

# UMM ŞAYHŪN: GEOGRAPHY AND HISTORY OF A PERMANENT BEDOUIN SETTLEMENT ABOVE PETRA, JORDAN

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## **Abstract**

Numerous studies have addressed social development in nomadic populations after re-settlement across the Middle East, but few have investigated the planning and layout of these towns. This study of a *bedouin* settlement represents a unique investigation into Levantine urban morphology, settlement planning and transitional nomadic practices. Petra, Jordan is renowned for its classical-period rock-hewn structures and built architecture, and was designated a World Heritage Site in 1985 with the recommendation that its *bedouin* residents be relocated. The Bdoul clan of *bedouin* were re-settled from the valley to a terrace at the valley's northern rim. Measuring about two square kilometers, the village of Umm Şayhūn was created to support around 100 families. Supported through UNESCO, the World Bank and the Jordanian government, in consultation with national agencies and Bdoul elders, the city was designed around a single two-lane road connecting Wādī Mūsā with Petra's northern road. The city now has around 3000 residents. Satellite imagery of Umm Sayhoun confirmed a peculiar series of oval 'blocks' flanking the main road that were observed through ground-level observations. This morphology can be attributed to *bedouin* tent arrangement and familial relationships while living in the caves of Petra. Interviews with residents present at the early planning sessions and *bedouin* elders revealed that the oval blocks permitted activities and interaction common to nomadic arrangement of tents, i.e. protection from the elements outside the ring, while inside the ring we found livestock corralling, car parking and inter-clan socializing, much like *bedouin* living in the nearby open deserts.

## **Introduction**

Throughout history, nomadic clans have had to create and adjust to new varieties of settlement through a number of different processes. There have been few studies done about how nomadic clans design their own villages and towns, leaving their nomadic ways behind as they become sedentary, whether through 'natural processes' or enforced settlement. During the days of the earliest cities, city design was commonly left to administrators, royalty or priests. However, it was not until recently that urban design was entrusted to trained and educated specialists. Only on rare occasions are we able to examine in detail the transition of nomadic culture into sedentary and structured culture. The Bdoul *bedouin* of southern Jordan are currently making that very transition. Within the past 25 years, owing to political circumstances, a local *bedouin* clan has been forced to abandon their nomadic lifestyle in favor of permanent settlement, resulting in the evolution of a small hamlet containing a few families into a thriving village / town of nearly 3,000 people, filled with shops, garages, playgrounds, a mosque and elementary school, close to the popular tourist destination of Petra. What is most interesting about this town is its form and development over time. What was a random scattering of cement block structures is developing into an organized, structured space of common areas, gridded streets and oval block arrangements characterized by their unique open public spaces – a form unknown in previously studied urban morphologies (**Fig. 1**). Through town resident interviews and highly detailed digital mapping and cartography, the placement, development and evolution of this town and its distinctive design has yielded important results that will contribute to future *bedouin*, anthropo-



1. Mosaic of Google Earth images showing the unique urban morphology of Umm Şayhūn.

logical, geographical and urban morphological studies.

Since the 1920s, the Bdoul *bedouin* of Petra have understood the economic importance of tourism. Coupled with agriculture and goat herding, the Bdoul were able to utilize tourism as a means of maintaining a semi-nomadic existence within the valley of Petra. They have been living among the tombs and caves for over 170 years and, after the development of tourism, were able to adapt a more settled lifestyle. As travel agencies and large scale accommodation developed within the valley and around the area, the Bdoul were increasingly excluded from the larger decision-making processes taking place about the archaeological site.

Due to political circumstances, this local *bedouin* tribe has been forced to abandon their semi-nomadic lifestyle and was relocated on a plateau above Petra. Discussions of a possible new location for the Bdoul were taking place as early as 1968 (Lane and Bousquet 1994). However, owing to UNESCO recommendations for their relocation outside of the new World Heritage site, design and construction of the concrete block houses in Umm Şayhūn began around 1980 and the Bdoul began relocating in 1984. In the village of Umm Şayhūn, the transformation of the Bdoul tribe was swift, with the immediate creation of a school, piped water, electricity and simple health-care services as a part of the relocation plan. Life within a conventional urban

infrastructure including, for example, utilities, permanent gardens and pens, sub-floor plumbing and glass windows, was a new indulgence as well as a new lifestyle for the Bdoul (Angel 2008).

After their relocation from Petra, the *bedouin* slowly reduced their cyclic movement from pasture to pasture, following water sources (e.g. cisterns, wadis) and seasonal resources (e.g. pasture, winter and summer wheat). Their life became focused on revenue and food production based on goat herding and vegetable (e.g. tomato, courgette, cucumber) and fruit (e.g. apricot, pomegranate, apple) cultivation. This sudden shift from a semi-nomadic to sedentary lifestyle was relatively unexpected for the tribe and, prior to removal, was seen as something “far away and insubstantial” (van Geldermalsen 2006: 114). Now the Bdoul are faced with challenges of unsustainable tourism, rapid village growth, changes in identities and regulations from local and national authorities. This article will discuss the events leading to relocation, examine the historical development and construction of their buildings and community complexes (e.g. mosque, school), and assess the current state of the Bdoul and their village.

### **Bedouin Life in Jordan**

There has been strong encouragement by the Jordanian government to settle the *bedouin* in Petra and across the Kingdom. Over the past

four decades, throughout the Middle East and North Africa, conscious attempts have been made by governments to integrate nomadic and semi-nomadic *bedouin*, Berber and Tuareg populations into both emerging and historically sedentary communities across the region (Dinero 2010; Cole 2003; Falah 1983). In most cases, states played the decisive role in the location and organization of the settlements. These relocations have had both positive and negative effects on *bedouin*, but effects have also been felt among across the country within the non-*bedouin* communities of the region. Even though settling the *bedouin* is seen as both positive and desirable, many of the non-*bedouin* communities and societies view pastoralism and the *bedouin* lifestyle negatively – even though it is continually romanticized in Arab television soap operas, theme restaurants across Jordan and the region, and in Western and Arab novels and popular fiction.

