

THE SHIFTING SANDS OF TIME: ARCHAEOLOGY AND MODERN ECONOMIC PROSPECTS IN SOUTHERN JORDAN

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Abstract

The Shawbak region in southern Jordan witnessed extensive habitation during the late Ottoman period, spanning from the 18th to the early 20th centuries. Among these historic settlements, Shammakh and Karak are notable examples. This study explores the ethno-archaeological implications of these villages and the available archaeological evidence to shed light on the patterns of settlement establishment, growth, and eventual abandonment in the Shawbak region over different ages.

The archaeological evidence from Shawbak suggests a complex history of settlement dynamics. The region was characterized by a sedentary way of life, with agrarian societies forming numerous villages surrounded by agricultural fields that supported both crop cultivation and animal husbandry. Preliminary surveys conducted in the area have identified more than fifteen villages that thrived during the 19th and early 20th centuries, reflecting a rich historical landscape.

These villages were typically composed of small houses, often consisting of a single room. The immediate vicinity of these settlements featured irrigated agricultural fields with a variety of fruit trees, including olives, grapes, pomegranates, and figs. Beyond these orchards lay another zone where dry farming of crops like wheat, barley, and lentils took place. This coexistence of crop cultivation and animal husbandry in the same region is indicative of a multifaceted agricultural system that sustained the local communities.

However, in contemporary times, these once-thriving villages stand as deserted relics of the past. The advent of modernity and urbanization has led to their abandonment, with former residents relocating to other towns and cities in Jordan or constructing new cement houses nearby. The contrast between the historical vitality of these villages and their

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current uninhabited state highlights the transformation of the region due to evolving societal and economic factors.

This study delves into the rich history and dynamics of Shawbak's villages, offering insights into the development of settlement patterns, agricultural practices, and the eventual decline of these communities. By examining the ethno-archaeological context, we gain a deeper understanding of how societies in this region adapted to their environment and thrived for centuries before being shaped by the forces of modernization.

Introduction

The Shawbak region was intensively inhabited during the late Ottoman period 18th-early 20th centuries,. Shammakh is among the older villages (Brown : 1988; Corbino and Mazza : 2009) and Karak (Ghawanimah 1979 : 219; Rwashdih: 2002; Abu al-Sha,,ar, 2010). The ethno-archaeological implications of these villages and the archaeological evidence available suggest that there was settlement establishment, settlement growth and settlement abandonment in the region of the Shawbak during ages. Furthermore, the evidence shows that the mode of sedentary life in this region characterized by agrarian societies inhabited many villages surrounded by agricultural fields associated with animal husbandry. A preliminary survey has revealed that there are more than fifteen of the 19th and early 20th centuries villages in the region of Shawbak in southern Jordan. The region was inhabited by small village communities distributed over a large area. These villages were characterized by an area of small houses (usually singleroom) surrounded by irrigated agricultural fields of fruit trees such as olive, grape, pomegranate and fig, and a second zone of dry farming of wheat, barley, and lentil. Today, these villages are abandoned and remain uninhabited as a consequence of modern and urban life and their residents have either moved to other Jordanian towns and cities, or built new cement-houses nearby.

In the medieval Period the Shawbak castle was part of strong fortifications stretching from Amman to the Red Sea supporting the Frankish rule within this eastern province known as the Lordship of Oultrejourdain. The Shawbak castle remained significant in several respects through the onset of the Modern era. The Crusader presence in Shawbak ended when Salah al-Din's forces seized the southern castles following the 1187 Frankish defeat at the Battle of Hittin.

The succeeding Ayyubids, who inherited the southern highlands, retained and enhanced the most castles, and added new facilities, including palaces of Shawbak (Brown : 1988; Corbino and Mazza: 2009) and Karak (Ghawanimah 1979 : 219; Abu al-Sha,,ar, 2010),by the latter period these castle were largely abandoned by the empire and their role as administrative centers had been declined as its representatives declared their independence and local tribes assumed regional authority and possession of the castles facilities (Peake 1958: 84). Towards the end of the nineteenth century, an Ottoman garrison of twenty- five men was re-established at Shawbak castle, where a large village populations also reside (Hill 1897: 141; Twaissi and Shqiarat 2012, Bdour *et al* 2012).

