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Revisiting Architectural Interventions and Considerations of the Burnt City Residents in the Fourth Settlement Era based on Archaeological Excavations

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Abstract

Studying and exploration of the findings of ancient era, provides historical insights about that era, and alters the human readings of bilateral relationship between man and life environment. The ancient area of Burnt City –(Shahre-Shokhteh) is one of the border civilizations of the Hirmand River Delta in present-day in Sistan and Baluchistan province. This region has continued its life in 4 historical eras and is considered to be one of the key civilization centers in the third millennium BC. This article was divided into two sections, including introduction and analysis of both architectural and urban data which sought to answer the question of what architectural considerations and interventions have the members of ancient civilizations had

in their urban environment of the Burnt city as a case study.

In the part of data analysis, the way that the residents of the Burnt City had dealt with the problem of residence, architecture and urbanism has been studied with regard to the archaeological documents and evidence. More than any other documentations, this part relies on the published images of this ancient area recorded by UNESCO during the world registration of the Burnt City and then the maps of the ancient city have converted to the applicable 3D images. In this section, having adapted the main features of Sistan's region to the architectural and urban findings arisen from the archaeological excavations, it was attempted to illustrate the type of encountering of the inhabitants of Burnt City with the context.

Keywords: *Burnt City, Region, Architecture, Urbanism.*

Introduction

The Burnt City is composed of low-lying hillsides, located in 56 kilometers from Zabol City and is

adjacent to one of the most ancient deltas of Hirmand River that can be visualized as an incomplete trapezoid shape with internal holes and attached flat

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lands (Seyyed Sajjadi, 2007, 20).

Until the comparison of Shahdad region with Arteh, the Burnt City was considered to be located in the same civilizational center. The current name of the Burnt City is a new name and with a history of less than two centuries. Some have chosen the term “the burnt city” because the locals of past residents used to call it that name. Others attributed the ash to the surface because of the degeneration and naming of this on the burnt city, and another group believed that the burnt city’s name has changed from the word of Shahre Shooteh in the sense of the great. But the first aspect of the tender seems to be more valid (Ibid).

Population studies in the Burnt City like other historical sites are based on the population studies in contemporary villages and the scope of the site, determines the possible population of the region. Usually this population is calculated for various places in each hectare to be between 50 to 300 men. Marizio Tozi suggested a population of 200,000 for each hectare of Burnt City. Accordingly, in the first era, the 15.5 hectares of the city was estimated to have a population of 3000, in the second era for 40 hectares this number is supposed to be 5000, in the third era 16000 and finally at the last era the population is estimated to be 1000 (Tozi, 1997). The Tozi’s model was rejected by the first systematic assessments of Burnt City in 2005. In this new model, the scope of city was increased to 20, 100, 80 and 5 hectares, respectively (Mortazavi, 2014, 18).

In the study of the causes of collapse of a great civilization like the Burnt City, a number of hypotheses exist. One of these hypotheses is the diversion of the river (Seyyed Sajjadi, 2002, 9). However, this theory, due to certain reasons, can be doubted. Because usually after the change of river’s direction, the residences do not disappear and are merely replaced. While after the collapse of Burnt City from 2200 to 550 BC, there is no evidence of the beginning of urban life and transmission of civilizational center along the redirected riverfront

(Barimani, 2004, 84).

Burning resulted from the war with Ayan fighting ranchers is another hypothesis of the collapse of the Burnt City (Seyyed Sajjadi, 2002, 48). The hypothesis of the invasion of the fighting nations is also rejected on the assumption that the arrival of the Aryans on the Iranian plateau was a gradual process that has occurred over time.

Another hypothesis is raised, referred as the occurrence of fire in the whole city and consequently its destruction.

In this hypothesis the slight volume of ash discovered on the surface, rejects the occurrence of citywide fire (Mortazavi, 2014, 18).