Jordan has taken an approach different from its neighbors to settling the *bedouin*. In Jordan, settlement usually involves incorporating *bedouin* into an established community. This may or may not mean removal from their original land, but more often involves an incorporation of tribal lands. In the case of the ‘Abbadis tribe, who reside in the Jordan Valley, tents are still used for most special occasions and rites of passage, and are the preferred form of shelter in summer (Layne 1987). Most families have permanent dwellings amongst the houses distributed by the government, however they still move to al-Ardah to escape the summer heat. Their migratory pattern has not changed to any great extent, even though the importance of pastoralism is declining. Some *bedouin* already had houses of their own, prior to moving into the new government housing, which helped facilitate migration patterns. As the new government housing became available, the *bedouin* began to favor the newer buildings and started renting out their older structures (Layne 1987). This was one of the reasons for the decrease in mobility among the ‘Abbadis tribe. Currently, there is a shift in this particular *bedouin* population to move towards a capitalist economy.

One of the main reasons for consistent *bedouin* marginalization lies in their contribution to the national economy, vision and national es-

sence. Administratively, if *bedouin* are settled they can be counted, and thereby be forced to contribute to other aspects of the nation and national identity, including the census, taxation and national plans for development. Unfortunately, the reasons are numerous as to why *bedouin* villages and settlements are not taking shape in a way that facilitates and maintains the traditional *bedouin* lifestyle. These influences include the difficulties attached to nomadic routines in urban settings, the imprint of ‘nation’ rather than ‘clan’ that can unintentionally be associated with government planned and maintained settlements (Falah 1983), and the complex concept of a democratic system imposed on a clan-based hierarchy where elders are valued over the young. Many aspects of *bedouin* culture simply cannot be integrated into urban settings, whether of the past or present. The complications developing in Umm Şayhūn may represent the same issues and problems facing *bedouin* as they integrate into larger sedentary communities across the Middle East and North Africa.

### **Bdoul Bedouin in Petra (Pre-1980s)**

The Bdoul tribe is currently the main *bedouin* group living in and around Petra. Prior to 1984, research has shown that the Bdoul lived in the valley of Petra for at least the previous 150 years (Bienkowski 1985; Ohannessian-Charpin 1995). Throughout Bdoul history, from what little is known, subsistence was primarily based on the herding of goats, supplemented by seasonal cultivation of small plots of barley, tobacco and wheat, and the hunting and gathering of available plant and animal resources (Russell 1993). Other *bedouin* tribes exist both north and south of Petra, consisting of the Amarin and Liyatnah tribes. These tribes are similar to the Bdoul in that they too supported themselves by goat herding and subsistence agriculture.

Traditionally, the local *bedouin* lived either in nomadic tents or resided seasonally in caves throughout the region (Bienkowski 1985). However the Bdoul *bedouin*, through much of their known history, have been considered semi-nomadic since they would seek higher ground during the summer months to herd goats and cultivate the land while occasionally settling in parts of the valley. While settling in the caves and tombs, the Bdoul constructed makeshift

walls, doors, and windows while still setting up tents outside in the open areas. Much of the terrain of Petra is not conducive to farming and agriculture, so movement was still a necessary aspect of daily life (Bienkowski 1985). Their 'traditional' dwellings in the caves and tombs of Petra allowed for a mobility not seen in other *bedouin* tribes of the region, Levant or North Africa. Cultivation and herding of goats and camels still contributed to most of their subsistence living. Living within the confines of the valley of Petra gave them a touristic head start over other *bedouin* tribes in the area.

In the 1920s, Thomas Cook and Sons established a tourist camp in the main valley of Petra. Members of the Bdoul and other tribes were employed as help and guides. By 1937, the camp was converted into a hostel housing tourists and research teams (Russell 1993), known locally and advertised as Nazzal's Camp. While most Bdoul families at the time remained pastoralists and goat herders, more and more members participated in and were hired for touristic activities, as well as archaeological excavations. As tourism became an increasingly large component of Bdoul lifestyle, shops were set up by members of the tribe in the main valley, at the end of the as-Sīq near al-Khazneh, and at other tourist concentrations (Shoup 1985). *Bedouin* began to sell artifacts – both real and fake – and rides on camels, donkeys or horses. They also filled other roles in the valley and surrounding area. Some served as tourist guides and tourism police, or became owners of refreshment stalls, or even re-enacted *bedouin* tribal dances and rituals for tourists.

While the Bdoul were living in the caves in Petra, numerous studies were carried out which assessed their use of space in the caves, as well as spatial organization of the area as a whole (Bienkowski and Chlebig 1991). Many of the caves were spacious and allowed room for growth among families. During the winter months the focus of family life would be inside the cave. In summer, the Bdoul set up tents outside the caves and at nearby al-Bayḍa, with the focus of family activity being at the cave (Bienkowski 1985). At that time there seemed to be no specific organization or traditional social distribution of caves (Bienkowski 1985). While living in the caves, the Bdoul preferred a certain amount of isolation

and would choose caves in more remote parts of Petra. As their ways of living developed at Petra, three aspects of use of space could be distinguished: one was residential, another was for work and the third was seasonal, usually in the form of a temporary tent. As can be seen in the image below, the Bdoul always allowed room for some sort of outdoor living area or courtyard that facilitated aspects of *bedouin* culture, such as weddings, guest entertainment or other gatherings. The natural placement of the caves allowed for these public areas and facilitated these aspects of Bdoul culture.

The caves also illustrate why the Bdoul were considered to be semi-nomadic (Ohannessian-Charpin 1995). The caves allowed for settlement and shelter during the winter months, and the tents allowed them to retain their nomadic tendencies and move to higher ground for grazing and cultivation. Considering that the nature of nomadism implies mobility, the Bdoul still actualize this movement in their lifestyle, but a semi-permanent residence also existed in Petra. Shifts towards settlement were already occurring prior to their removal from Petra. Even though seasonal movement was apparent, sedentary aspects could be seen. The Bdoul added structures to the caves, usually in the form of walls or windows to help facilitate the privacy that is common in Muslim cultures. Also, the Bdoul would add walls and fences to tents, for containing goats or in further attempts at privacy (Bienkowski 1985). These methods of 'tent building' can still be seen throughout the area today.