Currently, most of these latter Ottoman period's villages remain in isolated locations but are still well preserved. Nevertheless, they are threatened by population growth and a concomitant expansion of modern buildings. Beside this, there are no attempts to preserve these villages or to document them before they are demolished. The main reason for this is because they are less than 200 years old and consequently they are not considered as archaeological sites, and current heritage legislation offers no legal protection. Moreover, these villages are private property, and their owners have the right to do with them whatever they wish. To illustrate the various issues facing an Historical Archaeology of southern Jordan, we investigate the village of Shammakh in the region of Shawbak.

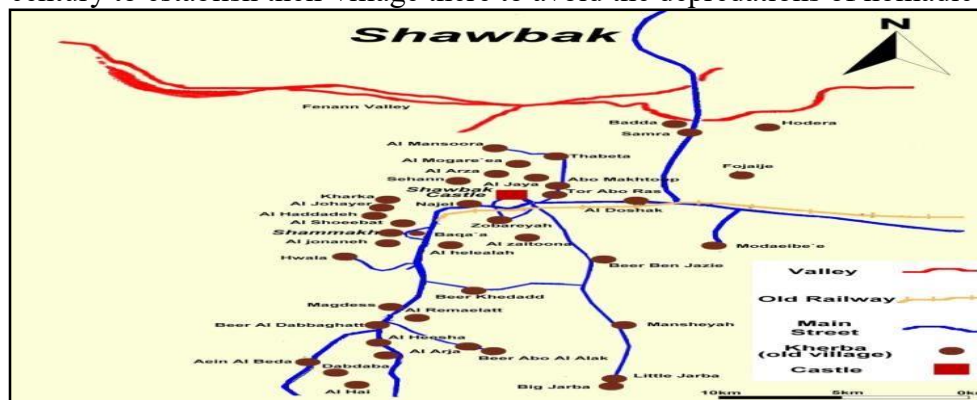
Literature review

The Traditional villages of Jordan, the archaeology of the Late Islamic period, chrono-typologies of rural Ottoman and British Mandate-era architecture, have just recently received interest, after many years of neglect. Currently, internationally-recognized efforts at developing both heritage villages (such as the Germans' work at 19th century Umm Qeis) and archaeological sites as part of larger programs of community development and outreach such as these projects at Umm el-Jimal and Tall Hisban and heritage buildings of Irbid and Bayt Ras (Lenzen and McQuitty) . Alison McQuitty (2007) studied the development of the village of Khirbat Faris (near Karak) through its standing houses. Bethany Walker studied Late Islamic vernacular architecture of multiple villages in northern Jordan, – as part of the Northern Jordan Project published in the Annual of the Department of Antiquities of Jordan).

ØysteinLaBianca"s chapter entitled "A Note on Seasonally Occupied Cave Villages" in the second volume of the Madaba Plains Project final reports (for 1987) which offers comparisons between Hisban and Shammakh Lionel Noca (1983) Studied the village of Smakieh in Karak region and compared it with other historic villages in southern Jordan. Rjoub, A. and Mahmoud, A. (2012(studied the emergence of agro-pastoral villages in Jordan Hamamet alOlimat village as a case study. Recent study (Twaissi et all 2016: 336-352) offers detailed description for Architectural Aspects of the Traditional Villages in Petra Region.

The Geography, Climate and Natural Resources of Shammakh

Shammakh is located in the Shawbak region which forms the northern part of the Edom highlands, a region of Middle and Upper Cretaceous and Tertiary deposits (Kürschner 1986: 46). Shammakh lies in the western slope of the *Jabal al Shara* mountain series between the Arabian Desert and the Rift Valley at an elevation of about 1152-1186 m ASL, overlooking the Wadi Araba to the west. It is four kilometers south west of the crusader castle of Shawbak, and about eighteen kilometers north of the world heritage site of Petra (Map1). Its geographical location makes Shammakh a naturally fortified site, a fact which encouraged its inhabitants in the nineteenth century to establish their village there to avoid the depredations of nomadic raiders during the harvesting season.



Map (1): Shawbak region and Shammakh location.

The climate of the Shammakh, as part of the Shawbak region, is of Mediterranean type with a moderately semi-arid bioclimatological zone with an annual rainfall average of about 250 mm (Shehadeh 1985: 30-31; Kürschner 1986:47). This is enough to sustain dry farming of cereals such as wheat and barley, as well as lentil in good years, lentil is considered to require 300mm. The soil is of *Terra Rosa* type, which is suitable for horticulture and cereal plantation (FIGURE1).



FIGURE 1: General view of Shammakh.