Burnt City as the center of the civilizations of Hirmand River was located between two renowned developed civilizational centers of third millennium BC, i.e. Mesopotamian and Elamite civilizations in the west and Harap in the east.

The seals of Burnt City which have been found in some graves reveal the complexity of internal and international relations in this region. Using seal in this civilization in this part of history is known as the name and signature. These seals are made of various substances depending on the status of their users and the social class to which they belong.

When comparing the information of the Burnt City with other regions like Tappeh Ganvar or southern region near Oman Sea and Persian Gulf or Shahdad in Kerman, we find that there is a similarity among the findings of Shahdad and Burnt City. This indicates that there has been a close relationship between these regions in the past. Although this may not suggest the existence of an immediate relationship between these civilizations, it does indicate that at least that both of these civilizations were in relation with a third center to which they borrowed the origin or the idea of the construction of the discovered works (Moqaddam, 2007, 4).

The population of Burnt City has increased markedly over a period of its life (third period of residence,

2100 to 2500 BC). This city in the middle of the third millennium BC which was known as the Bronze Age¹ was considered to be the Great Economic Juncture. This situation has led to the development and increase of the population of such centers as Bampur², Tappeh Yahya³, Jiroft⁴ and the Burnt City.

The life of Burnt City was sustained due to the existence of communicational capacity and being in the right and sustainable location with the appropriate natural conditions; therefore, the city by the assistance of this capability and the potentiality that is hidden in its context retained its process of development and responsibility (Barimani, 2004, 88). It seems that despite the existence of suitable natural conditions, the members of this civilization to be present in more suitable conditions and to form an environment that has more desirable livability; the geographical features of the region have considered solutions with the help of human interventions.

The signs of conscious interventions in the process of creating human made spaces have led the production of these spaces beyond the preliminary requirements related to the residence and raises this hypothesis that the residents of Burnt City have first built the shelter in an appropriate form as compared to the climate of the region, secondly some contemporary expressions of communal life which is beyond taking residence have been observed. The current article was an effort towards answering the question that what architectural considerations and interventions have been applied to in the environment of the Burnt City and the residents of this region by the use of which solutions have objectified the contemporary concept of architecture?

The applied methodology in this article fell into the qualitative research category. To verify the hypothesis that Burnt City has been designed at the level of residential units and to assume it as an urban complex in a conscious way, the single and the comprehensive plans of the units considering their adoption to the dominant climate of the region were

examined; moreover, the experimental tools and data were obtained to objectify this awareness.

Data Analysis

• Urban Analyses

In order to clarify the place of the discussed civilization in the ancient world, we considered the transit routes between East and West in view of the existence of other civilizations. As it is observed in Fig. 1, the presence of natural hazards like mountains and seas, has made it difficult to move from East to West. Moreover, limitation of transportation facilities has made the groups on the way to have resorts in the middle of the roads. It is the situation that makes the internal cities of Iranian plateau important. Mansour Seyed Sajjadi, who has undertaken numerous excavations in Burnt City, claimed that the discovered pieces from Shahre Sookhteh showed that this city had been the most important center of residence of all the region in the third millennium BC. The residential regions which had been faced with such an amount desire of accommodating, in fact had been regarded as the social, political, economic and cultural center of their own age.

According to the map shown in the Fig. 1, the strategic situation and location of Burnt City provides an easy route for passengers to cross from the East to the West and a convenient way to settle in.

For example, consider the hypothetical route of the movement from Harapa to Ur; there are two possible ways for this voyage. First the path that has Burnt City as its station. First one should move from Harapa to Quetta and then to Bampur or Burnt City that passes from lesser natural barriers and has been constructed on the low ground. The second route is the northern-southern routes of Burnt City which is difficult to cross due to natural phenomena like rivers, mountains and rivers.