After Petra attracted international attention as a result of tourism, the valley was nominated for and became a UNESCO (United Nations Educational Scientific and Cultural Organization) World Heritage site in 1985. As early as 1968, the Jordanian Government – with help from USAID – developed a plan to 'resettle' the Bdoul into permanent units outside Petra. This was part of the Jordanian government's re-organization of Petra along more commercial lines in an attempt to improve facilities for tourists (Bienkowski 1985). Therefore in 1985, the new village of Umm Şayḥūn was constructed. The Bdoul were forced to move into the new units over the next few years. By removing the Bdoul from Petra, Russell (1993) pointed out that

“many of those old enough to still remember the distant past through their childhoods or the stories told by their fathers and grandfathers will soon pass away” and how the removal “brought a final end to traditional Bdoul lifeways for most families”. Ken Russell’s observations in the 1990s are still evident today; Bdoul elders can still be seen goat-herding in the village, using herbal medicines, practicing traditional cooking (e.g. *Mansaf*) or playing age-old games like *Dhab*.

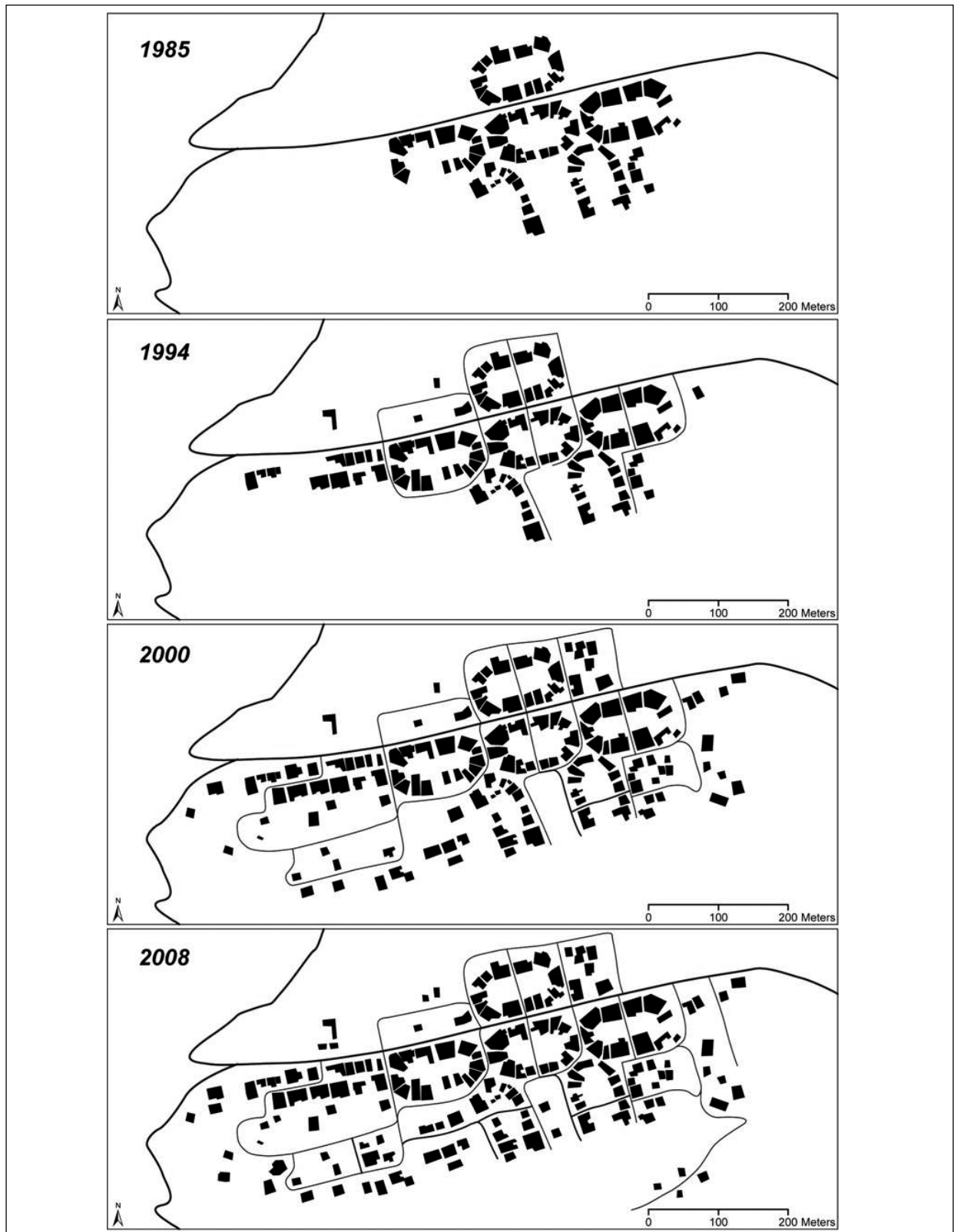
Previous studies have been conducted on the Bdoul, on subjects including ethnohistory, tourism, nomadism and spatial organization of settlements (Bienkowski and Chlebik 1991; Russell 1993; Tarawneh 2000). To date, however, no studies have been conducted on the spatial organization of Umm Şayhūn as a single spatial unit. Previous studies on Umm Şayhūn have investigated living conditions and spatial layouts of the original structures from the mid-1980s. Studies have also been concerned with societal perspectives of the Bdoul and the Bdoul perception of themselves. Tourism has had the largest effect on the Bdoul, being the single most important reason for their shift to sedentary life and their survival therein. Since their removal from Petra, the Bdoul have gained a new perspective on the world and themselves. Their placement in Umm Şayhūn has led to a national recognition of this specific *bedouin* group. Contrary to other sedentarization projects throughout Jordan, these *bedouin* have been given a specific village in which only Bdoul reside. In other areas of Jordan, as mentioned above, settlement has taken place more as integration within a previously established location, usually in another nearby village or city. Since their placement within the new village of Umm Şayhūn, the Bdoul have exploited their centralized existence, especially with regard to tourism. This new Bdoul *bedouin* identity is consistently reaffirmed in the area of tourism (Cole 2003).