The vegetation of the area, is adapted to the semi-arid bioclimaticological zone and is generally of the evergreen needle-leaved woodland type, which is resistant to cold. Shawbak receives an average of 300 mm of rainfall per annum, yet yearly amounts range from 150 mm to 400 mm (Hashemite Kingdom of Jordan 1986: 13-15). Rainfall distributions are limited to the winter months from November to April and are highly variable within any given year, such that the majority of total annual rainfall can occur within any given year, such that the majority of total annual rainfall can occur within just a few days (Willimott et al. 1964: 28-29). Accordingly, agricultural yields may be highly variable as well. As an extension of al-Jabal the Jabal al-Shara mountain range stretches from Shawbak southward, across Wadi Musa and the Petra basin. Today these mountains are characterized by a moderately semi-arid Mediterranean climate (Kürschner 1986: 47).

Doughty described the seasonally lush Wadi Hasa as a plentiful, wild pasture where thick grasses stood almost a yard in height and where bedouin of Shawbak tended livestock; yet he decried the wadis plentiful wild boar as pestes. “. . . the ravagers of the corn plots . . .” (1979 [1]: 65-66). over the last century, villagers have harvested grape, notable shrinking in the quantity of water issued from the local springs has had an adverse impact on the areas capacity to sustain orchard crops (Willmotte et al. 1964: 73). The site of Shawbak was utilized from the Nabataean period through Late Antiquity, and probably in earlier periods as well (Nucciotti 2007: 28; Glueck 1935:89).

On the human side ,T.E. Lawrence records some pertinent observations on the climate of this region in the course of his desert campaigns on the First World War. In *The Seven Pillars of Wisdom* he describes his campaign as "Fighting in a little Alp". His journey in mid- February by camel from Shawbak to Tafilah reveals a vivid picture of yard-deep snowdrifts, frozen mud banks, rain and floods, and icy winds (Lawrence 1975). As an extension of al- Jabal, the Jabal al Shara mountain range stretches from Shawbak southward, across Wadi Musa and the Petra basin. Today these mountains are characterized by a moderately semi-arid Mediterranean climate (Kürshner 1989:74). The extent to which the region may have experienced climate change sufficient to have significantly altered food production strategies between the twelfth and the nineteenth centuries is undermined although broad climatic cycles have been proposed for southern Transjordan (Koucky 1987:18-25).

Archaeozoological evidence from Hisban shows that Ayyubid and Mamluk periods had witnessed a hotter, dryer climate, and this appeared in the increase in goats at the expenses of sheep at that region which may (Driesch and Boessneck 1995:72), for goats are better adapted than sheep to hot and dry environment, as well as to areas with poor forage (Redding 1984:223; 1981:87). With respect to the later centuries, dendrochronological analysis shows frequent, episodic drought cycles from the seventeenth through the twentieth century's (Touchan et al.1999:301). These findings appear to correlate with the state from Tur Imday which indicate a period of relatively moist and cool climate from the mid-seventeenth through the early eighteenth centuries (Simms and Russell 1997:464-66).

Historical background

The presence of surface artifact scatters suggests that Shammakh has a long history of human settlement, probably due to the proximity of a natural spring, the fertility of the soil, and the naturally fortified and sheltered nature of the site. Occupation begins in the Iron Age (1200-539 BC.) as indicated by the presence of Edomite pottery, and continues through Nabatean, Byzantine, and Islamic times (FIGURES 2-3-4), (personal observation).



FIGURE 2: A pottery assemblage collected from the surface of Shammakh ranges in Date from Iron Age to the Crusade Period.



FIGURE 3: Nabataean rock-cut well at Shammakh.



FIGURE 4: A carved cross from the crusader period.

Shawbak and its surrounding was recoded in early 19th century when Burckhardt arrived in 1812, he found along established village population within the fortress ruins. This settlement of tents and stone houses sheltered a hundred families of the Malahim tribe, who kept flocks of goat and cultivated the neighboring lands, including the spring watered valley beneath the castle where garden crops and orchards of olive and fig thrived (1822: 416: 416; also Irby and Mangles 1844: 115-116). Other tribal groups in the area engaged in similar farming activities. For example, Burckhard encountered a tribal encampment to the south of Shawbak where the Rafaya (described as “fellahein bedouins”) herded cows, sheep and goats, and tended fields of grain and extensive vineyards. The Rafaya produced and sold large quantities of dried grapes (Burckhardt 1822: 418-19).

