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# An Architectural Study of the Ksour in the Touat Region of Adrar Province

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***Abstract*—**This study examines the architecture of the ksour in the Touat region of Adrar Province, an area rich in historic architectural heritage, particularly its kasbahs. It seeks to provide an objective analysis of the principal effects of urbanisation on this heritage. The theoretical component introduces the region's ksour and analyses their built form, tracing the stages of their architectural development in the Algerian Sahara, the architectural patterns within the ksar and their functions, the forms and classifications of ksour, and the factors that contributed to their emergence in the Algerian Sahara. The field component addresses urbanisation in the ksar, its manifestations and driving factors, and the reasons for its delayed onset, with the aim of identifying its implications for the ksar's built environment. To achieve these objectives, the study employed descriptive-analytical and historical approaches, combining quantitative and qualitative methods. Three data-collection instruments were used: documents and statistics, open unstructured interviews, and a questionnaire. The structured questionnaire was administered to 200 members of the community of the ksar under study.The study reached several findings, summarized as follows: First, urban ways of life have become widespread in the ksour, extending to a large proportion of their inhabitants as their built-up areas have expanded and they have become more open to the outside world, with corresponding effects on the built environment. Second, the built environment is the domain most affected by urbanisation. Third, the type and form of housing have shifted from mud-brick dwellings to cement or fired-brick construction, and from cramped dwellings lacking rooms or modern amenities to more modern forms of accommodation. Fourth, the provision of social, recreational and cultural facilities—including electricity, town gas, sewerage networks, a cultural activities hall, a neighbourhood sports ground, a medical clinic, paved roads and various communication services—has brought about changes to the built environment and the spatial dynamics of the ksar. Fifth, the ksar's built fabric appears as a mosaic of mud-brick and cement buildings, particularly as cement structures have encroached on traditional mud-brick housing, whether through the choices of the inhabitants themselves or state intervention intended to develop the ksar's inner areas. Finally, urbanization has brought several changes to the ksar. Its pace has accelerated particularly over the past two decades, affecting the historic architectural heritage.

***Keywords*—**ksar; architectural pattern; kasbah; urbanisation; dynamics of urban space.

## Introduction

The Algerian Sahara in general, and its western part in particular, contains numerous settlements characterised by historic built forms and traditional social structures, principally the ksour. This reflects the nature of their environment and the circumstances of their emergence and development. Historical, sociological, economic and anthropological documents and studies of the structure, dynamics and historical development of ksour communities indicate that their transition from a traditional to a modern social pattern occurred late, or has progressed very slowly. Several factors account for this, notably isolation and harsh natural conditions, which

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strongly discouraged settlement; the late arrival of colonial rule in the Saharan regions generally and the south-west in particular, where colonial forces arrived in 1900 and extended their control into the ksour of Touat by approximately 1920; and the regional imbalances created by French colonial policy, which left behind little infrastructure or facilities capable of attracting inhabitants. Development policy was also weak after independence, with attention concentrated on the coastal belt. Consequently, ksour communities retained a degree of stability and independence in their urban, social, economic and political organisation, largely free from external intervention.

This did not, however, prevent a subsequent phase of urbanisation following the introduction of modern facilities: water and electricity supply networks, sewerage systems, some urban infrastructure and services, modern housing, and planned and organised urban space. At the same time, urbanisation was accompanied by demographic and social mobility, intertwined with spiritual factors that had been fundamental to life in the ksar. The community also lost some of the conditions that had previously sustained its self-sufficiency through a series of changes and interventions (Marc Cote, p. 180, 1996).

The Saharan ksour have distinctive characteristics and spaces that distinguish them from other towns across Algeria. These spaces largely accord with the structure of oasis society, which is based on social solidarity, and are adapted to natural conditions. The ksour took the form of fortified settlements distinguished by their hydrological, social, economic and political unity.

Historically, the ksar's architecture bore Arab-Islamic characteristics, as reflected in surviving remains in some ancient heritage settlements, especially old kasbahs and the designs of certain mosques and houses. The region's local architecture has retained its distinctive characteristics despite modifications and improvements introduced in response to the requirements of modern architecture.

In designing a building in the ksar, inhabitants generally rely on the expertise of a skilled builder or on their own experience, guided by an individual conception rooted in the dwelling owner's social and cultural circumstances. We observed considerable variation in the ksar's housing: traditional mud-brick dwellings coexist with some modern single-storey cement buildings interspersed through its historic core. This variation is attributable primarily to socioeconomic differences among residents. The ksour of Adrar have experienced three interwoven architectural patterns within a single urban fabric, forming an interconnected architectural and social mosaic shaped by natural, sociocultural, religious and economic factors.

The ksar's buildings show little uniformity, with traditional mud-brick dwellings standing alongside modern single-storey cement structures that are interspersed through the historic core. Differences in construction arise primarily from socioeconomic disparities among inhabitants. In the ksour of Adrar, three architectural patterns overlap within the same urban fabric, creating an interconnected architectural and social mosaic influenced by natural, social, cultural, religious and economic factors.

The architectural patterns found in the ksar can essentially be divided into three types, differing in their physical and urban forms and in the ways of life and social relations associated with each.

Since the beginning of the twentieth century, the opening-up of the ksar and the process of urbanisation have generated profound transformations in ksour communities that continue to the present. This prompts the following questions, which the study seeks to address:

1. What are the principal effects of urbanisation on the architectural pattern of the ksar?

2. How have the ksour of the Algerian Sahara developed in architectural and urban terms?

3. What future awaits this architectural heritage under the development, urban expansion and urbanisation policies affecting the region?

To establish and enrich the study's theoretical background, draw on the efforts and perspectives of earlier researchers, and learn from the limitations of their work, it is necessary to examine previous and related studies dealing directly with urbanisation and associated issues, including the relatively limited sociological research on ksour communities. Reviewing these studies helps clarify our research subject and the contributions of other researchers. It also establishes how the present study relates to earlier work by comparing research aims, methods, sampling units and sampling approaches, data-collection instruments and investigated variables. Defining these relationships allows the researcher to identify the potential contribution of the present analysis. The relevant studies are reviewed below.

Moulay Mohammed, “Urbanisation in Ksour Society: A Socio-Anthropological Study of the Ksar of Adghou in Adrar Province”, unpublished master’s dissertation, Department of Sociology, University of Oran, 2012.

Thiyaga Esseddik, “The Architectural Pattern of the Saharan City”, unpublished master’s dissertation, Department of Sociology, University of Oran, 2008.

Touil Fatiha, “Urban Policy and Its Social Problems in Saharan Regions: A Field Study in the City of Biskra”, unpublished master’s dissertation, Department of Sociology, Mohamed Khider University of Biskra, 2005.

Chouichi Zahia, “Ksour Society: A Study of the Social, Urban and Cultural Characteristics of the Ksour of Touggourt”, unpublished master’s dissertation, Department of Sociology, Mentouri University of Constantine, 2006.

Bouzid Ali, “The Social Functions of Housing in the City of Adrar”, unpublished doctoral thesis, Department of Sociology, University of Oran, 2016.

An assessment of these studies highlights several ways in which they have informed the present research, particularly the following:

- They directed our attention to the need for a comprehensive perspective on the effects of urbanisation on architectural patterns, encompassing all determinants of this process both within and beyond the ksar as an urban space.
- They helped us develop and formulate the hypotheses of the present study.
- They assisted us in selecting appropriate methods and instruments.
- They informed the construction and design of the research questionnaire.
- Their findings also helped us analyse our data and compare the results with those of earlier studies.

The relationship between the preceding studies and our research can be clarified by examining their similarities and differences, as follows:

**A. Similarities between previous studies and the present study**

- In terms of research aims:

The first and second studies resemble the present study in examining changes in architectural patterns resulting from urbanisation. The first, fourth and fifth studies also address the same type of research community—ksour society—which, despite geographical differences and some variation between the communities investigated, shares distinctive social characteristics.

- In terms of methods:

All the studies, like ours, used the descriptive-analytical method. The first, third, fourth and fifth also employed the historical method, while all the studies adopted a quantitative (statistical) approach.

- In terms of data-collection instruments:

All previous studies, to varying degrees, used the instruments employed in our study: observation, interviews, questionnaires, and documents and statistics.

- In terms of the research sample:

- The studies were similar in the nature of their samples, comprising individuals, families or groups living in the same geographical area and sharing social and cultural characteristics.
- In selecting the sample, our study adopted systematic random sampling, which was also used in most earlier studies, namely the first, second, fourth and fifth.
- All the studies were also similar to ours in examining Saharan communities.

**B. Differences between previous studies and the present study**

- In terms of research aims:

The earlier studies—the first, second, sixth, seventh and ninth, respectively—sought to:

- Describe the state of social relations generally and neighbourly relations particularly in the context of social change.
- Identify the main factors facilitating acceptance of and adaptation to the ksar’s new urban circumstances following urbanisation.
- Identify changes in the ksar’s urban environment resulting from urbanisation.

By contrast, the present study aims to identify the effects of urbanisation on the architectural pattern of the ksar.

- In terms of sampling units:

- The previous studies differed from ours in the type of sample selected, examining respondents from either urban or traditional communities.

- Our study selects respondents in order to examine and analyse the repercussions and effects of urbanisation on architectural patterns.

- Moreover, all previous studies except the fourth confined their samples to communities occupying a single urban pattern, whereas our sample includes residents of both traditional historic built space and recently developed modern built space.

## 1. Methods and Instruments

### 1.1 The sample: selection method, type and size

The study population comprises all cases meeting specified characteristics determined by the research subject (Ali Abdelrazek Jalabi, 2003, p. 309). The type of sample is therefore selected according to the nature of the subject.