### **The Bdoul and their New Village (1980s-1990s)**

The new settlement of Umm Şayhūn is located west of Wādī Mūsā and north-west of Petra. The village itself is still within the official boundaries of the National Park, is situated on a narrow limestone plateau directly above

the Nabataean quarries at ‘Anjar, and is visible from the main valley below. In 2000 the population was estimated at about 1,300, and is currently between 2,000 and 3,000 individuals. In its original form, in 1984, the village consisted of 120 houses (Bienkowski 1985) but the village itself has increased dramatically in its physical extent since its creation nearly thirty years ago. The original city plan and layout has been modified and expanded in all directions (**Fig. 2**). With the increase in tourism since the World Heritage declaration, the growth of Umm Şayhūn has been rapid, especially in recent years. The rise in tourism has contributed to sharp rises in income for the Bdoul and Umm Şayhūn as well. What began as simply a village of unpaved roads, simple one-storey concrete brick structures (**Fig. 3**) and few vehicles, is now filled with paved roads, streets and parking areas lined with cars, trucks, and occasional tour buses, ice cream and food stores, services, handicraft shops, car shops, a pool hall and even a travel agency. These streets provide quick and easy access to the Petra National Park, al-Bayḍa and Wādī Mūsā, although public access into Petra from the village is restricted. Also, we have seen increases in structure size, changes in structural function, planned and unplanned growth of the village as a whole, discrepancies in living standards, abandonment of traditional resources and the rise of a new generation raised solely under the influence of tourism. In comparison to surrounding communities, the Bdoul *bedouin* of Umm Şayhūn can be considered most affected by the sharp increase in tourism and may prove Ken Russell’s observation of a “final end to traditional... lifeways” to be both correct and observable.

Since their relocation, the Bdoul have developed a new perspective on the region, the world and themselves. Their removal to Umm Şayhūn has sparked a national recognition of this specific *bedouin* group. Lane and Bousquet (1994) conducted an investigation into the management of the National Park as a whole and reported on the influence of tourism on surrounding communities, including the village. Their findings suggest that the Bdoul were primarily concerned with “the need for social and national recognition” (Lane and Bousquet 1994: 78) and that Umm Şayhūn was fulfilling that exact role. The new ‘identity’ of the Bdoul *bedouin* is con-



2. Composite map representing the evolution of Umm Şayhūn's urban morphology from its establishment (1980s) to the present (2008), highlighting pivotal periods in the town's growth. The most dramatic expansion occurred between 1998 and 2002 (Angel 2008).



3. An original single storey, simple cement block house built in the 1980s (photograph by Paradise 2007).

sistently reaffirmed and / or ‘fossilized’ in the area of tourism. One author describes this shift in self-perception, noting that:

“...a sense of bedouin identity still remains, an identity that is constantly shifting and being re-defined... ‘bedouin’ is still the social category with which the Bdoul are associated and in the presence of tourists, it is this identity which most often comes to the forefront... They still see themselves of ‘more bedouin’ that the others involved in Petra’s tourist industry... [and this] industry helps to maintain and reinforce this identity for them” (Wooten 1996).

In the past, income and resources mainly focused on farming, goat herding and subsistence, with some attention being paid to tourism. Currently, much of the solidification of the new Bdoul lifestyle has contributed to tourism being the main cultural focus of tribal members. With this change, the Bdoul are now able to ‘sell’ their identity to tourists. This can be seen as the *bedouin* invent new ‘traditional’ art, including sand-bottles filled with colored sand and different types of jewelry, as well as artifacts both real and fake (Cole 2003). It is also important to note that the Bdoul hide their new ways of life from tourists, especially their “televisions and other modern conveniences, [they] are literate and increasingly have university-level education, and are becoming like *Europe people*” (Cole 2003). Other economic ramifications of this shift are still to be seen. In the end it can be easily determined that relocation has changed the way the Bdoul view themselves in relation to the changing world around them, and that a new sense of what it means to be a Bdoul *bedouin* has developed in the village. Tourism played a major factor in the removal of the Bdoul from Petra and

plays a factor still as their main connection to their traditional cultural heritage while living in Umm Şayhūn. Beginning in the 1920s, the *bedouin* have had to learn how to adapt to this new source of income and industry, and have since been capitalizing on it - the *bedouin* used to encounter tourism, now it encounters them.

### Methodologies

This research provides an understanding of the origin and growth of the village. The preliminary methods were meant to determine whether there were any visually discernable reasons for the layout or growth of the village. These methods were based on qualitative analysis of remote-sensing data using Geographical Information Systems (GIS) and Google Earth. Once the preliminary qualitative analyses were completed, *in situ* data collection was carried out in Umm Şayhūn. This section of the research consisted of gathering data for further qualitative analysis. The team conducted this research through photographic documentation, interviews and town meetings. Also, the completion date of each structure was ascertained, allowing for time lapse analysis of the growth pattern of Umm Şayhūn. Through preliminary observations and *in situ* research, these methods provided a framework from which to draw conclusions about the origin and growth of Umm Şayhūn as well as implications for urban morphological research about nomadic resettlement.

The preliminary data were gathered using geo-referenced Google Earth satellite imagery, which allowed accurate measurements and analysis to be conducted. The statistical analyses of this research were conducted in ArcGIS. The structures in the imagery were vectorized using a variety of methods (Donnay, Barnsley and Longley 2001). Vectorized structures were exported from Google Earth thus:

1. Vector outlines were created in Google Earth;
2. The vector outlines were exported using the Kml2Shp program. This was developed by Zonum Solutions as a means to accurately export data from Google Earth into GIS formats, in this case as a shapefile ([www.zonums.com](http://www.zonums.com) 2007);
3. The new shapefile was imported into a new map document in ArcMap.

A variety of geostatistical analyses were car-

ried out on the vectorized structures, which allowed the quantitative form of layouts and arrangements to be assessed (Jiang and Claramunt 2002). The following analyses were conducted:

1. The city center was located as a control using a tool located in the ArcToolbox in ArcGIS. The city center helped to provide information as to whether the layout and arrangement of the structures were centered on a specific location;
2. The central feature was located as a control using another tool in the ArcToolbox. This provided information about whether a specific structure (e.g. religious, political) was the reason for the layout and arrangement of Umm Şayhūn;
3. The area in square meters of each structure was calculated;
4. Frequency analysis was also conducted about the overall arrangement. This provided information about average, maximum and minimum structure sizes, and generated a chart detailing information about the frequency of each structure.