The 19th-20th century village of Shammakh

Ethnographic records of 19th and 20th century travelers are silent about Shammakh. However, we conducted interviews with the older generation who used to live in the village and who still remember much about it. The village was inhabited by the *Kushman*, *Shu'aibat* and *Hawartheh* clan families who currently live in three separate settlements along the main road connecting Petra with Shawbak. Each clan family has its own settlement (seeMAP1). According to Mr. Abdelkader al-Kushman (95 years old), the total population of „old“ Shammakh during the 1960s numbered about 375 people. He mentioned that the first house was built there around 1850, and the last one in 1950. The village had undergone a process of abandonment which began in 1961, and was

completely abandoned after 7 years: the last family left in 1968. Some houses are still used for storage and the orchards are still cultivated there.

According to the old people, Shammakh was abandoned because the inhabitants wished to live nearer to the main road so that schools were more accessible to their children, and because young people had begun join the National Army and take government jobs. It is worth noting that the first change in the mode of production took place early in the twentieth century when a 40-km long branch line of the Hijaz Railway between Uniaza and the wood-cutting area of Hishi near Shawbak, and not far from Shammakh was constructed in 1915 (Atkinson and Beaumont 1971:311).

This project (Hijaz Railway) employed many local inhabitants in the construction works and wood cutting for rail fuel (Shqiarat *et al* 2011) However, as Glueck (1940; 1968) points out, most of the Juniper forests were cut down prior to World War I by the Turks to construct the Hijaz railroad. Further east on the plateau, large grasslands and rolling hills cover the territory. In many areas such as Shawbak large tracks of this land have been bulldozed and cultivated. Further east the area returns to a hyper arid desert environment. The territory of Shawbak is an agriculturally rich area with springs and open valleys suitable for farming and pasturing. However, the settlements patterns from the survey, revealed that the main heartland of Shawbak was only sparsely occupied during the Iron Age period (Hart 1989). Abandoning Shammakh left 75 houses empty, 80% of which are single-room dwellings with an average area of 35m² (FIGURES 5-6).



FIGURE 5: A Single - room house at Shammakh.



FIGURE 6: A Single-Room House at Shammakh.

And 20% are twin-room structures with an average area of about 60m² (FIGURE 7-8), and very rare examples of multi-room houses (FIGURE 8). The houses were built using local materials of limestone, juniper wooden beams, reeds and straw.



FIGURE 7: A Twin - Room house at Shammakh.



FIGURE 8: A multi-room house at Shammakh.

Walls usually consist of two rows of mostly dressed stones and the space between them filled with mud and rubble (FIGURES 9-10).



FIGURE 9: Construction method of walls at Shammakh.



FIGURE 10: Details of construction of partitioned walls at Shammakh

The average width of the external walls is 75cm, while it is 50 cm for the partition and interior walls as well as for the arches. Walls are always coated with thick lime mud mixed with straw (FIGURE 11).



FIGURE 11: Details of coating technique and material

The roofing system was principally based on arches that are usually built of well-dressed and similar-sized stones (FIGURE 12).



FIGURE 12: Roofing System based on Arches at Shammakh

However in two examples we found wooden buttresses supporting the roofs and these were found in small rooms where arches are not structurally required, and where the usual length of the juniper beams can span the whole room (FIGURE 13).



FIGURE 13: Wooden Posts supporting the roofs at Shammakh

It seemed to us that these wooded posts were a later addition and not contemporary with the original build. Roofs always consist of three layers of roofing materials: a group of juniper beams arranged in 1.5 meter intervals span the side walls and the arches, or if the width of the room is small the beams were placed directly on the wall. Second, a layer of reeds bound together span the whole roof space and form a floor to carry the third 20-25 cm-thick layer which is lime mud mixed with straw and usually beaten with heavy rolling stones (FIGURES 14-15).



FIGURE 14: Wooden beams and reeds as Roofing materials Shammakh



FIGURE 15: Details of roofing layers at Shammakh

Floors are always beaten mud unless natural bed rock is available. Fortunately, some of the rolling stones which had been used to beat the roofs and the floors were left *in situ* (FIGURE 16).



FIGURE 16: Rolling stone used to beat roof and floors at Shammakh

Some material culture not required for the inhabitant's new life, such as traditional oil lamps, seeds sieves and donkey saddles were also left *in situ* (FIGURE 17).