When a place is identified suitable for permanent and temporary residence, its commercial growth is not also far from mind. Moreover, although Burnt City

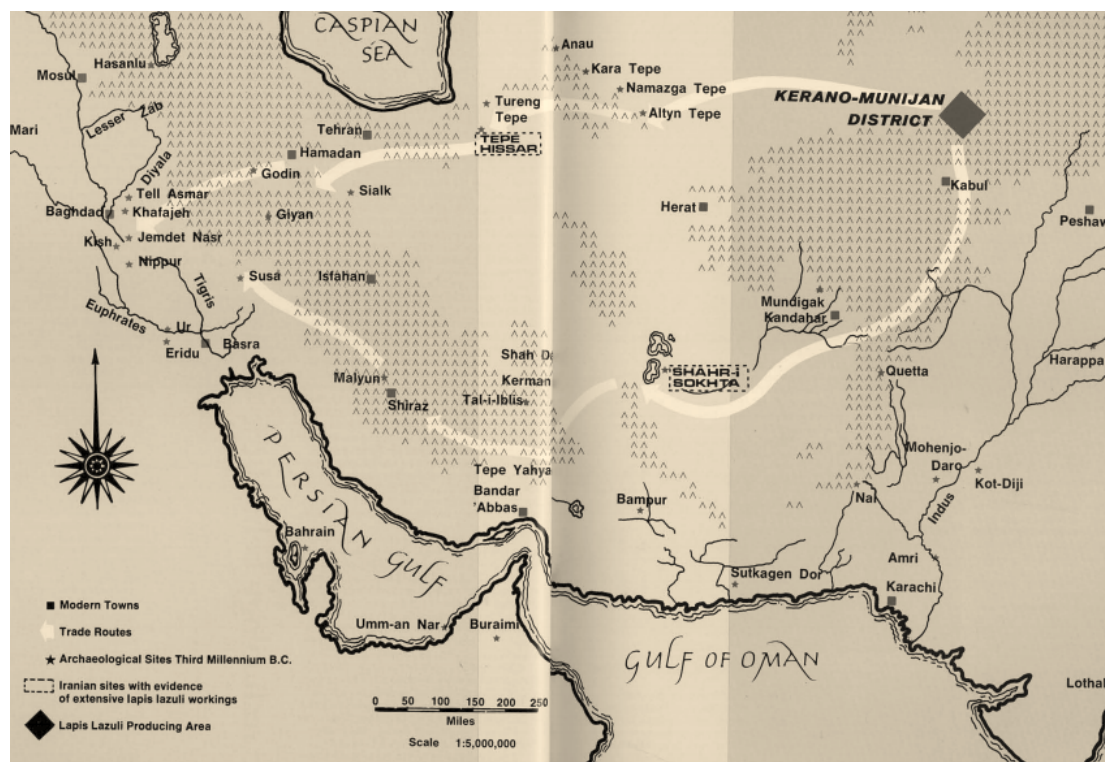


Fig. 1. The Location of Burnt City among Other Civilizational Centers. Source: Author Archive.

is distant from the banks of Oman Sea, this city like other civilizations of central plateau of Iran has been a better platform for shipping goods through water ways. This is why Burnt City can be considered as an interconnecting way with such contemporary civilizations as Harapa, Mohenjodaro, Mondiak, Bampur, Tappeh Yahya, Malyan Tappeh, Godin Tappeh, Shush, Ur and Babel.

In the analysis of scaffold and body system of the city relying on the map of the excavated regions of Burnt City, the role of 120-day winds of Sistan is notable. The 120-day winds of Sistan after entering the province from the north change their direction around Sistan from the west to east. This wind usually carries windy sands and leads to the corrosion of soil and obstruction of water canals.

Having considered at Burnt City maps, it can be found that the city founders (in general sense) have had a correct understanding of regional climate where they lived and struggled to harmonize their life world with

short term and long term needs.