Once the statistical analyses had been completed, we made on-the-ground observations. Time-lapse data would be necessary to obtain an accurate cartographical view of what happened in Umm Şayhūn. A map was prepared using Google Earth imagery, ArcGIS and Adobe Photoshop. Because this was meant as a tool to

be used in town meetings, it did not need to be geo-referenced. Also, prior to leaving for Umm Şayhūn, the team decided on a variety of pre-designated locations for town meetings and interviews. These meetings were allotted in a manner to diversify the possible answers that were received (**Fig. 4**).

On arrival in the village, we began the photographic documentation of Umm Şayhūn. The team's primary focus was on the oval block arrangements of the structures. Each of the block arrangements were labeled accordingly, as block A, block B, etc. Photographic documentation was also conducted in the western and eastern districts. These images helped to define the visible growth process that was occurring in the village at the time of the interviews. It also provided a visual reference to the block arrangements and determined how each arrangement was being used. These photographs will aid future research on Umm Şayhūn, by enabling the growth patterns of each structure to be assessed. This photographic documentation was collected from various directions and viewpoints, including cardinal directions, ground level observations and numerous roof-top vantage points.

Seven town meetings were held in the village. A pre-defined set of guided questions were presented to each group, after which open discussion was encouraged. It was expected that



4. Spatial distribution of town meeting locations.



each group would focus on different aspects of the village, including its growth, history or current state. The completion dates of the buildings were the primary focus in each town meeting, and each patron at the meetings provided answers and corroborated other responses. This ensured little error in the final result, especially when entered into the previously created databases. There were three general questions that were used to guide discussions with the Bdoul:

1. In what year was each building completed?
2. Currently, how are the oval block arrangements utilized?
3. What was the original purpose of these arrangements – if known?
4. What other information do you think would be pertinent to know about the village?

After gathering all the photographs, dates and responses from the resident *bedouin*, local Jordanians and new residents, the attributes and data were used to update the previously created shapefile. This will allow the original layout to be accurately interpolated in collaboration with any acquired primary source data (Jiang and Claramunt 2002). Once the data was added to the vector shapefile, an accurate time-lapse cartographic representation was created.

### The Village of Umm Şayhūn

The village of Umm Şayhūn was originally equipped with running water, electricity and sewerage. These have subsequently been greatly expanded and improved. According to the Jordanian Water Authority (2005), Wādī Mūsā and Umm Şayhūn maintain the most reliable running water infrastructure in the area. A majority of the roads and pathways in Umm Şayhūn are now paved; the main road running through Umm Şayhūn can be described as the main arterial flow of traffic and income (**Fig. 5**). At the far downhill end of the main road, the Bdoul are afforded quick and easy access into the main valley of Petra where they receive most, if not all, of their income. Income is then transferred to shops or restaurants within Umm Şayhūn, or the main road is used again for travel to Wādī Mūsā contributing to the local economies there (Angel 2008).

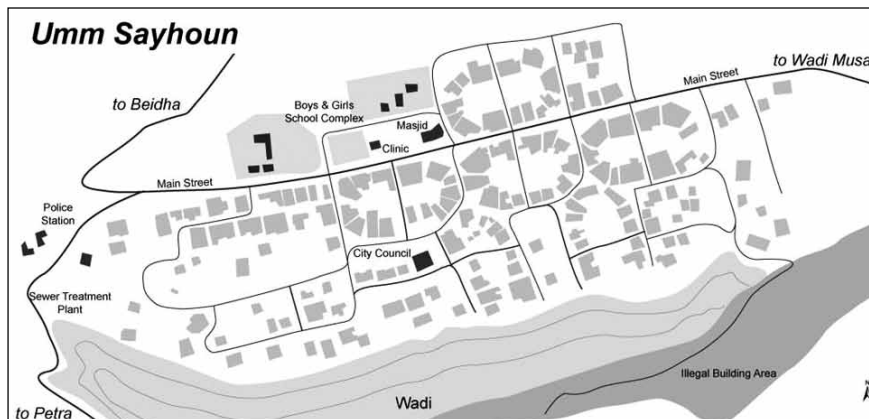
The growth of Umm Şayhūn can be easily evaluated by investigating the pivotal points in its history. In 1985, around 120 houses were



5. A view looking up the main street of Umm Şayhūn. Only paved in the mid-1990s, the road now represents the main artery for commerce, transportation and utilities (e.g. water, electricity) in Umm Şayhūn and Bayda (photograph by Paradise).

completed to accommodate about 100 families (Bienkoswki 1995). Using national and regional planning assistance in tandem with input by Bdoul elders, the original plan (**Fig. 8**) created a series of oval housing blocks which encircled open areas for parking, playing, gardens, storage and easy access to other houses within each section. These oval city blocks appear to be unique within the Levant, as well as practical (Angel 2008). Each structure had a single residential purpose: to house one or two Bdoul families (**Fig. 2: 1985**). At this time, the roads were unpaved and travel to Petra, Wādī Mūsā and Bayda was arduous and difficult by vehicle. The majority of movement in and out of the village was to and from the valley of Petra. The village itself was laid out in a series of oval blocks to compensate the Bdoul for their loss of open areas as well as to enhance the privacy of major Bdoul families. By 1994, just prior to the first re-investigation of the Petra management plan, the structures and the village had grown at an alarming rate (**Fig. 2: 1994**). New structures were built, including a school, mosque and clinic. Also, the main road was paved contributing to growth in south-eastern parts of Umm Şayhūn. These new structures remained in close proximity to the main road (**Fig. 6**).

In 1998, the Bdoul requested assistance from a number of governmental and non-governmental organizations to assist in the creation of a city council. This led the Housing and Urban Development Corporation (HUDC) to sign an agreement with the United Nations Center of Human Settlement (UNCHS) to take responsibility for city consultations in Umm Şayhūn. The objectives of this agreement were as follows (Tarawneh 2000):



6. Map showing the physical terrain, morphology and urban features of the village / town of Umm Şayhūn in 2008 (Angel 2008).

1. To provide access to appropriate residential land for the residents of the village;
2. To develop existing urban patterns to cope with economic and tourist development in the region;
3. To promote policy changes at national and local level regarding land management;
4. To enhance participation of the local population in land-use decision making and development of the settlement.