FIGURE 17: Traditional material cultures left *in situ* at Shammakh
Usually, in side of rooms near the door they used grain silos made by the woman out of unfired mud in the style and decoration only found in Shawbak villages *Kawayir alqamh* (FIGURE18). (Khammash 1984).

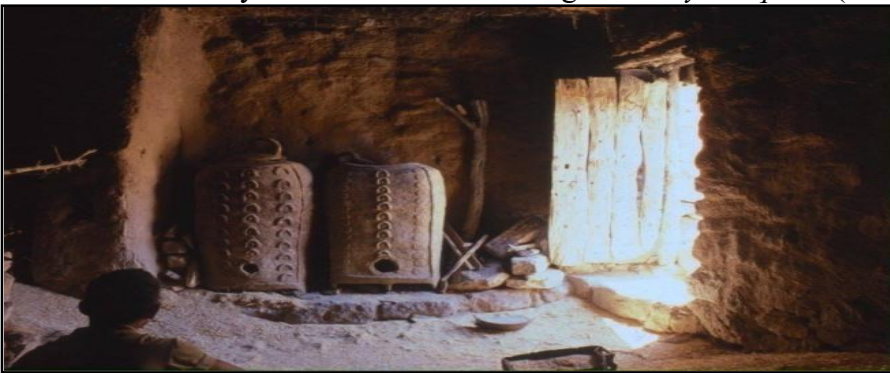


FIGURE 18: Two grain silos at Shammakh (Khammash 1984).

Building materials are locally available. For example, juniper grows in abundance in the Hishi forest just a few kilometers to the south west of Shammakh. Reeds grow in the Shammakh valley in huge quantities. Building stone is the easiest to acquire, as it lies scattered across the surface as residue from earlier periods of occupation. Evidence for the reuse of masonry ashlar and dressed stone can be found on the door lintel of one of the houses which bears an inscribed cross in the middle (FIGURE 4), suggesting a previous settlement here, dated, at the very latest, to the crusader periods. Further evidence of reuse includes typical Nabataean dressed stones, which characteristically contain the masonry chisel marks lined at 45 angle degree. A common feature of these settlements is that they are founded on ancient occupation using ancient materials.

A particularly interesting phenomenon is that of the prayer-house (*masjid*) of the village which was built in 1365 H/1946 AD, and which might be one of the last buildings to be completed in the village and the building probably continued until at least the 1950s. The building of this masjid was commemorated by a foundation inscription on the cap stone of the entrance (FIGURE 19): it reads:

In the year 1365. Allah is the lord of all prosperities, he is the omnipotent." No god but Allah and Mohammed is his Messenger may Allah pray on him and peace be upon him":



FIGURE 19: The foundation inscription of the prayer house of Shammakh

The main source of water at Shammakh is the natural spring which flows at some 540 liters per hour and which appears to have been enough to sustain the whole population and support their nearby fields. The spring water is channeled into a collection reservoir (FIGURE 20) and distributed among the families to irrigate their fields following traditional norms of water distribution that ensure equality of water rights and to ensure that each family field is irrigated every 21 days.



FIGURE 20: The water spring of Shammakh

The fields themselves yield fig, grape, olive, and pomegranate trees, and were supplemented by the dry farming of wheat, barley and lentil in the surrounding highlands, as well as animal breeding of goat and sheep. Handicrafts and traditional industries in Shammakh are the productive side in the life as of any society where crafts go under traditional industries in its general definition. If grazing, hunting, cultivation and medicine are crafts, then smithery, manufacture, sewing and carpentry are considered industries. There is no doubt that Shammakh enjoys a rich cultural heritage, inherited from its cultural and historical stages. This is clearly manifested in the diversity of its folklore, crafts and traditional products which reflect an artistic taste and a rich heritage. Handicrafts and traditional industries in Shammakh are so diverse that they cover all the daily life requirements. Examples of those traditional crafts and industries are: Pottery; like ovens, drinking water containers. Wood industries include cups, boxes and agricultural tools. Metal industries, ornaments; textile and weaving include woolen textile which is still in use like carpets; leather industry.

During the nineteenth century, Shawbak castle and the village of al-Jiyat Wadi Musa were the principal settlements of the region. The castle village at Shawbak offered more than one *madafa* or guest house, and merchants from Hebron conducted on site business with the tribal residents (Burckhardt 1822: 416-17).