- Type of sample:

Our selection of this community stems from the nature of the subject, which concerns the effects of urbanisation on social relations, particularly relations between neighbours and within families; relations among the social groups constituting the ksar's community; and relations between males and females across age groups, social classes and levels of education. It also concerns whether inhabitants live in a traditional or modern built environment. Furthermore, the ksar, to which I belong, has characteristics that make it a suitable case study. It is one of the municipality's largest ksour in terms of population and geographical extent. Its territory is divided into two architectural zones: a historic traditional zone and a recently developed modern zone. Its social composition is also distinctive, encompassing a variety of social groups and educational levels.

- Sample size:

Sample size refers to the total number of cases selected for investigation as representatives of the original population (Ali Abdelrazek Jalabi, 2003, p. 311).

Our sample was selected by identifying the distinguishing characteristics of the population under study, seeking a balance between conventional criteria (age, sex, occupation, marital status and so forth) and different situations and social groups. The sample comprises 200 people.

These data were used to determine the number of male and female respondents in the sample in proportion to their shares of the study population. The proportions were nearly equal because the ksar's total population contains similar numbers of males and females: 50.67% male and 49.32% female.%%

- Sampling procedure:

We investigate these effects and changes using a limited sample of individuals, since it would be difficult and labour-intensive to study the entire population at once. Respondents were therefore selected from among the ksar's inhabitants using systematic random sampling, with the aim of representing the original population's characteristics as accurately as possible and reducing bias and chance effects. The sample includes residents with different social positions, sociocultural backgrounds and economic circumstances. Direct observation was used to establish that the population displayed a broad range of ecological, social, cultural and economic characteristics. The study population was also defined without imposing conditions concerning dwelling type or other specified personal characteristics, with the aim of obtaining a sufficiently inclusive and representative population for scientific investigation.

### 1.2 Research methods

Researchers must follow a method suited to generating knowledge that can be used in the present and potentially in the future, in line with the research problem and objectives. The subject itself determines the appropriate method for investigating the research problem in practice. We therefore consider the descriptive and historical methods, together with the statistical method, to be the most suitable approaches for this study.

The descriptive method examines conditions, phenomena, situations and relationships as they exist, without intervention by the researcher, before providing detailed description and comprehensive analysis to explain the research problem (Mahmoud Abdelhalim, 2000, p. 201). It involves gathering information and attempting to interpret the meanings and implications of the resulting data for the purposes of prediction (Abdelwahab Ibrahim, 1985, p. 100).

We adopted the descriptive method because urbanisation and its repercussions alter conditions in ksour communities. Our investigation begins with the realities and distinctive characteristics of the ksar and seeks to understand this process, its successive stages and how it unfolds within this particular built environment, which differs from other urban spaces. The aim is to describe and analyse its architectural and social conditions and identify the most important changes.

The historical method was used to identify the successive stages of the ksar's development by tracing past events across different periods and examining the history of its built environment alongside the contemporary social conditions of those periods, thereby clarifying the social problems that shape the present.

The quantitative method was employed after the completed questionnaires had been entered into statistical tables containing numerical percentages, which were then interpreted qualitatively and incorporated into the relevant parts of the analysis.

**1.3 Data-collection instruments**

A research instrument is the means used to obtain the data and information required by a research subject (Ali Abdelrazek, 2003, p. 245). This study used several data-collection instruments, namely observation, questionnaires, documents and statistics. These established sociological fieldwork techniques are effective ways of collecting information relevant to the research topic.

**A. Direct observation:** As a major technique of sociological fieldwork, direct observation was employed to examine in depth the circumstances of the population of the ksar under investigation. It enabled us to observe the forms of behaviour under study in residents' everyday lives and their social interactions. This technique makes it possible to encounter events directly and understand different aspects of life in the ksar as elements of the wider community. We sought particularly to identify the main aspects of individuals' social lives that had changed following outward migration or expansion of the ksar. Direct observation was used as a means of investigation and discovery comprising three processes: perception, memorisation (mémorisation) and recording (la notation). It was considered the most appropriate method for observing residents' interactions with their surroundings, supplemented by photographs of the ksar.

Our observation also focused on the residential environment of the ksar community in order to examine its structure and organisation at close range. We considered the location of traditional and modern dwellings, residents' interactions and ways of life within each form, and the relationship between these adjacent spaces, which originally constitute one built environment, the second merely extending the first.

**B. Questionnaire:**

The questionnaire is an appropriate instrument for obtaining data and information concerning the study setting. We relied on it as our principal instrument because we considered it the most effective means of collecting data.

For our research on "the phenomenon of urbanisation and its impact on the form of social relations", we prepared a questionnaire based on the stated indicators and hypotheses. It comprised 62 questions organised into the following sections:

1. The first section contained personal information and comprised eight questions on age, sex, marital status, educational level, occupation, family type, place of residence and the respondent's social group.

2. The second section concerned the ksar's urban space and comprised eight questions on dwelling type, number of rooms, reasons for urban expansion, and the social and recreational facilities available in the ksar.

3. The third section concerned neighbourly social relations and comprised eight questions on the criteria used to choose neighbours, the nature of relationships between neighbours, reciprocal visits and participation in neighbours' social occasions.

4. The fourth section addressed family and kinship relations and comprised 19 questions on spouse selection, relationships between siblings and children, family dialogue and discussion and their subjects, father–child relations, preferred family structure, and women's employment outside the home.

5. The fifth section concerned social relations between males and females, addressing indicators such as whether authority within the family rests with men or women, the nature and type of relationships with the opposite sex, family responsibilities, and the work and activities undertaken by men and women.

6. The sixth section addressed social relations between the various groups making up ksour society. It comprised eight questions on the bases of social differentiation, the nature of intergroup relationships, the extent to which traditional foundations are maintained and, where changes have occurred, their causes.

The questionnaire included both direct and indirect questions. Direct questions concerned respondents' personal circumstances, such as age, sex, place of residence and marital status, whereas indirect questions addressed aspects serving as indicators of the subject or theme being examined.

In terms of question format, the questionnaire included closed-ended items offering predetermined response possibilities, from which respondents selected the option expressing their position, such as "yes" or "no". It also included open-ended questions for which no possible answers were prescribed and respondents were free to reply in their own words, for example: "If yes, what is the reason for these relationships?", "In either case, why?", "Why do you think that is?" and "Who prevents you from establishing relationships with members of the opposite sex?"

In addition to closed- and open-ended questions, the questionnaire included semi-closed questions offering suggested responses while leaving space for respondents to add alternatives, using options such as "Other, please specify", "Other places, please specify" and "Other occupation".

The questionnaire's language was adapted to respondents' educational levels. Because a large proportion of the ksar's inhabitants were educated, it was written in Modern Standard Arabic. For the small number of illiterate respondents, generally older people, I read the questions aloud myself or with the assistance of one of their relatives, using the local dialect, and recorded their answers on the questionnaire.

After dividing the research subject into subtopics, indicators and dimensions, each covering an aspect of the study, I identified the questions associated with each subtopic and the data required to address it. The initial wording and design of the questionnaire followed these principal considerations:

- Precision, brevity, clarity and simplicity of expression.
- Avoidance of preconceived judgements.
- Avoidance of questions likely to make respondents uncomfortable, undermine their confidence in the researcher or discourage accurate and truthful answers.
- Gradual and logical sequencing to engage respondents' interest and help them organise their thoughts.

The next stage involved entering the completed responses into SPSS to obtain quantitative results in simple and cross-tabulated statistical tables. The software greatly facilitated production of these tables in a straightforward and appropriate form. The resulting tables, particularly those closely related to the research topic, were subsequently interpreted and analysed.

The statistical techniques used in analysing the fieldwork data were percentages and the arithmetic mean. A percentage is calculated by dividing one number by another and multiplying by 100. Percentages were used throughout the study's statistical tables, whether simple or cross-tabulated.

**C. Interviews:**

In addition to observation and questionnaires, interviews were employed as another means of collecting information. An interview is defined as "a face-to-face situation between two individuals (researcher and respondent), based on verbal interaction in which the researcher seeks to elicit information about the respondent's experiences, opinions and beliefs for use in exploratory, diagnostic or therapeutic scientific research" (Ali Abdelrazek, 2003, p. 267). On this basis, I conducted several open interviews with older inhabitants and prominent figures in the ksar to obtain information about its former character and structure, to inform an account of its morphology, and to elicit their perspectives on contemporary everyday life in comparison with their earlier experiences. This made it possible to identify the areas that had changed most and were most affected by urbanisation.

The interviews and their conduct varied between individuals; there was no standardised format. Respondents were not constrained by a fixed interview schedule but were allowed to speak freely about matters concerning them, with flexible prompts to bring the conversation back to the main subject when needed. Questions were asked in the local colloquial dialect, and responses were recorded, sometimes in a research notebook.

**D. Documents and statistics:**

Alongside questionnaires, interviews and observation, I used available documents and statistics concerning the region generally and the ksar of Adghou in particular. Statistical material covered population size, growth rates, household numbers, the numbers of males and females, and sometimes geographical area, the number of ksour and the number of buildings. Sources included the National Office of Statistics, particularly district records from successive general population and housing censuses, the technical departments of the municipality containing the

ksar and provincial services, notably the urban planning and development office of Zaouiet Kounta municipality and the province's Directorate of Planning and Statistics.

The documents concerned the ksar's buildings, urban and architectural plans, and maps showing administrative divisions and the geographical locations of the areas under study. These materials were particularly valuable in deepening my understanding of the ksar and its community.