In Fig. 2 the direction of wind blowing has been shown to be from northwest to southeast. If the direction of the dominant blowing wind of Sistan is compatible with the way of obstructing and clearing of the the city passages according to the Burnt City on the map, the optimal use of architectural capacities in ancient times, taken for creating the best life conditions, would be obtained considering the contextual limitations. In Fig. 3 the openings behind the intruding wind are seen. These openings whether considered in the majority of public spaces or at the entrance of mass are mostly in line with this wind. The thickness of the walls in vertical position to the wind direction are generally greater than that of aligned walls. Moreover, in some sections of the map where the condensity of cells is high and the residential units are closer to each other, the thinner separating walls are applied.

The Fig. 4 shows a regional passage. By comparing

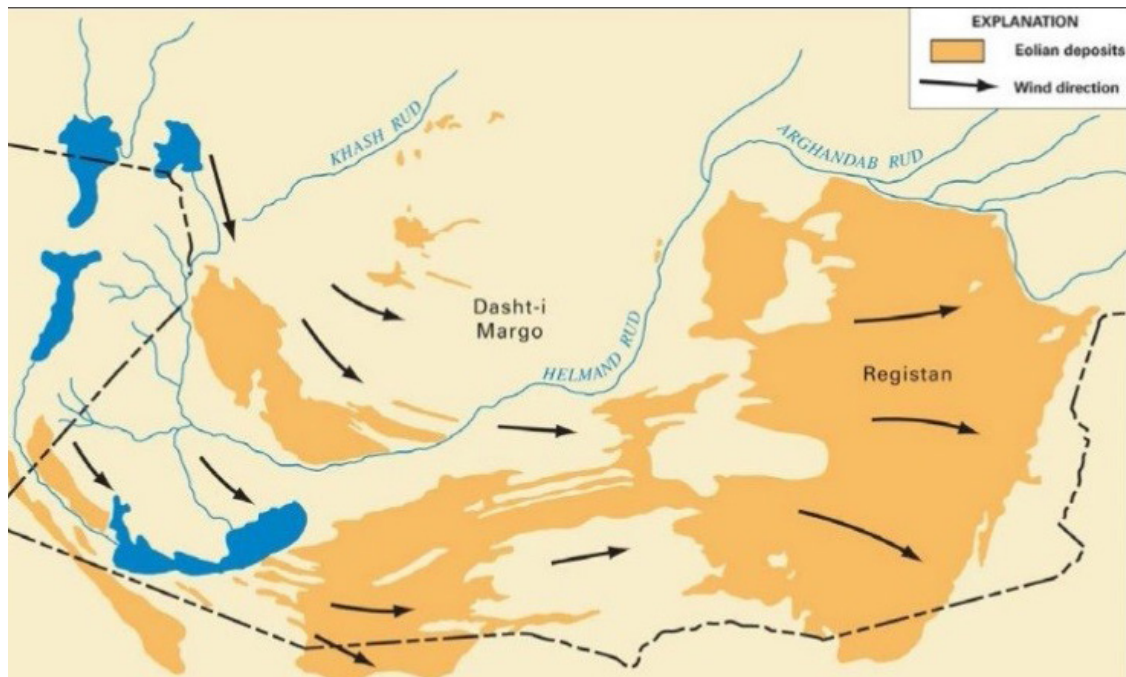


Fig. 2. Direction of the dominant winds in Siestan region. Source: <https://whc.unesco.org>.



Fig. 3. Openings as against to the wind in urban passages of Burnt City, The barriers are in vertical position to the wind. Source: <https://whc.unesco.org>.