Caravan traffic passed between Shawbak and Cairo, apparently with some frequency (Irby and Mangles 1844: 117), as in the medieval period. The local population traded their wool, hides, and butter in Gaza as well (Burckhardt 1822:405), while also conducting raids far into Sinai and southern Palestine (Peake 1958: 200). By 1896 there were five or six hundred inhabitants in the castle, but most of this population spent the greater part of the year in the surrounding countryside herding flocks and tending fields and orchards (Hill 1897: 141). The

village of Jaya at the base of the east slope of Shawbak was settled or resettled around this time, for the villagers within the castle had grown in numbers and extramural housing become necessary. Further population overflow led to the emergence of additional settlements at Abu Makhtub and other wadi side sites around Shawbak (Willmott et al. 1964: 79).

Three ethno-archaeological notes

Shammakh's story provides interesting data for our understanding of settlement growth, settlement abandonment, and demographic archaeology. The following ethno-archaeological notes reveal useful insights into these processes. The first point is that the prayer house, temples, sanctuary, and churches are not always the first to be built in the village and they are not always in the center of the settlement. Here we would like to stress that while the process of initial settlement and subsequent growth is voluntary, places of worship will be among the last buildings to be erected, and only occur when the population reaches a critical mass. Before this, worship is restricted to the household level or in the open air. It is also worth noting that, when settlement growth is gradual, a place of worship might be located on the margins rather than at the centre. When settlement is voluntary and gradual, rather than preplanned, the process will be continuous and long-lasting. At Shammakh, this process lasted for about one hundred years and probably coincided with population growth. New buildings, constructed over time, may possess new architectural elements and employ different architectural techniques. This is illustrated by the construction and roofing system of the masjid whose roof was supported by stone posts in the middle with metal rails, mainly from the Hijaz Railway, built during late Ottoman times. (FIGURE 21).



FIGURE 21: New roofing material, rail bars, used in the construct the prayer house at Shammakh

The point here is that similar phenomena found in the archaeological record should not be interpreted as evidence of a „new period“ or „new population“, but rather should be interpreted contextually, within a framework which adheres to the processes of socio-economic change within both the site and the region. Shammakh provides the archaeologist with almost intact houses, except roofs, which offers permit an accurate calculation of the total space of the architectural area. At the moment just before abandonment began, Shammakh's total built area was some 2400 sq m. Ethnographic records from the area shows that in 1961 the total population of Shammakh was 257 inhabitants (Willmott *et al* 1964: 82). These figures possess important implications for demographic considerations by archaeologists. They indicate that estimating the population of rural communities based on settlement size or architectural space can be calculated as 9.3m.sq. per person – an equation which has hitherto been ignored by archaeologists in Jordan.

The modern economic potential of Shammakh

The proximity of Shammakh to Jordan's main tourist destination, the world heritage site of Petra, make it a promising site to develop as a tourist attraction in its own right, and as a means of supporting the local community. One of the main problems of Jordan's tourism is an over reliance on cultural heritage tourism and the lack of other kinds of tourism product in the region. In this domain the authors consider that Shammakh has a high tourism potential for it offers various types of attraction, such as rural tourism, a relatively new development with significant potential currently absent in Jordan. Furthermore, the area of Shammakh has a wide biological and

geological diversity which is also of good potential for ecotourism (tourism product based on natural components and bio-diversity). If the village of Shammakh was rehabilitated, it could play a major role in the development of Jordanian tourism in general but definitely eco-tourism and local use, and the development of the local communities in particular. It could enrich the tourism product in the Petra region and enrich the tourist experience of the local culture as currently tourists have little to do at Petra after 5pm.

The village could be rehabilitated as a rural hostel, a museum of traditional life in southern Jordan, and an ethnographic museum. Such developments would have positive economic, cultural, and social impact. This could include developing local communities and improving their productivity, which in turn would help preserve remnants of cultural heritage of particular villages between the 18th and the middle of the 20th centuries. Furthermore a rehabilitation of such a village means a display of cultural heritage in its indigenous environment. Finally it will contribute to developing new tourism products in the vicinity of Petra, the world heritage site, which help to extend tourists' stay and subsequently contribute to local and national income.