The research problem may be understood in terms of two principal variables: urbanisation in the ksar as the independent variable, and the resulting effects or changes in its physical form, urban fabric and architectural pattern as the dependent variable.

**First: The Ksar in Architectural and Social Terms**

**1.1 The concept of the ksar**

**A. Linguistic meaning:**

- Qasr (قصر), from the Arabic verb qaṣura; the plural is quṣūr (ksour).

In Arabic, the word qasr denotes a large, elevated house and came to refer specifically to a grand Arab residence. The designation has been associated with the confinement or seclusion of women within it. The term also corresponds to its common use in historical writings to denote the residence of a caliph or ruler and members of his household or entourage.

- In French, qasr is comparable to château-palais, a grand fortified residence characteristic of the Middle Ages and inhabited by feudal landowners and their families.

**B. Technical meaning:**

In the Atlas and Saharan regions, a ksar designates a residential settlement, sometimes occupying a small area, that is fortified or at least situated on elevated ground. It does not signify a spacious palace inhabited by princes and dignitaries (Despois (J), 1975, p. 2025).

The ksour community examined here is a local community in south-western Algeria made up of groups sharing cultural values and a relatively simple way of life. There are also ksour communities in the south-east, which differ somewhat from those of the south-west. The present study concerns the historic Touat region of Adrar Province. Most of its population descends from groups originating in the Maghreb, including Berber, Arab and Black African populations (Faraj Mahmoud Faraj, 2010, p. 45). Their descendants settled in Touat at different times and under different circumstances. Through intermingling, these population groups merged into a community sharing customs and traditions, while Islam reinforced social solidarity. Ksour society has traditionally had a stratified social structure, with the sharifs occupying the highest position, followed by the marabouts, then free Arabs, and finally slaves and the Haratin, who occupied a similar position at the bottom of the hierarchy. This classification was based on descent, birth and social standing (Faraj Mahmoud Faraj, 2010, p. 46).

Religion is central to this community's way of life and, as noted above, reinforces cohesion through Islamic teachings. It is also fundamentally an agricultural society: farming is an important source of income for most inhabitants of the ksour of Touat. Craftwork and traditional industries are widespread across the region and have provided livelihoods for many families. For men and women, these activities were also occasions for enjoyment, social interaction, exchanging news and spending leisure time. Later sections of the dissertation further examine the nature of ksour society, its distinctive features, social structure, organisation and prevailing social relationships.

2. Stages in the Architectural Development of the Ksour of the Algerian Sahara

The architectural development of the ksour of the Algerian Sahara, like that of other regions, may be divided into two principal phases: the pre-colonial period and the post-colonial period. The latter saw the first signs of development and change, although progress remained slow until 1987. Thereafter, Saharan ksour, particularly those in Adrar Province, experienced substantial advances in several areas, including their built environment and social life, as discussed below.

**2.1 First phase: From the pre-colonial period to 1962**

Before the arrival of French colonial rule, the Touat region experienced unrest, warfare and political turmoil arising from rivalries among local tribes over leadership. Security, economic and social conditions deteriorated further as the region divided into two tribal alliances, the Yahmed and the Sufyan, whose rivalry extended

throughout Touat. The rulers of Morocco, who exercised influence over the area and collected tribute from its inhabitants, paid little attention to their political and security conditions until French ambitions in the Sahara became apparent (Faraj Mahmoud Faraj, 210, p. 7).

Powerful and influential tribes frequently attacked weaker groups, seizing their possessions and livestock. Disputes also arose over the foggara irrigation systems, including a conflict between the Ouled El Hadj Mohammed of Tamentit and the maraboutic Ouled Sidi El Bekri over a foggara maintained by the former. Such disputes were compounded by serious tribal rivalries that divided Touat between the Yahmed and Sufyan factions. Each of Touat's ten districts became affiliated with one or the other: seven with Sufyan and three with Yahmed. Most Yahmed supporters were Arab, whereas Sufyan supporters were predominantly Berber (L. Rouire, 1981, p. 363). Timi, the largest district of Touat, and Tamest belonged to Yahmed, while Bouda, Tamentit, Boufadi and Zaouiet Kounta belonged to Sufyan. The division was tribal rather than racial in its basis (C. Bajolie, 981, p. 152).

Besides internal conflicts among the largely sedentary tribes of Touat, who depended on agriculture, crafts and trade and lived on dates from their palms and wheat and barley from their gardens, there were external conflicts involving nomadic Saharan tribes. Relations between Touat's inhabitants and these groups alternated between friendship and peaceful coexistence on the one hand and hostility and warfare on the other. At times, conflict and disorder spread throughout the region, exposing inhabitants to violations and dispossession. Touat occupied a strategically important position on caravan routes to and from the Sudan region, making it attractive to nomadic tribes that relied on raiding to obtain necessities. The oases consequently remained vulnerable to incursions that caused widespread damage.

According to the French historian Martin's account of social relations among the inhabitants and tribes of Touat during the eighteenth and nineteenth centuries, the region's political and social life during the colonial period was marked by disorder and recurrent conflict. In the absence of effective authority and security, inhabitants could not be confident of their personal safety or property. Nevertheless, the people of Touat united during economic and humanitarian crises.

After entering the region, the French recognised the importance of the Greater South, especially Touat, during the first half of the twentieth century. They consequently studied its political, economic, natural, demographic and social characteristics, as well as the trans-Saharan trade routes, which they viewed as a key to the wider surrounding territories.

During the colonial phase, all the province's ksour shared a broadly similar architectural pattern: narrow, winding lanes and old houses of comparable design, with a mosque and a rahiba (central square) at the centre. The square fulfilled various important functions, including festivities, traditional performances, and children's recreation. The earliest spatial transformations began in the early twentieth century with the arrival of the French administration, which established military administrative posts and transit centres, including the Reggane transit centre in 1920. From 1954, the French administration built several small schools, each accommodating three or four classrooms, as well as a prison for life-sentenced prisoners, a military hospital and an airfield in Reggane, another hospital in Adrar (the provincial capital and centre of Touat), and a further hospital in Gourara, now Timimoun. Prefabricated houses were also provided for military personnel working in the region. After studying the local climate, French builders made use of local clay and mud bricks alongside modern materials, including lime for finishing walls and pillars and sheet metal for roofs. They also constructed walls approximately twice as thick as those used by local residents (field survey of colonial buildings in the Reggane region, 27 December 2015). As French activity expanded, two unpaved roads were constructed: one linking Adrar in the north to Reggane in the south via the ksour of Touat, and another linking Adrar to the northern Gourara region and its principal town, Timimoun. Other secondary roads were also developed, including the route from Reggane to the Zarafil area through Taourirt, where France maintained a military base connected to work on the atomic bomb at Hammoudia, 45 km to the west.

During this phase, most of the province's ksour saw some construction outside their original boundaries, although colonial-era building remained limited. These new neighbourhoods were referred to as "berra" or "above the ksar", denoting areas outside the original settlement.

At that time, agriculture in the ksour was predominantly traditional and low-yielding, intended mainly to provide households with basic produce from their gardens. Only small amounts of crops such as dates, wheat, barley, tobacco and henna were sold or traded. This labour-intensive traditional farming remains widespread today. Although some modern equipment has been introduced, its use is limited and has not transformed these

practices into modern mechanised agriculture. Many farmers continue to employ traditional methods despite having the resources to change, believing that doing so preserves divine blessing (baraka) in their harvests and that modernisation would remove that blessing and bring financial ruin (Mohammed Essaleh Houtia, 2007, p. 217).

Irrigation likewise relies on a traditional system known as the foggara, which allocates water precisely among agricultural landowners. Each person receives a share according to their labour or financial contribution to the system's upkeep, the latter being known locally as an "atiyya". Each inhabitant's entitlement is entered in a special register in the presence of the ksar's community assembly, leading figures and foggara stakeholders. These records take the form of scrolls known locally as "zemmam", kept by the ksar's religious scholar and secretary, who may also serve as a teacher and a person knowledgeable about the community's affairs (Abdelhamid Bekri, 2010, p. 48).

Ownership of agricultural gardens (jannat), land and houses was similarly recorded by the sheikh or religious student and recognised by the community. Customary deeds identified a garden or plot as the property of a named person and their heirs. In the absence of formal institutions, the region was governed by the community assembly (jama'a), which mediated disputes and managed common affairs. Each ksar had an assembly comprising tribal leaders and its religious scholar, responsible for religious and secular matters alike. The French colonial administration did not succeed in replacing this system. Instead, it concentrated on larger districts and appointed a qa'id to each, whose authority sometimes extended over several ksour. The authority of local assemblies and notables nevertheless continued within the ksour for years after independence (Thiyaga Esseddik, 2007, p. 139).

The arrival of French colonial rule brought substantial changes to dwelling form, building materials and the architectural pattern of the ksar. Whereas mud bricks had previously been shaped by hand into triangular forms, the French period introduced rectangular bricks made in moulds approximately 20 cm long and 10 cm wide, while retaining clay as the main material. Traditional houses had generally been arranged around two flat-roofed passage spaces. The first contained the main entrance, known as bab fam ed-dar; the second lay in the middle of the house, where the family conducted daily activities. This inner space usually ended in a recess, about one and a half to two metres long, called fam er-rukna, where clothing, bedding and other household possessions were stored. A wooden pole from the branches of a locally known thorn tree, agar, was fixed between its two main walls and used to hang valuable, winter and ceremonial clothing. A small hearth or raised feature was commonly located in the middle of the passage and used for cooking and burning firewood for warmth in winter. These two areas were associated with what the inhabitants regarded as sacred elements of the house, including the threshold, the men of the household and aromatic plants. The latrine pit, called kabini or kanif, was consequently placed away from them in a third passage area regarded as profane. This area was divided into a latrine, an animal stable (tagmi) and an open space for sitting and recreation (rahba ma'riya). Adults and children played traditional games there, including kaj, tamgattan and dama. Although a full description of these games is beyond the scope of this discussion, their social role was considerable. Played collectively across the ksar's social groups, they encouraged solidarity and close relationships while providing recreation and a way of spending free time without physical or psychological harm (Mohammed Essaleh Houtia, 2007, p. 323).