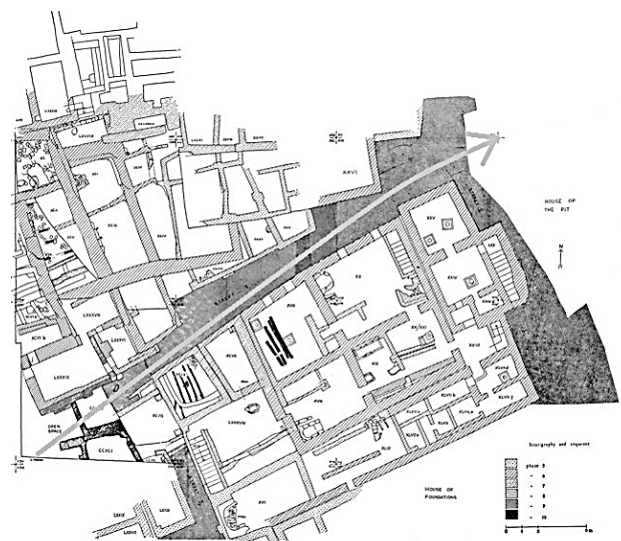


Fig. 4. The Passages and Order of masses. Source: <https://whc.unesco.org>.

the dimensions of it with those of residential units and also by taking the general urban scope, one can find that this passage had been one of the key routes and passages of the Burnt City.

This passage is just opposite to the intruding wind direction and under the shelter of residential houses

provides an interconnected way for other regions of the city. Moreover, in urban texture, the totality of city elements including alley, street and residential buildings have assisted each other in a unique order and in response to their needs. For example, as it shown in the Fig. 3, it is the existence of an order in the classification of residential complexes and units that first creates the passages and second, separates them from each other.

Fig. 5 & 6, shows the two parts of residential region of Burnt City. This section is located in a part of the burnt city that seems to be the consequence of urban development followed by the expansion of urban construction.

These images from the completely excavated parts of the Burnt City show that how residential units and masses, as mentioned earlier, have led to the specific arrangement of it in addition to creating the passages, have led to the emergence of urban public squares and spaces (on a historical and times-scale of Burnt City).

In other words, the climatic considerations in the Burnt City have revealed themselves in terms of wind influence on the urban passages and has formed the urban routes. However, paying attention to the climate in construction and the type of architecture of the buildings is also tangible. The study of house plans, passages and urban structure suggests that the residents of Burnt City had been informed of the capability and limitations of their life context, therefore the architecture of the Burnt City is the result of the knowledge of the civilization members to climate and context in which they lived (Fig. 7).

Fig. 7. The above figure shows the wind retaining wall for a complex of adjacent units. Similar walls are seen in every residential part of Burnt City. This wall retains several adjacent complexes. Observing the construction of these types of structures built based on the public interests, refers to the civil participations in the society of Burnt City. Finding that there was a collective understanding among the

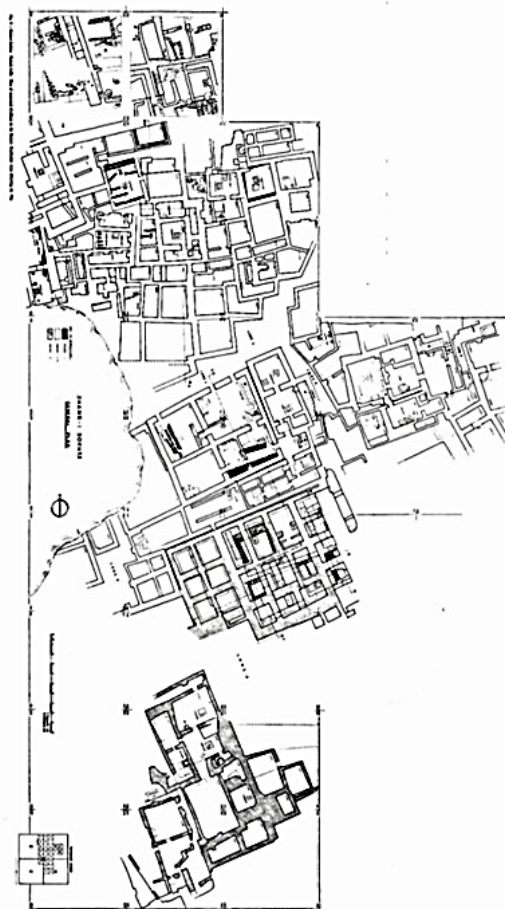


Fig. 5. An excavated plan of residential part of Burnt City.
Source: <https://whc.unesco.org>.

people of the Burnt City civilization, can approve the hypothesis of existing type of public space (merely in contrast to the private space and not necessarily what it means today).