This agreement also led to other community developments, including a *sabeel* (water fountain adjacent to the mosque, serving a social and religious function), recreational park and the development of a community hall (Tarawneh 2000).

By 2000, the largest new structures were being built in more remote areas to the south-east, which afforded better views overlooking Petra (**Fig. 2: 2000**). The village continued to expand at a rapid pace in order to accommodate the growing population, which had increased to over 1,300. By this time the village had received improvements to infrastructure with the addition of a sewage treatment plant to the south-west (**Fig. 6**). Finally, a police station was placed at the 'entrance' to Petra at the end of the main road. This was meant to limit the movement of tourists through Umm Şayhūn. By 2008, the majority of the open areas around the outer edges of the plateau had been filled in with structures of all kinds. Some of the original structures were converted into shops, markets, travel agencies and other service-based store fronts, or into open garages. Many of the smaller structures that existed within Umm Şayhūn were developed to provide corralling of livestock and locations for storage of vehicles or various supplies

(Angel 2008).

The original village was relatively limited in space, yet growth was inevitable (**Fig. 2: 2008**). Currently, a new built-up zone is developing around the town's southern fringe. Most of this growth is shifting towards the cliffs facing Petra (south-west of Umm Şayhūn) – this may be Umm Şayhūn's first 'suburb' or newest neighborhood (**Fig. 6**). Most of the houses in this zone are larger in area, have more stories and are of an overall higher quality; these new residences tend to be owned by wealthier Bdoul. On this side of the village (to the south-west), there is a sharp drop down a 50 to 100 meter escarpment which affords these parts of town a spectacular view of Petra. This is important because new luxury houses are being built there to exploit the view, in the hope that one day tourist accommodation may be developed in Umm Şayhūn.

In 1984 the average size of a single unit was 150 square meters, which has subsequently expanded to an average of 255 m<sup>2</sup>, with the largest structure at 725 m<sup>2</sup> (Angel 2008). The residential buildings were seen as too small for practical use, especially in comparison to the spaciousness of the caves in Petra (**Fig. 3**). As a result, buildings that were originally constructed on one level are now being remodeled or renovated to include two or three stories. These housing modifications are possibly the result of perceptions that the Bdoul developed while living in Petra (Lane and Bousquet 1994). Here, the Bdoul were accustomed to differentiate between caves in terms of use, in that there were work caves, residential caves, open public areas for recreational and social gatherings, gardens and areas set aside for tents during summer months (Bienkowski 1985). Therefore, it should

be expected that the Bdoul would rebuild, renovate or retrofit the newly acquired structures and open areas in ways that would reflect this differentiation. Some of the modifications and extensions have been horizontal, tearing down government-built walls and extending their territory to build more rooms, and some have been vertical, constructing new floors and creating multi-dimensional living spaces (**Fig. 7**). As was the case in Petra prior to relocation, buildings are now being used for non-residential purposes (Angel 2008). These modifications have contributed to modern urban development in the area, with the new creation of work places, public facilities and paved streets. It was reported in 1994 that these changes had been at “the Bedouins own expense” (Lane and Bousquet 1994: 76). Therefore, they can be seen as a reflection of increased prosperity resulting from increased tourism.

West of the main road, a mosque and school provide the *bedouin* with access to education, religious classes, and daily and Friday worship without having to travel outside the village (**Fig. 6**). This new centralization of education and religion has also changed the mobility of the Bdoul and their identification with Islam.

New structures have also been built entirely to their inhabitants’ own specifications, designs and needs. These structures are usually built by wealthier individuals and are complete with balconies, multiple gardens, gated walls for privacy and obvious attempts to acquire the best views of the valley. Other new structures are now appearing in an ‘illegal’ area to the east of Umm Şayhūn, separated by a large ravine and wadi. Currently no infrastructure has been set up to



7. Three- and four-storey structures such as this one represent the emerging architectural style in a new neighborhood of Umm Şayhūn. Most of these large homes are located south and south-west of the main arterial road (photograph by Paradise 2007).

support this peripheral growth. Some Bdoul are petitioning local authorities to prohibit growth here or to permit it. It will be interesting to see how this new area develops and whether or not the government will continue to allow this expansion. What is important to note about this area is that it is a clear indication of the need for more expansion to accommodate the growing village.

Since economic transitions were inevitable after the relocation to Umm Şayhūn, work places have been separated from living spaces; these included tent shops in Petra or local shops within Umm Şayhūn. In attempt to capitalize on the appeal of *bedouin* culture to tourists, the Bdoul have set up tents and shops within Umm Şayhūn to cater for that demand. There are also small shops along the main streets in Umm Şayhūn, some specializing in tourist items and services while others provide for local needs such as groceries and personal items.

By 2007 and 2008, a number of new trends were obvious. The newest structures included a pool hall, rentable lodging (however questionable in legality), new shops, cafes and small restaurants (for years there was only one), and three travel agencies. Also, the Bdoul are now utilizing technologies that were unavailable in the past, such as computers, high-speed wireless internet for e-mail, Twitter and Facebook, automatic garage doors and luxury vehicles. The new roads that run through major parts of the village contribute to the growing number of cars in the area, especially in the nodes and areas of primary use. *Bedouin* are often seen driving their trucks or cars into the back entrance to Petra on their way to work. Work in Petra includes retail shops (e.g. souvenirs, books, snacks, jewelry), services (e.g. town guides, tours and medical assistance), food and recreation (e.g. hiking guides, camel treks), and out-of-town ‘*bedouin* experiences’ in large tented complexes for dining, dancing and overnight stays. Many shops in the village are for local use, but many have also been set up to provide assistance, products and services to the tourists who now visit the village. This is also why there are now a few lodgings in the village, which increasingly serve tourists, archaeologists and visiting scholars, especially once regional lodging policies and licensing are standardized (Angel 2008).