Successive waves of Berber, Arab and Black African tribes also settled in the region, contributing to a stratified society. Sharifs and tribal and district leaders occupied the highest social positions, followed by free Arabs, then Haratin and slaves. Despite such inequalities, the people of Touat shared many customs, traditions and social conventions. The region was frequently exposed to raids and attacks that destroyed ksour, gardens and foggara systems, causing considerable suffering. Ksour were therefore fortified for defence and for the protection of inhabitants and property. Surviving remains of some kasbahs reveal defensive arrangements in their walls, including towers and openings from which arrows could be fired. The kasbah was also surrounded by a ditch, locally called ahfir, and generally had a single entrance, opened during the day and in times of peace but closed at night and during war or raids.[1]

In his study of different Algerian regions, Pierre Bourdieu concluded that Berber characteristics predominated in institutions at all levels, including agricultural and pastoral settlements and marriage systems (Pierre Bourdieu and Abdelmalek Sayad, 1964, p. 32).

The essence of this culture lies in its strong communal spirit and adherence to ancestral ways, expressed in the maxim "Follow the path of your father and grandfather". Social organisation is therefore based on patrilineal descent, with social units formed around a common ancestor. Islam governs not only religious and intellectual life

but also the social, private and practical affairs of ksour society.

At the time, ksour society consisted of several population groups and social categories: Berbers (Zenata), Arabs, slaves, Haratin and Jews. The Zenata tribes were among the earliest arrivals in Touat and played an important role in trade with the Sudan region. Berber groups initially possessed considerable strength and numbers, but Arab arrivals later gained leadership and authority through their numerical predominance. The Haratin are described as descendants of slaves and free men born to enslaved women, and they undertook agricultural work and the excavation of foggara systems. Enslaved people were brought from the western Sudan during the period of the slave trade to perform labour that sharifs and free people refused. They were under the protection of Arab tribes, which sought to prevent abuses against them.

The sharifs came from northern Morocco and settled in Touat, taking pride in their claimed descent from the Prophet's household. They enjoyed high standing and were widely respected. Among the earliest sharifs to arrive was Sidi Slimane ben Ali al-Idrissi, who stayed with Sheikh Baamar at Ouled Aissa (**) in 593 AH/1196 CE and subsequently moved to his ksar at Ouled Ouchen (***), which he founded in 605 AH/1208 CE as the fifth ksar of Timi. He supervised the excavation of the first seven wells of the Ajdelaoun foggara and married into the family of the Ait Aissa tribal sheikh. He had five sons, including Ali, Abdelhaq and Aissa, whose reputation and blessing spread across Touat. Many sharifian families subsequently came to the region, each establishing a settlement, encouraged by the generosity and affection of Touat's inhabitants, who welcomed their arrival and offered gifts (A. G. P. Martin, 1908, pp. 396–406).

### 2.2 Second phase: Post-colonial period, 1962–2010

Many sociologists have examined the social changes characteristic of post-colonial societies. Georges Balandier considered such changes a particularly fruitful epistemological subject for sociology.

During the post-colonial period, Touat society was distinguished by the strength of its general social relationships, characterised by affection, compassion and solidarity, qualities that inhabitants drew from their Islamic faith (Abdelhamid Bekri, 2010, p. 20).

#### A. 1962–1974

According to the National Office of Statistics' criteria for classifying settlements, an urban unit is a continuous built-up area in which an urban population resides within a geographically defined space, irrespective of dispersed populations or administrative boundaries. An urban agglomeration must contain at least 100 buildings, no two neighbouring buildings being separated by more than 200 metres. As regards population and employment, an urban agglomeration must have at least 10,000 inhabitants and more than 2,000 non-agricultural workers, who must account for at least 57% of all workers. Applying these criteria to Adrar indicates that, although it acquired provincial status in 1974, it did not qualify as an urban agglomeration until after 1987.

**Note: These criteria remained applicable until 1987 but were subsequently changed, beginning in 1998.**

During this period Algeria adopted a new centrally planned economic system. National plans that substantially affected the economy, regional development and population movements included the transitional three-year plan (1967–1969) and the two four-year plans (1970–1973 and 1974–1977). Regional and local planning initiatives, or special programmes, also covered ten provinces, including the Oases. These plans and programmes fundamentally reshaped Algeria's economic and industrial geography through new industrial units, zones and centres. Dozens of agricultural villages were established in rural areas, while towns expanded through the development of new residential districts, road networks and economic complexes (Bachir Tidjani, 2000, p. 24).

These economic plans and programmes substantially accelerated urbanisation in Algeria and increased migration from rural areas to towns. During this phase, the urban network of many Algerian cities, especially in the north, acquired its principal characteristics. Southern towns were an exception, perhaps because isolation limited their access to these programmes or because they were subject to separate development policies designed around their particular social and geographical circumstances.

Among the policies that most visibly affected Saharan towns, especially the ksour of south-western Algeria, were agrarian reform and land nationalisation. The Algerian state introduced these measures to improve rural conditions, reduce regional disparities between countryside and towns, limit urban migration and encourage agricultural workers to remain on the land. In practice, however, the outcomes were contrary to these expectations: agrarian reform fundamentally altered rural social and landholding structures and contributed to a reduction in rural populations.

The ksour of Adrar were also affected by this policy, through the creation of individual and collective agricultural cooperatives and socialist agricultural villages. The new villages became the nuclei of small, developing towns because they contained basic urban amenities, gradually changing agricultural lifestyles and introducing farmers to a semi-urban way of life. Nationwide, around 750 agricultural villages were constructed out of 1,000 planned, generally on fertile land. Many later evolved into municipal centres, subordinate municipal branches or administrative districts with functions far removed from agriculture.

These socialist villages, established to achieve social, economic and political aims, had a strong impact mainly on the rural communities and ksour in the study region where they were built. Their distribution, however, did not follow precise criteria or a long-term urban policy.

Most were built in provincial, district or municipal centres, or in settlements close to such centres. Many consequently stagnated and retained their original form without substantial growth, either because of weaknesses in the policy itself or because of the state's subsequent shift from a socialist to a capitalist economic orientation.

Agrarian reform, implemented in the Algerian countryside and Saharan regions from 17 July 1972, was a major planned development initiative intended to develop and modernise agriculture and pastoralism while supplying services to rural inhabitants where they lived. In other words, it sought to narrow differences between countryside and towns and establish a degree of balance between the two sectors. These objectives were clearly set out in the Agrarian Revolution Charter and Law (Mohammed Soueidi, n.d., p. 107).

Algerian farmers welcomed the thousand-village project, especially after eligibility for housing was broadened beyond the direct beneficiaries of agrarian reform. The second four-year plan provided for 40,000 rural housing units and a further 60,000 dwellings through self-build schemes, extending provision to workers in self-managed agriculture and poorer farmers (Mohammed Soueidi, n.d., p. 223). This last category included the ksour of Adrar Province. The expansion was beneficial because the scattered distribution of nationalised land made it difficult to bring all agrarian-reform beneficiaries together in one location. An important limitation, however, was the concentration of agricultural villages in relatively prosperous areas. Villages were generally built where farmland was concentrated or where some indicators of growth already existed. Moreover, many architectural designs did not respond to beneficiaries' preferences. In some ksour that received agricultural villages, dwellings lacked facilities residents considered necessary, such as an animal enclosure or stable, a vegetable garden, an open space for ventilation, and a separate place for preparing traditional local dishes over firewood. Planners either failed to recognise these needs or ignored them. Some early designs had been borrowed from European countries before the practical requirements of farmers were considered in relation to local natural, economic and sociocultural conditions (Mohammed Soueidi, n.d., p. 224).

**B. 1974–2010**

Until approximately the end of the first decade of this period, southern Algeria, including the steppe regions of the High Plateaux and the Sahara, remained relatively sparsely populated. Administrative headquarters of districts and provinces may be considered steppe or Saharan urban centres influencing their surrounding urban and rural settlements (L. Rouire, 1891, p. 54). Adrar is a prominent example. Its urban settlements have experienced marked population growth over the past twenty years, partly owing to high natural increase. They have also attracted migrants through local development investment and programmes, and the expansion of administrative services after the region ceased to depend administratively on Béchar. More recently, Adrar has become an investment destination in the energy and hydrocarbons sector, with numerous national and international gas and oil companies operating in the region.

Adrar became a province under the 1974 administrative division. It included Gourara and Touat, formerly part of Saoura Province, and part of Tidikelt, formerly attached to the Oases Province. The In Salah area of Tidikelt remained attached to Tamanrasset, which also became a province under the 1974 division. This distinction matters because In Salah, like Adrar, is characterised by the presence of foggara irrigation systems.