Conclusion

Understanding the story of Shammakh from a Histro-archaeological perspective has led us to the conclusion that: when settlement establishment is voluntary and gradual, rather than pre-planned, the process will be continuous and long-lasting. One can also understand that changes in the mode of production and the evolution of new labor pools can be considered as prime mover of settlement abandonment and new settlement establishment, and accordingly the process of abandonment will be voluntary, gradual and span many years, rather than a quick and sudden event. Moreover the case of Shammakh has shown that while the process of initial settlement and subsequent growth is voluntary, places of worship will be among the last buildings to be erected. Finally, the built area of Shammakh indicates that estimating the population of rural communities based on settlement size or architectural space can be calculated as 9.3m.sq. per person.

Traditional crafts and the rural locations in which they are made should be preserved as part of Jordanian heritage. The purpose of this paper is to draw researchers attention to what remains of the civilization of Jordanians ancestors and to provide valuable historical information for all inhabitants and visitors to Jordan's villages. In order to implement local laws pertaining to the preservation of heritage. We should stress that there is no history without documentation; and our heritage and traditions will be lost unless they are documented. Shammak has a good potential for developing a cultural tourism in the Shawbak region and benefiting from its proximity to Petra. It remain one of the few villages in this region which still retain its authenticity as: its unique traditional architecture, it escapes the modern visual pollution, environmentally green as it still retain its organic orchid agriculture.

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References

- Abu al-Sha,,ar, H. (2010). The Ottoman Civil Registers as a Source of History: The Civil Register of the Village of Shawbak as a Case Study: *Journal of History and Archaeology of Jordan* Vol.4.1.102-1137.
- Bdour,A; Shqiarat,M; Twaissi,S. (2012): Some notes on the medieval Shawbak: historical and archaeological evidence in anthropological perspective. *La Transgiordania nei secoli XII-XIII e le "frontiere" del Mediterraneo medievale*, a cura di G. Vannini e M. Nucciotti , 321-325, BAR, Oxford. al-Eisawi, D. M. (1985).Vegetation in Jordan. *SHAJ* 2:45-57.
- AL-Zahrani, A. Jbour, S &Isa, J.(2007). Ancient architectural pattern at Asir region in Saudi Arabia: its evolution and conservation method, *Damascus University Journal for Engineering Science*,23 (1), 189-228 (Arabic).

- Atkinson, K. and Beaumont, P. (1971). The Forests of Jordan. *Economic Botany*, 25, 305-311.
- Brown, R. (1988). Summary Report of the 1986 Excavations: Late Islamic Shawbak. *ADAJ*. 32. 225-254.
- Burckhardt, J. (1822). *Travels in Syria and the Holy Land*. London: J. Murray.
- Corbino, A and Mazza, P. (2009). How and Where did the Inhabitants of Shawbak Castle live? The Faunal Remains. *SHAJ* 10: 679-684.
- Doughty, C .M. (1979). *Travels in Arabia Deserta*, 2 vol. New York: Dover Publications.
- Driesch, A von den and Boessneck, J.(1995). Final Report on the Zooarchaeological Investigation of Animal Bone Finds from Tell Hesban, Jordan. In Ø SLaBianca and A von den Driesch (eds), *Faunal Remains : taphonomical and zooarchaeological studies of the animal remains from Tell Hesban and vicinity*. Hesban 23. Berrien Springs, MI: Andrews University, 65-108.
- Fardapour T.(2013). Analysis of Iranian traditional architecture through the lens of Kenneth Frampton's Critical Regionalism, *American Journal of Engineering and Applied Sciences*, 6(2), 205-210.
- Ghawanimah, Y. D (1979). *Tārīkh Sharq al-Urdun fī asr dawlat al-Mamlūk al-ʿUlā: al-qism al-ʾiḥḥār*. Amman: Wizārat al-Thaqāfah wa-al-Shabāb.(Arabic).
- Glueck, N. (1935). *Explorations in Eastern Palestine*, vol. 2. *AASOR* 15. 1940. *The Other Side of the Jordan*. New Haven.
- Hart, S.(1989). *The Archaeology of the Land of Edom*. PhD dissertation, Macquarie University.
- Hashemite Kingdom of Jordan. (1986). *National Atlas of Jordan. Part 2, Hydrology and Agrohydrology*. Amman: Royal Jordanian Geographic Centre.
- Herbert, D. Prentice, R. and Thomas, C. (1989). *Heritage Sites : Strategies for marketing and development*. Aldershot : Avebury.
- Hill, G. (1897). A journey to Petra – 1896. *PEFQ*: 134-144.
- Irby, C L and Mangles, J. (1844). *Travels in Egypt and Nubia, Syria, and the Holy Land; including a journey round the Dead Sea, and through the country east of the Jordan*. London: John Murray.
- Khammash, A. (1984). *Documentation of traditional architecture*. Unpublished.
- Koucky, L, (1987). The Regional Environment. In S T Parker (ed.), *The Roman frontier in central Jordan: interim report on the Limes Arabicus project, 1980-1985*. BAR 340. Oxford, England: BAR, 11-40.
- Kürschner, H.(1986). A physiognomical-ecological classification of the vegetation of southern Jordan. In H Kürschner (ed.), *Contributions to the vegetation Wiesbaden : L Reichert*, 45-79.
- Langendorf, J. and Zimmermann, G. (1964). Trois monuments inconnus des croisés. *Bulletin du musée d'art et d'histoire de la ville de Genève* 13:123- 165.
- Lawrence, T. E. (1975). *Seven Pillars of Wisdom: a triumph*. London: Jonathan Cape.