8. Original map (1980s) of the village of Umm Şayḥūn before relocation from Petra to the village (Angel 2008).

At the end of the main road, above the police-manned, gated road into Petra, is the main road to Bayḍa, a small Neolithic site and home of the burgeoning tourist destination of so-called Little Petra. Many *bedouin* maintain relationships with other Bdoul as well as with the other tribes who live there. Because of this easy access to Bayḍa, many who own shops or work in Petra may now live some distance from their main sources of income. However, because travel to and from Bayḍa is dependent on access to a vehicle, it is usually the wealthier *bedouin* who travel to and from Petra on a daily basis from Bayḍa (or hitch a ride). As Bayḍa develops into a satellite community for Umm Şayḥūn, businesses have grown in Bayḍa where tourists can experience 'local *bedouin* culture' by dining and dancing in the open air, or by staying in goat hair tents serving grilled chicken, hummus and bread while the Bdoul entertain them with traditional songs and string instruments (*rababa*). This exposure to *bedouin* culture has propagated the creation of similar venues and businesses across southern Jordan, and many of the Bdoul can be found involved in these new tourist ventures.

Similarly, tours have been established from the nearby town of Wādī Mūsā into Umm Şayḥūn to provide tourists with an 'authentic' *bedouin* experience. The majority of recent internal changes have been for touristic development. Travel agencies, information centers, tours and accommodation (e.g. bed and breakfast, small hotels) are becoming the norm in the village. Umm Şayḥūn is quickly becoming a powerful example of the effects of tourism on

villages near high profile attractions like Petra.

As the population of Umm Şayḥūn is continually expanding, the *bedouin* are in constant need of more land for cultivation. Unfortunately, increasing the amount of land under cultivation is impossible because the lands surrounding the area belong to other tribes or the terrain is non-cultivable. The majority of the Bdoul sustain their lifestyles on the basis of access to tourism within Petra. Some areas have been set aside within the valley to allow for shops to be built and maintained. These areas are now 'owned' by Bdoul from Umm Şayḥūn, sometimes in partnership with non-*bedouin* Jordanians. This is important since ownership also implies exclusion. There are many *bedouin* who have little to no access to tourism within the valley. Therefore, their lifestyles, if possible, are still somewhat maintained through subsistence farming and herding, whilst at the same time being forced to live in Umm Şayḥūn. Unfortunately, the lack of arable land and restrictions placed on pastoralism outside the boundaries of Umm Şayḥūn create a wide disparity in living standards within the village. Many *bedouin* are finding it difficult to remain within Umm Şayḥūn and have found residency and mobility at Bayḍa, while some Bdoul continue to build onto their already large homes creating multi-storey 1,000-2,000 m<sup>2</sup> palaces overlooking Petra. These disparities in income, possessions, connections (*wasta*), tradition and a sense of belonging are broadening, and will only get larger and more challenging for the Bdoul, the wider community and the region in general.

### Explaining the Urban Patterns

The results of this research suggest that the original public spaces and residential oval blocks of the original plan were completed at the same time. After initial construction phases were complete, families began moving into selected locations based on clan relationships. Therefore, it appears that the layout was developed to cater for the tribal and familial needs of the Bdoul *bedouin*. The oval layout is a spatial representation of the tribal relationships surviving from when the Bdoul were living in Petra. Still, these reasons did not explain the purpose for the oval shape, but instead demonstrated the apparent segregated sections that make up the oval patterns. Questions, however, still remained: what were the uses of those particular spaces, and were the main entrances of the residential buildings facing the open areas rather than the streets (inward *versus* outward)? For answers to these questions, one must look at the responses from the *bedouin*.

So, why the oval house arrangement? In an attempt to find answers, specific questions were asked about the previous and current uses of the open areas in each layout. Also, current uses of the open areas were assessed by visits, observations, discussions and photographic documentation. It was found that the open central areas were being used for car parking, storage, gardens, public areas, camel and donkey stabling, and other miscellaneous activities including playground use, soccer and ball games. After each town meeting, the research team realized that these areas also had other specific attributes. In particular, they were designed to be set aside for large communal public gatherings and events, such as weddings, parties, play areas and rites of passage. It also became apparent that this was a secured setting. Most of the houses faced inwardly towards the open area rather than outwards to the streets. Early Muslim towns were built with houses placed closely together to maintain privacy and adherence to spiritual laws (Golany 1995). The balconies of the village also face inward, on to the open centers. The central areas are meant to be public spaces upon which all attention is focused, reinforcing *bedouin* concepts of friendship and family, while at the same time maintaining safety and privacy.

It is important to note that the early planners

involved the Bdoul in the early stages of village design. Also, if one were to plan this village based solely on the layouts of the caves and dwellings that were modified by the *bedouin*, one would easily conclude that space and family are of prime importance (Russell 1993). Regardless of who planned the layout, it was definitely intended to maintain Bdoul culture, clan networks and relationships.

Since the original layout was developed, the village has grown into a mixture of planned, grid-iron and organic morphologies. The 'planned', however loosely, portions are the original oval blocks. The grid-iron layout began taking shape in the early 1990s, and started as a function of the ridge and wadi topography. The original UNESCO memoranda about the status of Umm Şayhūn state that much-needed additional land was not given to the *bedouin* until the early 1990s. Therefore, until that time more building was not legally possible. However, building was already taking place outside the 'planned' areas, so eventually the governing authorities decided that the village boundaries needed to be extended. This confirmed that the houses of this second phase were not planned, much as described by the Bdoul at town meetings.

It is interesting to note that a grid layout was still developing in 2008. This is most likely the case because the main road was already in existence, albeit unpaved, and the Bdoul began building along that road. Also, the main road followed the primary ridge that descended the plateau, with a few unpaved side roads arranged orthographically that may also have contributed to the grid-iron appearance. Regardless of the reason for the grid-iron layout, the oval central public areas were not continued across the newly acquired land. There is a new urban area that is developing at the village edge. This could be considered the suburban area of the village. Most of this area, as can be seen in the movement patterns recorded in this research, is shifting towards vantage points of Petra (south-west of Umm Şayhūn). As mentioned above, new houses are being built in this area to take advantage of the views. Also, as can be seen in the photographic documentation, most of the houses being built in this new area to the south-west are of higher construction standards. This new tendency is organic and spontaneous, but with a

specific purpose.

Finally, an area of illegal growth is now appearing east of the village. It will be interesting to see how this new area develops and whether or not the government will continue to allow it. The *bedouin* themselves prefer to allow the areas to develop. This is important because it illustrates the Bdoul's perspective on the growth of the village. Either way, it is apparent that something needs to be done to accommodate the rest of the incoming *bedouin*.