Following the administrative division of 1984, Adrar Province comprised 11 districts and 28 municipalities. From 1987, it experienced economic and social changes similar to those in other southern provinces. Development plans supported projects in several sectors, particularly the economy, contributing to physical expansion as the population grew and public services improved. Most ksour expanded accordingly, with changes in their size, form and urban structure. These changes were frequently accompanied by organisational, social, economic and urban problems, partly because development policy did not sufficiently account for

the distinctive character of these settlements.

One of the principal urban policies implemented in the ksour was the improvement of the surrounding built environment. Under this scheme, residents received financial assistance to replace mud-brick external walls with cement walls, with attention to road width. The policy was only partly successful because its coverage was incomplete, planning was imprecise, and demolition and construction debris caused disorder and problems in the built environment.

State support for rural housing across the province's ksour also encouraged outward expansion into new small suburban settlements with certain essential services. It contributed to changes within the historic ksour themselves, where cement buildings became interspersed among traditional mud-brick structures.

3. Factors in the Emergence of the Ksour of the Algerian Sahara

Touat, in south-western Algeria, contains settlements resembling an archipelago of islands scattered across a sea. Several factors encouraged human settlement there, although they were not primarily environmental, since the harsh climate tended to repel rather than attract inhabitants. Settlement in the ksour was also shaped by less tangible factors embedded in people's perceptions, which were not necessarily expressed openly but appeared directly or indirectly in patterns of settlement and building forms. These factors were rooted in the collective consciousness of the settled community (Thiyaga Esseddik, 2007, p. 139).

**3.1 Security factors and stability**

In his book Al-Qawl al-Basit fi Akhbar Tamentit, Ibn Baba Haida writes: "Know that our Touat is a land of scarcity and little abundance, yet of blessing, contentment, security and well-being, where worship, spiritual discipline and asceticism are possible. This is why saints and righteous people have been numerous there. If material provision is scarce, security and faith abound. Among life's blessings is that God grants you what suffices and withholds what would lead you to excess; there is great virtue in sufficiency and freedom from the pursuit of abundance" (Ibn Baba Haida, 1988, p. 11).

As settlement shifted from inside the kasbah to areas outside its walls, tribal warfare ceased, and inhabitants adopted modern means in various aspects of life, the old kasbah form lost much of the defensive function for which it had been constructed. The ksar therefore expanded and changed in both form and social function. These factors, together with population growth and increasing cultural contact with the outside world, produced a social structure combining past and present. Despite physical expansion, the ksar has retained a notable sense of safety. Visitors to its neighbourhoods may observe doors left open, especially in the historic quarters of the province's ksour. This practice is less common in modern extensions, except in houses occupied by large families. Outsiders are also readily recognised because the inhabitants of an individual ksar generally know one another well.

**3.2 Movement of trade caravans**

The towns and ksour of Touat evidently developed along trans-Saharan routes used by trading caravans, travellers and pilgrims, or as stopping places where they could obtain shelter, rest, food, water and pasture for their camels. Caravans could purchase supplies, especially dates, in local markets and replace weakened camels with healthy animals to continue their journeys (Faraj Mahmoud Faraj, 2010, p. 33).

**3.3 Sacred authority and its role in the emergence of the ksar**

Many of the region's ksour, especially older settlements bearing Zenata (Berber) names, are said to have been founded by Arab tribes associated with Sufism, asceticism and revered religious figures. Numerous ksour have names beginning with "Zaouia", followed by the name of a person renowned for piety, a tribal leader, the founder of a religious order, or someone combining these roles. Examples include Zaouiet Kounta, Zaouiet Sheikh Ben Abdelkrim El-Maghili, Zaouiet Sidi Hainoun, Zaouiet Bilal and Zaouiet Reggani. El-Kounti, Sheikh Ben Abdelkrim El-Maghili, Sidi Hainoun, Bilal and El-Reggani are personal names associated with figures who may have led tribes and established religious lodges in their ksour to disseminate learning and religion.

The arrival and settlement of a revered saintly figure often encouraged people to settle nearby in pursuit of his blessing and protection. Accounts of why and how such figures arrived differ and include legendary and supernatural elements deeply rooted in the collective imagination of the settled community. As the anthropologist Abderrahmane Moussaoui observes, this imagination surrounded the saint's arrival with an aura of legend: he might be said to have been brought by the instruction of the head of his religious order or an unknown figure, conveyed in a dream or waking vision, prompting him to leave his homeland for an uninhabited place or one without saints (Moussaoui Abderrahmane, 2000, p. 145).

Acting together, these factors encourage people to settle in the ksar and provide a sense of comfort and reassurance. They also strengthen attachment to the place, despite the absence of some essential living conditions. Inhabitants may therefore prefer to remain in the ksar rather than consider migration.

4. Forms and Classification of the Ksour

The forms and classifications of the ksour of Adrar are shaped by several circumstances and factors. Earthen architecture in its various forms developed over centuries to meet community needs. Local inhabitants experimented with different designs until they found forms that provided adequate protection from summer heat and winter cold. Climate and regional conditions thus imposed requirements to which builders adapted their structures. War and peace, as well as the degree of settlement stability, also influenced building forms, heights and materials. Historic ksour were not generally designed by professional architects and may not have been formally planned. Rather, they are the product of centuries of continuous experimentation by successive generations and the civilisations that occupied the region. The interaction of climatic, social and material factors ultimately produced a ksour environment that proved suited to these conditions.

**4.1 Forms of the ksour**

A ksar typically consists of residential units arranged as neighbourhoods, quarters, lanes and sometimes shops. It may comprise several adjacent ksour or kasbahs sharing gardens. Neighbourhoods may be separated by walls with gates that opened in peacetime and closed during conflict. J. G. Echallier attempted a morphological classification based on earlier sources and his own field study of 333 ksour. As researchers and residents of ksour communities, we briefly identify the main forms found in the region, drawing on some of Echallier's categories and our own field observations of important local ksour. This leads to the following classification.

The ksour of Touat take several geometrical forms, including square and rectangular forms, both associated with the arrival of Arabs and Islamic civilisation, and circular forms, known in areas historically inhabited by Jewish communities and considered to offer certain advantages over square and rectangular designs. Ksour can also be classified by building materials, including mud brick and clay or stone and clay mixed with salt. Other criteria include the number of towers—two, four or six—and tower form, such as a broad-based rectangular form tapering towards the top or a conical form. Towers may be tall or short. Finally, geographical location provides another distinction: some ksour stand on rocky plateaux, while others occupy lower open ground.

Despite their different forms, the region's more than 300 ksour, many of which are now neglected through lack of attention despite their significance for local identity and heritage, share several characteristics (Mohammed Essaleh Houtia, 2007, p. 343):

- They were built near foggara watercourses and contain artesian wells that can be used when necessary.
- They have defensive characteristics and are constructed using clay-based materials.
- They are adapted to natural conditions, reducing summer heat and cooling the interior; their gates are positioned against prevailing winds to disrupt airflow.

**4.2 Classification of the ksour**

Most ksour in south-western Algeria, especially in Touat, can be categorised according to several criteria: ethnicity or descent and social hierarchy, tribal affiliation, geographical position, settlement size, or association with a revered saint considered the founder or unifying figure.

The first criterion, ethnic or group affiliation, is reflected in names such as Zaghlou Arab, Tilouline Ech-Cheurfa and Titaouine Ech-Cheurfa, indicating that the earliest or numerically dominant inhabitants belonged to Arab or sharifian groups alongside other local groups.

The second criterion is tribal affiliation. Names of this type often begin with "Ouled", "Zaouia" or "Beni", the latter also being common in Béchar Province. Examples include Ouled Ahmed, Ouled Aissa, Ouled Ibrahim and Ouled Khedir; Beni Abbès and Beni Ounif; and Zaouiet Kounta, Zaouiet Sheikh Ben Abdelkrim El-Maghili and Zaouiet Reggani. Descendants of the tribes or figures after whom the last three are named still live there: the well-known Kounta tribe in Zaouiet Kounta, descendants of the historically prominent Sheikh Ben Abdelkrim El-Maghili in his eponymous zaouia, and descendants of Moulay Abdallah Reggani in Zaouiet Reggani. The latter is buried in that ksar, and his descendants are dispersed across other ksour of the province. Some deceased figures are buried in mausoleums that are visited annually.

The third criterion is geographical location. Two ksour that originally formed one settlement may, after expansion, acquire the same name with the qualifiers "upper" and "lower", as in Bouyahia El-Oulia and Bouyahia

Es-Soufla, or Brich El-Fouqani and Brich Et-Tahtani. The distinction reflects the position of one settlement on higher ground to the east and the other on lower ground to the west.

Other naming criteria refer to location, age or size. For example, Kasbat El-Janna takes its name from its position among gardens, while the “Old Kasbah” is so called because it predates other kasbahs in the ksar. Ksour are closely linked to agriculture and are frequently surrounded by gardens, which are a major economic resource and also serve as protective barriers that lessen sandstorms and hot air currents.

Martin (A. G. P.) proposed another classification, dividing ancient Touat ksour into two types:

1. Zenata Berber ksour and kasbahs, dated from the beginning of the period to 100 BCE, including Taourirt, Deldoul and Echarf.

2. Jewish ksour, dated between the years 100 and 600, including Tazoult in Zaouiet Kounta (Esseddik Hadj Ahmed, 2003, p. 44).

5. Architectural Patterns in the Ksar and Their Functions

Historically, the architecture of the ksar displayed Arab-Islamic characteristics, as evidenced by surviving remains in some ancient settlements, particularly old kasbahs and the designs of certain mosques and houses. Local architecture has retained its distinctive features despite modifications and improvements introduced to meet the requirements of modern architecture.