- Lionel Noca (1983). Chronique archéologique. In: Syria. Tome 60 fascicule 3-4, pp. 270-333.
- McQuitty , Alison. (2007). "Khirbat Fāris: Vernacular Architecture on the Karak Plateau, Jordan." *Mamlūk Studies Review* 11, 1: 157-171.
- Mollenhauer, A. (1997). Historical residential houses in as-Salt: remarks on their shape and Function, Annual of the Department of Antiquities of Jordan, 41,415-431.
- Nucciotti, M. (2007). Analisi stratigrafiche degli elevati: primi risultati. In G Vannini (ed.), Archeologia dell'insediamento crociato-ayyubide in Transgiordania: il progetto Shawbak. Borgo San Lorenzo (FI): All'insegna del giglio, 27-55.
- Peake, G .(1958). A History of Jordan and its Tribes. Coral Gables, FL: University of Miami Press.
- Redding, W. (1984).Theoretical Determinants of a Herder's Decisions: Modeling Variation in the Sheep/ Goat Ratio. In J Clutton-Brock and C Grigson, Animals and Archaeology 3. Early Herders and their Flocks. BAR 202.Oxford, England: BAR, 223- 241.
- Rijoub,A. & Mahmoud, A. (2012).The emergence of agro-pastoral villages in Jordan Hamamet al-Olimat village as a case study, Journal of Human Ecology, 38(3): 231-243.
- Rwashdih, M. (2002). Al-Shawbak the land and the People : A documentary Field Study (in Arabic), Amman, Ministry of Culture.
- Serageldin, I. (1986)."Financing the Adaptive Reuse of Culturally Significant Areas." In Yudhishtir Raj Isar, ed., The Challenge to our Cultural Heritage : Why preserve the Past? WASHINGTON, DC: Smithsonian Institution Press and Paris: United Nations Educational, and cultural Organization.
- Shehadeh, N. (1985). The climate of Jordan in the past and present. Studies in the History and Archaeology of Jordan 2, 25-37.
- Shqiarat. M, Al-Salameen, Z . Faulkner, N. Saunders. N(2011). Fire and water: tradition and modernity in the archaeology of steam locomotion in a desert war. Levant issue 43/1. 98-113(16) .
- Simms, R and Russell, W (1997). Tur Imdai Rock- shelter: Archaeology of Recent Pastoralists in Jordan. JFA 24.4: 459-472.
- Thorburn, A (1986).'Marketing Cultural Heritage: Does It Work Within Europe?', Travel and Tourism Analyst, December, pp. 39-48.
- Thorburn, A (1986). Marketing cultural heritage: does it work within Europe? Travel and Tourism Analyst, December, 1986, 39- 48.
- Touchan, R, Meko, D and Hughes, K, (1999). A 396- Year Reconstruction of Precipitation in Southern Jordan. Journal of the American Water Resources.
- Twaissi , S. and Shqiarat, M. (2012). The Culture of Shammakh Village in South Jordan. Journal of Folk Culture. Vol.17. Issue No.9. Pp.122-127.

Twaissi,S, Abuhaleh,B. Abudanah,F. Al-Salameen.A (2016). The Architectural Aspects of the Traditional Villages in Petra Region With Some Anthropological Notes. Mediterranean Journal of Social Sciences vol.7.N4:336-352.

Willimott. G, Birch. P, McKee.F, Atkinson K and Nimry, S (1964) Conservation Survey of the southern highlands of Jordan. Durham (UK). 336-352.