The discovery of a related inscription dating back to early Elamite era shows the possible existence of undiscovered written laws as well as codified urban structure and organization. A city with urban water system was certainly managed by an individual or a group of individuals and urban planning has probably been undertaken by a power beyond the general people. Management of a society relying on a central system and core of power, was definitely associated with written instructions.

The Fig. 7 is a written inscription showing the text of a kind of business invoice (a commercial receipt).

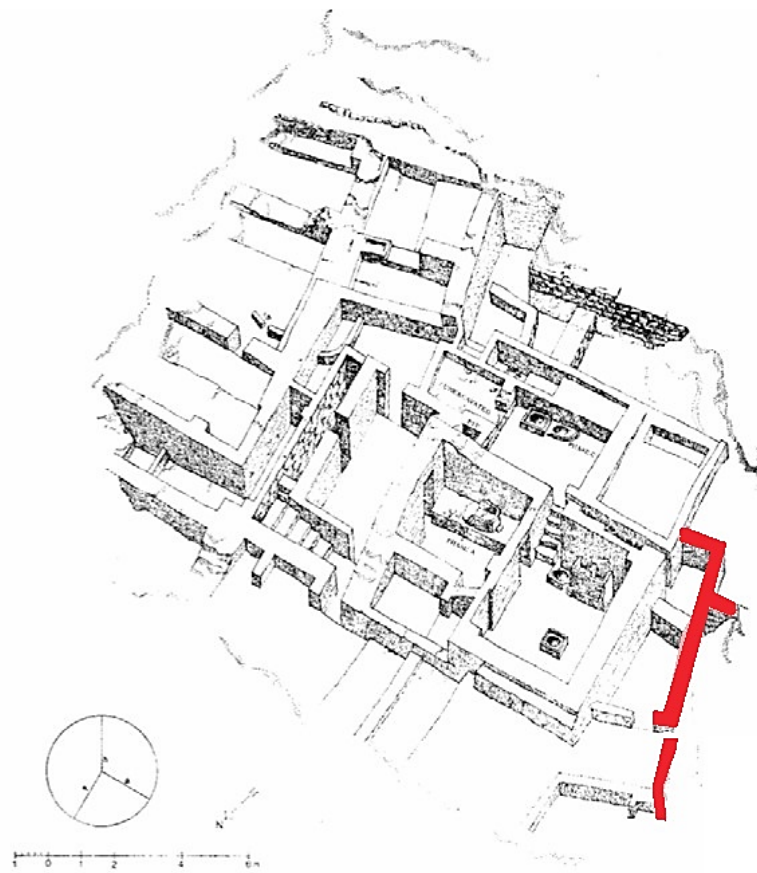


Fig. 6. The Wind Retaining Wall. Source: <https://whc.unesco.org>.