When constructing a house in the ksar, residents generally rely on the expertise of a skilled builder or their own experience if they possess construction skills. Personal labour and practical knowledge consequently play a central role in the construction of informally built dwellings. The work is usually carried out collectively by family members capable of contributing. Skilled builders are sometimes employed at particular stages, especially where the household lacks tools or specialised construction expertise.

The ksar’s housing displays little architectural uniformity. Traditional mud-brick dwellings stand alongside modern single-storey cement buildings within the historic fabric. This variation primarily reflects socioeconomic disparities among residents. The ksour of Adrar contain three interwoven architectural patterns within a single urban fabric, forming a connected architectural and social mosaic shaped by natural, social, cultural, religious and economic factors. The following sections describe these patterns and the forms of social life associated with each, then examine architectural development, its effects on prevailing social relations, and the links between the patterns that have emerged at successive stages of the ksar’s development.

**5.1 Historic traditional architectural pattern: the kasbah**

This is the oldest architectural pattern in the region, comprising a fortified kasbah or a group of neighbouring kasbahs forming a ksar. These settlements were often divided along ethnic or descent lines. Individual kasbahs might bear the names of the sharifs, notables or rulers who supervised their construction, the tribes inhabiting them, or their locations. As the historian Abdelhamid Bekri explains, buildings in Touat were constructed from mud bricks and clay-based stone in a visibly interconnected arrangement: house followed house and wall adjoined wall, reflecting a concern for cooperation and collective protection. Mud-brick construction also had notable thermal advantages, retaining warmth in winter and coolness in summer. Palm timber was used for roofs, doors and other building components (Abdelhamid Bekri, 2007, p. 30).

Kasbahs followed particular building patterns, generally rectangular or square and sometimes circular. The latter form was associated with Jewish communities that had settled in the region in ancient times. Nearly all the ksour they left behind were strategically situated on rocky plateaux and built in circular form, taking advantage of cooler conditions and protection from floodwaters. Arabs arriving later drew on this experience and also built kasbahs on rocky ground. A kasbah comprises a compact group of adjoining houses enclosed by an outer wall with defensive and observation towers at its four corners. A surrounding ditch could be filled with water to prevent enemy infiltration. It was generally inhabited by a single lineage or tribe sharing an ethnic identity, producing a cohesive social structure based on mutual assistance. Inside, houses were connected by long, winding lanes resembling a maze, most roofed with palm trunks and therefore dark by day as well as night. The lanes led to a single main entrance fitted with a large wooden gate, opened during the day and closed after the evening prayer. This residential space was regarded as the inviolable domestic domain of the social group or tribe inhabiting it.

Outside the kasbah lay palm groves and gardens containing traditional irrigation channels (sawaqi) and reservoirs (majin) supplied by the foggara. Water was then distributed precisely through ground-level channels

across agricultural plots. At one end of each garden stood an animal stable and a storage space for produce and fodder, locally called the mashar.

As security improved and state authority extended throughout the territory, the kasbahs deteriorated and population growth increased, the former need for dense, compact settlement diminished. The environmental benefits of the tightly interconnected building form—summer cooling, protection from sunlight, warmth in winter and reduced wind and sandstorm exposure (Kamal Jelloufa, 2002, p. 89)—were increasingly replaced by modern equipment and furnishings. Air conditioners and ceiling fans became almost universal, while houses spread across larger expanses of land, including former agricultural plots. Household heads increasingly chose spacious, multi-room dwellings (Navez-Bouchanine, 1996, p. 106).

**5.2 Modern traditional architectural pattern**

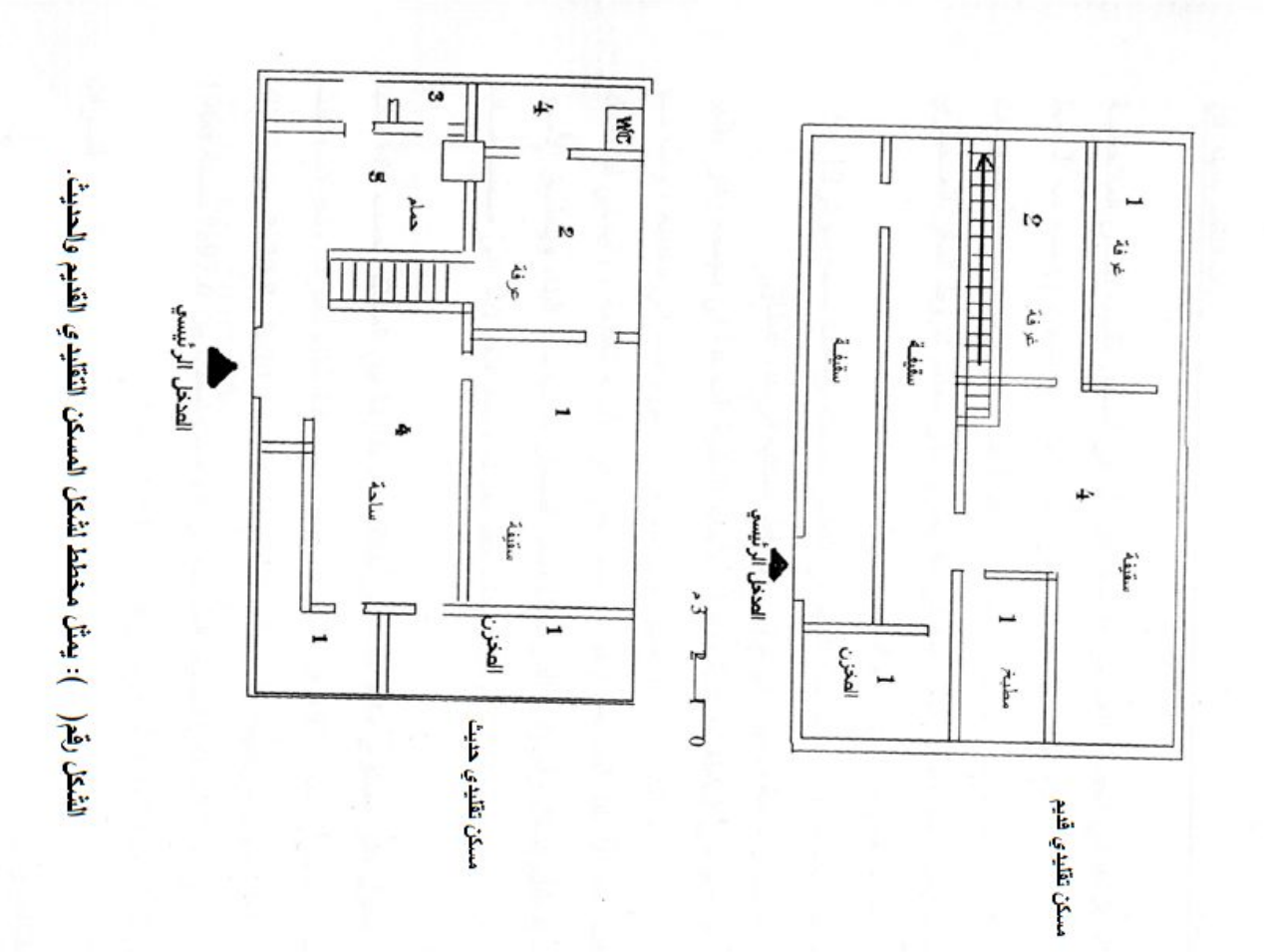
This pattern emerged as inhabitants began moving outside the walls of the kasbah or group of kasbahs forming the original ksar. The movement became clearly visible with the arrival of French colonial rule around 1920 and expanded further after independence in 1962. Population growth accompanying improved living standards meant that the enclosed ksar could no longer accommodate all its inhabitants. Compared with the older pattern, the newer fabric featured more dispersed dwellings and wider, mostly unroofed lanes. Some covered spaces remained as places of rest and meeting for older men, selected for their shade, ventilation and relative coolness in summer. Housing and streets were still largely unplanned. Initially, this outer space accommodated newcomers, outsiders, slaves, Haratin and some commoners, whereas the ksar's established sharifian, maraboutic and free inhabitants generally remained in the kasbah.

This outward movement, from the historic traditional to the newer traditional built form, was accompanied by changes in the ksar's social structure as new social groups arrived. Extended families and tribes previously living within the same kasbah also expanded and split into smaller branches that settled beyond its walls. The separation marked the beginning of a loosening of extended kinship networks, as large families and tribes were increasingly divided into nuclear households.

In this newer traditional architectural pattern, agriculture remained the principal and often sole source of income for many households. It also performed important social functions associated with the waqf system, khamasa sharecropping, agricultural guardianship (kharasa) and the foggara as a hydraulic, economic and social institution. Agriculture provided food and cash through the sale of dates, tomatoes, tobacco and other crops. Palm trees also supplied essential building materials, including fronds, fibres and trunks, in addition to food.

Later in this phase, dwellings began to change in form and construction materials (see the following figure). Modern materials were introduced, including iron beams (ferrate) to replace arches formerly used to divide rooms wider than 12 feet, the approximate length of manually prepared palm-trunk beams traditionally used for roofing. Industrially prepared timber beams, known locally as madre, and zinc sheets were also employed. These materials were easy to use, relatively inexpensive and simplified roof construction. Mud bricks also changed from hand-shaped triangular units to rectangular bricks formed in moulds, locally known as moulded mud bricks, although clay remained the principal raw material for brickmaking and construction. Lime was introduced for wall finishing, replacing hand-applied wet clay, and modern tools were adopted for the same task.