### **Implications and Suggestions**

This research explored the historical and geographical development of Umm Şayhūn through examination and mapping of its unusual settlement and growth patterns. Also, this research sought to understand the peculiar patterns and layouts that can be seen in aerial photography. This was accomplished through mass interviews and town meetings with the *bedouin* involving questions on the construction dates and purposes of each structure, the reason for their location and, particularly, the oval block arrangements. After various data sets had been gathered, GIS was used to conduct spatial analysis of town growth over the past twenty years. A series of maps showing the development of Umm Şayhūn were created. These shed light on the thinking behind the unique urban patterns found in Umm Şayhūn.

This shift from nomadism to sedentism at Umm Şayhūn has allowed a unique urban morphological process to occur. This process is unique in that previous literature on urban morphology has failed to explain what has happened in Umm Şayhūn. This research has filled a gap by providing detailed observations on the layout, pattern and growth of a permanent *bedouin* settlement. This research has also used innovative technologies to pose questions and solve problems concerning more remote regions of the world, especially in the Middle East.

Through new technologies, data is more readily available than ever. This is why urban geography, morphology and analysis can benefit from software programs such as Google Earth and ArcGIS. These technologies were able to provide the team with informed expectations of possible results from Umm Şayhūn. Also, these technologies helped provide a cartographic framework within which to examine

the layout, pattern and arrangement of Umm Şayhūn, especially with regard to the oval block arrangements. Although these technologies and geo-statistical tools could not answer all of the questions relevant to this research, they were helpful in understanding the overall character of Umm Şayhūn.

Seeing that technology alone could not explain the reasoning behind the layout, the team conducted *in situ* research. This portion of the research was the most important because it shed light on cultural influences. This on-the-ground research involved photographic documentation, interviews and town meetings. Through photographic documentation, we were able to generate a baseline for future research on this village. Also, this documentation assisted in demonstrating the layout and uses of the block arrangements. The interviews and town meetings explained the reasoning behind the layout as well as the history of the village, including time-lapse data, clan structure and history, and historical documents.

This research discovered various uses of the current layout (see above), as well as the reasoning for the layout in the first place, for example:

- The Bdoul value the arrangements for privacy and family use;
- The Bdoul have no intentions to build within the block arrangements;
- The arrangements were specifically designed to cater for cultural aspects of Bdoul clan structure not seen elsewhere;
- Each block arrangement was originally occupied by a different family unit, which accorded with the clan structure from their earlier days living in Petra.

The new village / town of Umm Şayhūn has provided numerous benefits to the Bdoul. Immediate access to healthcare and education has greatly influenced population growth within Umm Şayhūn and participation in education throughout Jordan. The original goal of integrating the Bdoul within the Kingdom, nation and fabric of Jordan has met with some success. Many members of the new generation of educated Bdoul pursue opportunities in other parts of the country and across the world.

For the time being, geography imposes limitations on any future village growth. As well as the lack of arable land around the urban plateau,

the Bdoul are running out of land upon which to build. For now, a few of the poorer Bdoul are building illegally on the plateau to the south-east. Also, limitations on future growth may lead some Bdoul to return illegally to the caves and tombs in Petra (in fact, some have continually resided in the caves between Petra, the Snake Monument and Jabal Hārūn). This will ultimately lead to greater conflict between the Bdoul and local authorities, in a return to the policy concerns and disputes that developed during their relocation. The buildings are expanding vertically which contributes to the village / town being easily visible from across Petra (Fig. 7). This already affects the tourist experience throughout the valley.

As the town's population grows faster and faster, the number of Bdoul entering the work force will increase. These Bdoul will expect and plan to work within this unique service and retail industry. Studies need to be conducted to investigate the relationship between the Bdoul, their skills, the active workforce, their changing jobs and needs, and overall opportunities for employment in Petra, Wādī Mūsā and Umm Şayḥūn. Increases in the number of workers in the valley will place strain on those working families already established both there and in adjacent towns and tourism-related businesses. This will undoubtedly create new friction between the Bdoul, their co-workers and Jordanian competitors, as well as new policy conflicts between the Bdoul, local authorities and future regulations, and within the Bdoul community itself.

Upon their relocation from Petra to the plateau above in the 1980s, one of the original purposes of Umm Şayḥūn was to assist in the integration of the Bdoul *bedouin* within wider Jordanian society. Currently, the major problems exposed here underscore a weak vision and direction for Umm Şayḥūn, and limited opportunities for diversification of employment and income sources for its *bedouin* residents. The growth of Umm Şayḥūn requires enforced management of current (Fig. 8: structural placement) and future regulations (possible zoning requirements). Effective urban planning integrates land use, activities, transportation, infrastructure and education to improve the built, economic and social environments of communities; Umm Şayḥūn would benefit greatly from this type of foresight and strategy. Simple measures in cre-

ating land-use zones, improving infrastructure, enforcing planning policies and actively involving community elders and residents would be a significant first step.

Unfortunately, current educational opportunities are limited within the village. Since Umm Şayḥūn's inception, the Bdoul have become more isolated from other local communities in the region, and within Jordan as a whole. When the Bdoul lived in the valley, all of them interacted with visiting foreigners on a daily basis. However, there are now many residents of the village / town who no longer regularly intermingle and 'network' with the Arabs, Africans, Asians and westerners who frequented Petra then and now. The emerging world of global tourism and industry requires broad foundations, and formal secondary and college education may be one answer. Scholarships or government grants for the Bdoul could be made available to them at new local colleges such as al-Hussein bin Talal University in nearby Ma'ān. In 2004, al-Hussein bin Talal University opened a College of Archaeology, Tourism and Hotel Management in Wadi Musa, and a number of Bdoul have successfully graduated. This will help the Bdoul to diversify their skills and be stronger candidates in a dynamic global workforce, as well as promoting involvement outside Petra and Umm Şayḥūn and reducing competition for service industry jobs in Wādī Mūsā and the valley of Petra.

Ultimately, the success and sustainability of the Bdoul and Umm Şayḥūn will depend on the creation of opportunities and a strong vision for the future. Improvements to Umm Şayḥūn through urban planning and infrastructure mitigation, in conjunction with improved and accessible educational opportunities may be the key to the future of Bdoul *bedouin* of Petra and their sprawling town of Umm Şayḥūn.

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