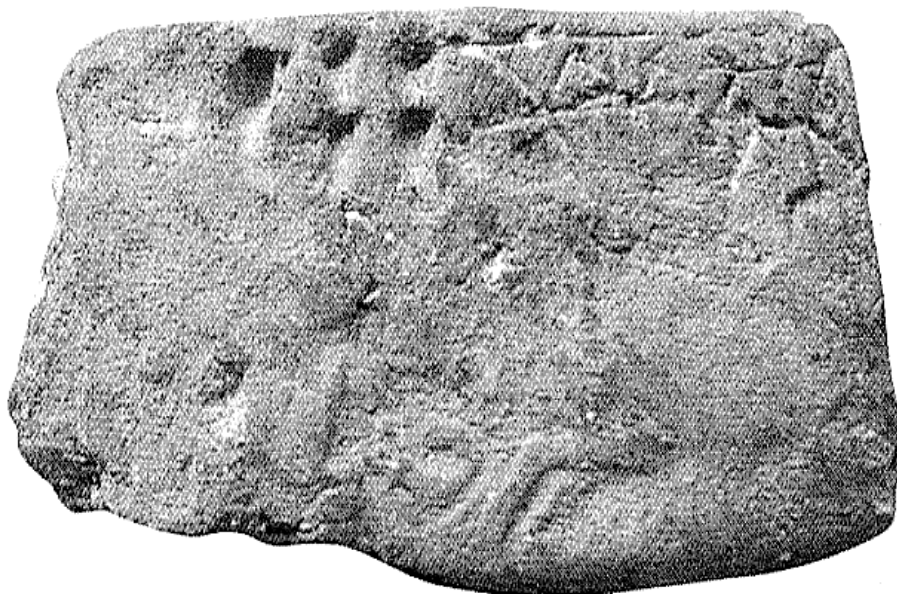


Fig. 7. Part of a Proto-Elamite Tablet inscription discovered in Burnt City, Name of good/person/institution +unknown sign+symbol of number⁵. Source: Meriggi, 1977.

This is evidence that even the partial bills were documented in this civilization. Discovering such items and inscriptions proves the possible existence of more general laws of social management. The text of this inscription is as follows:

Architectural Analyses

In addition to having kind of conscious futuristic thinking over the Burnt City urbanization, the residence of people in this city is of considerable points. Recreation of one of the residential units of the Burnt City assists us to prove this claim. The features of this architectural space considering their functions and basic human needs at present time, are reinterpretable.

The white space in Fig. 8 contrary to the blue space despite their equal area lacks column. This is why it is supposed to be open and roofless space. This is to say that the first space when entered to a house, is yard. It means the first space leading to a house is yard. Two external stairs in the plan show that the house has been built on a platform and this yard (white space) due to the difference of its height as compared to the ground of the external space (the alley) separates itself from the alley. The pink part behind the yard is separated from the yard by a number of stairs and if we suppose that the blue part is a space-roofed place⁶, it can provide a limited communicational route for the roofed space of house.

After the yard, there is a relatively small space which is defined as an intermediate place for indoor and outdoor heat exchange, or alternatively according to the common definition of Persian (Iranian) house building, it is an attempt to preserve what is called privacy.

Given what was presented herein and as it is observed in the figures, a basic hierarchy form of entry space from the most public spaces to the innermost sections is clear. This is another evidence of this claim that in Burnt city society, if one cannot mention the class of architects as it is known today, a kind of elementary

concepts can be observed in the evolution of the architectural future path according to the buildings left.

The materials of the residential units have been brick, clay wall, timber and mat. The wall of residential houses in Burnt City has been generally thick and the roofs were made of clay and straw, mat and timber, and the floor was covered by the crushed soil. The materials mentioned are still used in contemporary Sistan. Examples of Kapari structures are very common in these regions.

In Fig. 9, the movement of shadow and wall shadowing during day (summer revolution) which is the hottest day of the year has been shown. This shadow is measured based on the latitude and longitude of the region and also by considering the day and month.

As it can be seen from these shadows, at all hours of a summer's day in Sistan, the architectural solutions helped the people of Burnt City, by providing shade to adjust the outdoor air of the residential buildings. Thus, during the hottest day of the year, even at the last hours of the day, there is a percentage of wall shadowing⁷ in the yard.

Conclusion

The civilization of Burnt City in many fields like trade, use of symbol and language, separation of life and work, is considered to be a truly systematic and planned city. Analysis of architectural works excavated from Burnt City shows that the body of this city has been built based on its climatic conditions.

Reading (or interpreting) plans of Burnt City and finding urban physical signs such as the public interest and urban squares along with the archaeological finding, that the people of this civilization in various social classes have had unique seal, signature and character, show that there had been public space in Burnt City similar to the contemporary spaces.