In this architectural pattern, the range of finishing materials expanded according to households' aesthetic preferences and cultural and economic circumstances. Better-off families coated walls with white clay or lime, while emerging wealthy groups used different types of paint and cement floors in place of bare earth. Housing thus became a marker of social and economic differentiation and, in the inhabitants' social imagination, a source of competition. These changes were not due solely to greater material resources; migration and contact with outsiders and returning migrants also encouraged the adoption of new and more attractive architectural forms. Unlike the dwellings of the older pattern, houses were no longer closely similar in design. Wealthier households used modern materials as circumstances permitted, including iron beams and zinc sheets, while some covered passages leading to rooms with palm timber. Choices depended on finances and residents' preferences. Some houses used iron beams and zinc sheets for every roof (Lakjaa Aek, 1997, p. 14). Interior walls were plastered with lime and coarse sand and sometimes painted in colours chosen by the owner. Carefully laid cement replaced floors previously covered with clean sand brought by donkey from the ksar's outskirts and periodically renewed when soiled.




الشكل رقم( ): يمثل مخطط لشكل المسكن التقليدي القديم والحديث.

**Figure 1.** Plans showing the forms of historic and newer traditional dwellings.

### 5.3 Modern architectural pattern

This pattern spread through the ksar's extensions and outskirts. The transition from historic to modern building initially produced mixed construction, with reinforced-concrete columns and mud-brick walls intended to suit the local climate. Later, clay was abandoned entirely in some dwellings, resulting in construction made entirely (100%) of cement-based materials. The year 1987 appears particularly important in this change in building materials. With the spread of cement, houses lost some of the traditional character that had reflected owners' tastes and specific cultural needs. Instead, ksour housing increasingly followed relatively standardised designs based on criteria external to the local community. Modern extensions frequently departed from traditional models in layout and materials. Hand-made mud bricks gave way to cement blocks or fired bricks, displacing the older hand-formed units that had long predominated in ksour architecture.

The adoption of modern fittings in place of traditional locally sourced materials was accompanied by changes in the functions of domestic rooms. Rooms became more specialised: one near the entrance was assigned to receiving guests, others to sleeping, storage and cooking, together with modern toilets. This brief account shows how housing and its interior organisation were influenced by the community's economic and social

circumstances. Ksour dwellings underwent extensive changes in size, location, furnishing and materials. These changes were also linked to younger generations' new perceptions of domestic space, their wish for change and their adoption of new practices. The modern pattern was particularly associated with relatively higher socioeconomic status among prosperous families, whose cement-built houses featured tiled floors, painted walls, piped drinking water and modern furniture and facilities. Modern toilets and bathrooms were among the most significant innovations compared with older dwellings (Janus Bachinski, p. 25).

**Second: Urbanisation in Ksour Society—Causes and Manifestations**

In Ibn Khaldun's view, nomadic societies precede urban societies because nomadism is an initial stage in human life. Humanity progresses towards urbanisation and development through the experience accumulated over time and successive generations. Early life centres on necessities, followed by wider needs, comforts and eventually luxury, prompting changes in various spheres, including the construction of villages and towns, the planning of settlements, the establishment of industries and the development of systems of organisation (Idris Khedir, 2003, p. 155).

The following discussion therefore examines the factors responsible for urbanisation in ksour society and the signs indicating that the ksar is undergoing urbanisation, including the spheres in which this process can be observed.

1. Factors Driving Urbanisation in Ksour Society

Urbanisation is one manifestation of a society's growth, development and transformation. It also involves a shift from a traditional way of life towards one that is more developed, complex and modern, insofar as everyday lifestyles and practices change.

Several important factors contribute to the emergence of urbanisation in southern towns, particularly the ksour:

1.2 Urban policies pursued by the state through local authorities in different sectors, including environmental improvement and the restructuring of ksour through facilities and infrastructure suited to contemporary requirements.

1.3 Willingness to urbanise, reflected in inhabitants' desire to change existing architectural and urban patterns because older forms may no longer meet contemporary living needs and preferences.

1.4 Demographic growth. The region's ksour experienced substantial population increases as living and health conditions improved following earlier periods of famine and deadly disease. Historic dwellings could no longer accommodate growing households, prompting residents to build larger and differently designed houses outside the old ksar, better suited to contemporary requirements.

2. Reasons for the Delayed Urbanisation of the Ksar

The main factors contributing to the delay in urbanisation include:

**2.1 Natural conditions, particularly a harsh climate that strongly discourages settlement.**

2.2 Regional imbalance created by colonial policy, which left insufficient urban infrastructure and facilities to attract residents.

2.3 Weak urban development policies after independence, when attention focused on coastal and some inland towns while southern towns received little or none.

2.4 Social isolation arising from geographical location, which limited interaction with other communities, or from restrictions imposed by colonial rule or by the community itself for political, economic, social or cultural reasons.

2.5 Attachment to the old and fear of change. Some social groups resist new practices and advocate preserving inherited ways of life.

2.6 Population heterogeneity. Differences in age, sex, education, social standing, class and religion can produce divergent interests, social divisions and resistance to change.

Another factor was the physical deterioration of the ksour caused by natural forces such as rain and wind, which compelled inhabitants to move from the historic settlement into newer residential areas.

Some people accept innovation, while others reject it. Acceptance depends on its type, form and importance to society. Innovations consistent with existing values and cultural elements are more readily accepted than those perceived to conflict with them. Tangible changes, such as new technologies, may be adopted more rapidly than intangible changes to language, values, customs, concepts or religion. For example, premarital sexual relations are rejected in Arab society because they conflict with prevailing values and religious law, whereas household

technologies used by women may be accepted because they do not conflict with family and cultural values. Every society contains both “innovators” and “conservatives”, who differ in their responses to social change and innovation.

3. Manifestations and Domains of Urbanisation in the Ksar

### 3.1 Manifestations of urbanisation

Some aspects of urbanisation become clearly apparent when we consider ksour society’s attempts to adapt to urban ways of life and living conditions. Although this society was initially relatively homogeneous, the transformation has exposed it to substantial differences that can be difficult to understand and accommodate. The demands of life in an urban setting nevertheless compel individuals and families to adapt to new patterns, despite the problems urbanisation creates for ksour communities.

Several new features indicate that the community has begun to undergo urbanisation affecting major social, cultural and architectural domains. These manifestations can be summarised as follows:

- Changes in the ksar’s built environment and the outward movement of its residential space.
- Changes in dwelling type and form, from mud-brick housing to cement or fired-brick construction, and from small dwellings with few rooms and limited modern facilities to larger, multi-room houses equipped to contemporary standards.
- Changes in social relationships among individuals and groups within the ksar.
- Greater cultural openness among inhabitants through cultural interaction and exchange.
- Women’s increased participation in education, including advanced levels, leading to employment outside the home.
- Changes in some aspects of the ksar’s social organisation, including the family, marriage arrangements, customs and traditions, and individual social status.
- Access to educational opportunities and greater equality of opportunity among individuals from different social groups within the ksar.
- Provision of social, recreational and cultural facilities, including electricity, town gas, sewerage, a hall for cultural activities, a neighbourhood sports ground, a medical clinic, paved roads and various communication services.

According to urban studies in this field, three important causes of change can be distinguished. The first is the inevitability of change: social change is characteristic of every society, and no society can be conceived as entirely static. The second is openness to the outside world, and the third is the desire for change or willingness to accept it.

### 3.2 Principal domains affected by urbanisation

In respondents’ views, the domain most affected by urbanisation was the built environment (97%), followed by culture (73%), religion (48%), social life (43.50%) and, finally, the economy (31%). These results appear reasonably plausible: the physical and material environment can change rapidly and visibly, whereas patterns of thought, behaviour, customs and traditions—that is, the components of culture—tend to change more slowly, particularly in conservative communities.

Consistent with the preceding discussion and the observable circumstances, the findings from the sample in the previously mentioned study showed the built environment as the most affected domain (98.50%), reflecting extensive suburban expansion around the ksar. Culture followed (89.50%), reflecting residents’ contact with other cultures (acculturation) and girls’ access to schooling and advanced education, whereas previously they had often been required to stop after primary education or attend only Qur’anic schools. The religious domain followed at 85%.

4. Changes in the Built Environment

### 4.1 Spatial dynamics of the ksar

Population researchers have considered this phenomenon a form of migration involving a change in an individual’s or group’s place of residence from one area to another within the borders of the same country. It is therefore a type of internal migration, understood as the movement of people or groups between locations within a society. Internal migration generally involves lower costs and fewer entry and exit difficulties; it may also involve flows in opposite directions, including outward movements from areas that otherwise attract population.

This account of internal migration is applicable to recent developments in the ksour of Adrar Province. Around almost every ksar there is now a relatively recent modern built-up area, generally planned and characterised by wholly cement-based buildings and urban facilities. These extensions are also associated with new forms of social relationships that differ from relations within the historic core, including neighbourly ties founded on different criteria.

### 4.2 Architectural pattern most suitable for climatic conditions

**Table 1.** Type of housing most suitable for climatic conditions.

| Responses | Frequency | Frequency percentage | Valid percentage |
|---|---|---|---|
| Historic mud-brick | 23 | 11,5 | 11,5 |
| Newer mud-brick | 99 | 49,5 | 49,5 |
| Cement | 78 | 39,0 | 39,0 |
| Total | 200 | 100,0 | 100,0 |

The table indicates that mud-brick dwellings, both historic and newer, are considered the most appropriate housing type for a climate characterised by intense summer heat and severe winter cold. Clay and mud bricks are described as limiting the penetration of solar heat, thereby moderating indoor temperatures in summer and winter. When asked which architectural pattern was most suitable for the climate, the highest proportion of respondents selected newer mud-brick housing, reported in the text as “,549%”. Recent changes to this type of dwelling and its materials have allowed it to combine traditional and modern features. Cement housing came second at 39%. Modern cement dwellings have become popular, particularly among younger people preparing to marry. Young men are often expected to build independent cement houses even when their financial circumstances are difficult, partly because of social expectations and the desire to demonstrate status. Wider availability of modern cooling equipment may also have reduced young people’s interest in mud-brick housing. The historic traditional pattern is now rarely chosen, despite the text’s assessment that it is the most climatically suitable: its materials are 100% locally sourced, the houses are adjoining, and the narrow roofed lanes help moderate indoor temperatures.

