the eastern entrance to the cave, from east.

5. WATER AND POWER

Water access, management and distribution were obviously connected with the exercise of power by the earliest urban ruling élite. Who was able to control such a basic resource immediately hold the scepter of power – this was thought since the 19th century with the ‘hydraulic theory’ of the origin of the state by K.A. Wittfogel³⁴ and J.H. Steward³⁵. Water management needs great skills, and the steep creeks and rivers of Jordan surely challenged the capabilities of the earliest communities. Labour organization, centralized planning, hierarchy, innovative instruments (including metal and livestock) are typical features of the urban model, which became useful tools to achieve a full and durable control over riverine waters. For this reason, as archaeology documents hydraulic devices such as dams, canals, and underground water reservoirs, we can easily postulate that a complex community – what we call “a city” – had raised.

³⁴ Wittfogel 1955; 1956; 1957; Mitchell 1973; Liverani 1998, 19-21.

³⁵ Steward 1955.

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