### 4.3 Most suitable architectural pattern in social terms

**Table 2.** Architectural pattern considered most suitable in social terms.

| Responses | Frequency | Frequency percentage | Valid percentage |
|---|---|---|---|
| Historic pattern (kasbah) | 59 | 29,5 | 29,5 |
| Pattern extending beyond the kasbah | 52 | 26,0 | 26,0 |
| Modern spacious pattern | 89 | 44,5 | 44,5 |
| Total | 200 | 100,0 | 100,0 |

The table shows that the largest share of respondents (44.5%) considered the modern architectural pattern the most suitable socially. Its more dispersed houses and wider streets allow greater personal freedom, with weaker neighbourly ties and social relationships that differ from those in the older and newer traditional patterns. Most respondents were young, and younger inhabitants increasingly preferred to conduct their lives without interference from other individuals or groups. The modern pattern facilitates departure from customs and practices no longer favoured by some inhabitants, partly because houses are not attached and streets are wider than in the old kasbah; these spatial characteristics influence behaviour and relationships. Another 29.00% considered the newer traditional pattern most suitable, since the adoption of modern building materials and improvements had allowed it to combine features of the historic and modern patterns. The smallest group, no more than 26.00%, preferred the historic traditional pattern, seeking to preserve established ways of life. Its adjoining houses and narrow streets support stronger social ties, but also encourage conformity with group expectations and direct or indirect monitoring of individuals, thereby restricting personal freedom. The deteriorating condition of dwellings in this pattern has also led residents to leave them or modify them to make them habitable.

### 4.4 The form in which the ksar appears most attractive

**Table 3.** The most attractive appearance of the ksar.

| Responses | Frequency | Frequency percentage | Valid percentage |
|---|---|---|---|
| Historic pattern (kasbah) | 30 | 15,0 | 15,0 |
| Pattern extending beyond the kasbah | 59 | 29,5 | 29,5 |
| Modern spacious pattern | 111 | 55,5 | 55,5 |
| Total | 200 | 100,0 | 100,0 |

Each architectural pattern within the ksar has social and environmental advantages and disadvantages. Opinions about which form presents the most attractive appearance differ according to individual preferences. Among respondents in the present study, the modern, more spacious pattern was generally favoured because its streets are wider, its contemporary buildings are planned, essential facilities are available and cleanliness is easier to maintain than in the older and newer traditional patterns. Thus, 55.50% considered the modern pattern to present the ksar in its best form. Another 29.50% preferred the newer traditional pattern, perhaps because it combines characteristics of older traditional and modern housing. Only 15.00% favoured the historic traditional pattern represented by the kasbah. This relatively small proportion may be understandable because many kasbahs have become abandoned ruins owing to deterioration caused by rain, wind and the movement of residents towards what they consider better modern living conditions outside the kasbah walls.

### 4.5 Current condition of the ksar's built environment

**Table 4.** Current condition of the ksar's built environment.

| Responses | Frequency | Frequency percentage | Valid percentage |
|---|---|---|---|
| Organised | 24 | 12,0 | 12,0 |
| Not organised | 58 | 29,0 | 29,0 |
| Somewhat organised | 118 | 59,0 | 59,0 |
| Total | 200 | 100,0 | 100,0 |

Direct observation shows the ksar as a mosaic of mud-brick and cement structures, with the latter increasingly replacing the former through residents' decisions or state intervention intended to improve the historic settlement. Municipalities have pursued a policy of improving the built environment, involving the demolition of older mud-brick houses, their replacement with cement buildings and the creation of larger open spaces within the ksar. Unfortunately, the policy has also affected kasbahs in some settlements, despite their status as both tangible and spiritual cultural heritage. The text refers to Table 7 concerning the ksar's current condition. According to 59.00% of the sample, the ksar is "somewhat organised" architecturally because it contains three patterns—the historic traditional, newer traditional and modern forms—as noted earlier. Their overlapping and intermingling within a single urban fabric, however, make the settlement appear less than fully organised. Residents of the older mud-brick areas often demolish their houses and rebuild in cement, while mud-brick houses can also be found among cement buildings in newer extensions, creating the observed mosaic.

### 4.6 Prevailing architectural pattern

The inhabited parts of the ksour now fall mainly into two architectural patterns, because the oldest pattern—the kasbah—has largely been abandoned. Some former homes have become animal stables or stores for fodder and agricultural produce. Their mosques may still attract residents on annual religious occasions, such as the Night of Power during Ramadan, while some houses formerly occupied by people regarded as pious or blessed remain places visited in connection with weddings and other customary occasions. The newer traditional mud-brick pattern, which extended beyond the kasbah, is widespread in the older parts of the ksar and still accommodates a large share of residents. It has recently declined, however, as cement construction gains popularity, particularly among younger people. Modern cement housing extends beyond the newer traditional areas; these planned extensions contain some urban facilities. Social ties there differ from those in the two traditional patterns because

neighbourly relationships follow different criteria, while household organisation, marriage and relationships between families have also changed.

**Table 5.** Prevailing housing type in the ksar.

| Responses | Frequency | Frequency percentage | Valid percentage |
|---|---|---|---|
| Historic mud-brick | 26 | 13,0 | 13,0 |
| Newer mud-brick | 84 | 42,0 | 42,0 |
| Cement | 90 | 45,0 | 45,0 |
| Total | 200 | 100,0 | 100,0 |

The table on respondents' dwelling types shows that 45% lived in cement houses and 42% in newer mud-brick houses, two relatively close proportions. Nevertheless, cement construction has increasingly been preferred, while interest in building with local mud bricks has declined, especially among younger people, despite the material's suitability for the region's climate.

**Conclusion**

The research aimed to examine the architecture of the ksour of Touat in Adrar Province, one of Algeria's regions most widely associated with this historic architectural heritage. We sought to offer an objective analysis of the main effects of urbanisation on traditional architecture, following outward residential movement from the ksour and the implementation of various urban policies in the region.

The study examines the ksar's internal and external spaces and their architectural patterns, seeking to identify physical changes and spatial dynamics. The surrounding environment shapes perceptions as forms of adaptation; once formed, these perceptions can themselves contribute to changes in the environment and lived space. Individuals create spaces suited to their own perceptions and needs while also seeking to adapt to their new surroundings.

Our principal finding is that ksour society has undergone substantial physical and social change in recent years.

The study also identified factors underlying the emergence and development of the ksour, reasons for delayed urbanisation, and influences that encouraged their openness, growth and urbanisation, while examining the distinctive social and architectural characteristics of these communities.

Through general analysis of the ksar and field investigation in particular, we found that new architectural patterns have emerged as a result of urbanisation and structural changes affecting the ksar's architectural heritage.

The modern architectural pattern has spread extensively across the ksour, accommodating a substantial share of inhabitants as their built-up areas have expanded. Greater contact with the outside world has affected various spheres of community life.

The study also examined the direction, speed, forms, factors and sources of urbanisation on the ksar's outskirts. These processes have generated social dynamics leading to rapid changes in both the built environment and social structure.

A further important finding is that urbanisation has brought several changes to the ksar, with its pace accelerating particularly over the past two decades and affecting its historic architectural heritage.

One objective of this study is to formulate recommendations based on its findings. Urbanisation has changed the physical structure and social organisation of the ksar, but these transformations must not extend to the destruction or erasure of historic kasbahs. Coordinated local and national efforts, including intervention by state institutions, are therefore required to save the remaining heritage. We appeal particularly to the Ministry of Culture and Arts and its responsible bodies, including the regional cultural parks and the Algerian Centre for Earthen Built Cultural Heritage (CAPTERRE), based in Timimoun Province. Established for this purpose, the centre is tasked principally with inventorying, classifying, conserving and restoring earthen-built cultural heritage, especially the kasbahs found across southern Algeria, east and west. Although it has undertaken preservation efforts since its establishment, these remain modest relative to expectations, the areas reached and the number of kasbahs restored or conserved. Its activity has largely remained within Timimoun and the surrounding region, despite its national mandate wherever this type of heritage exists.

It is therefore time to pose further questions that may guide our own or other researchers' continued investigation of ksour architectural heritage. More detailed scientific study is needed to clarify poorly understood aspects, track ongoing transformations and identify ways to preserve and develop this historic heritage. Such work should also examine international experiences of adapting earthen heritage to contemporary requirements while respecting its environmental, natural, social and cultural characteristics.

All concerned should expand rigorous urban-sociological, anthropological and architectural research on these and related questions. Such investigations can document the authenticity of historic architectural heritage and the communities that created it, while identifying developments and pressures that threaten its survival. As researchers belonging to these communities, we must examine their past, analyse their present and seek to understand or anticipate their future.

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**Notes**

[1] * A term used for one of the social groups making up ksour society. Its members are described as having physical characteristics resembling those of Black African populations, including skin colour, facial features and hair. Several accounts exist concerning the group's origins and the origin of its name