The consequence of the conscious encounter of the Burnt City residents of Bronze Age naturally shows their learning experience from the climate. The

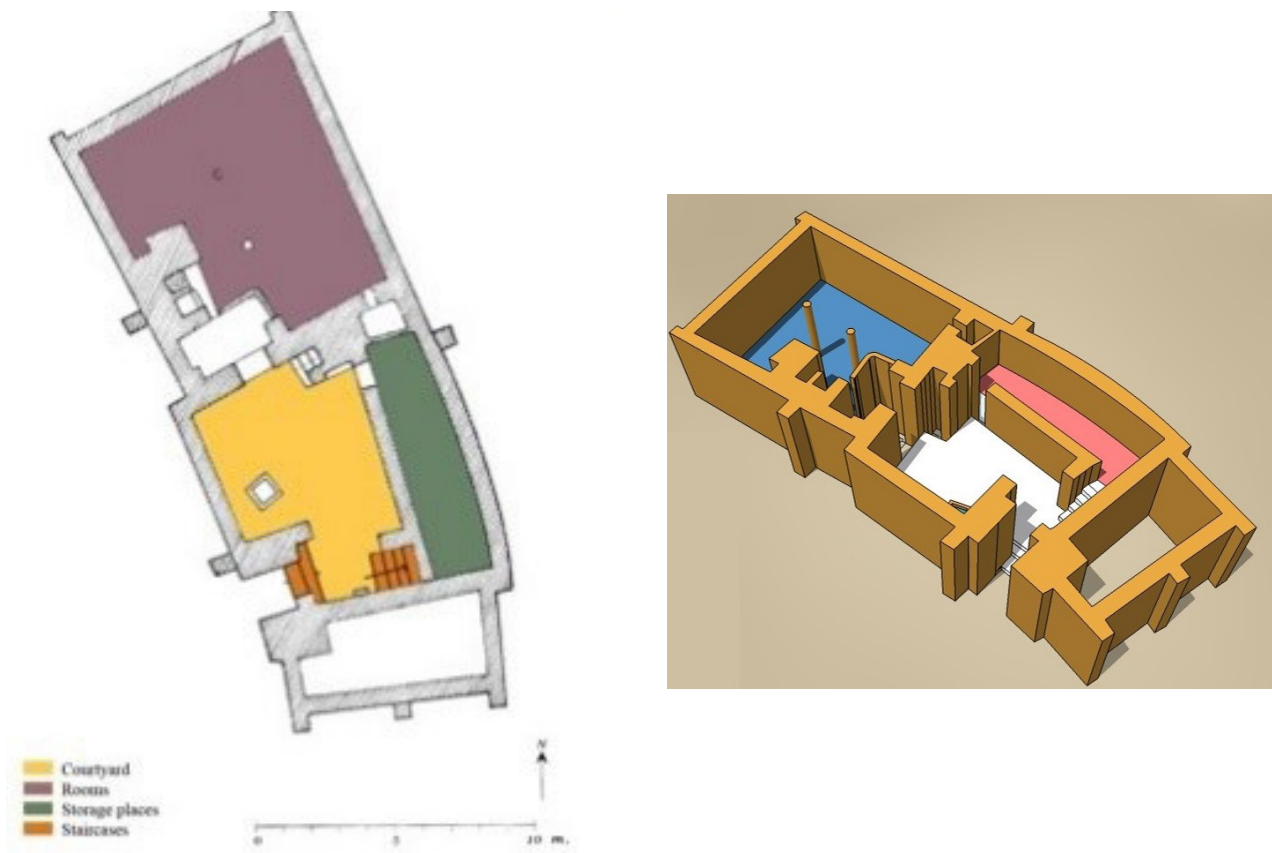


Fig. 8. Plan and 3D Image of a Residential Unit in Burnt City. Source: Meriggi, 1977.

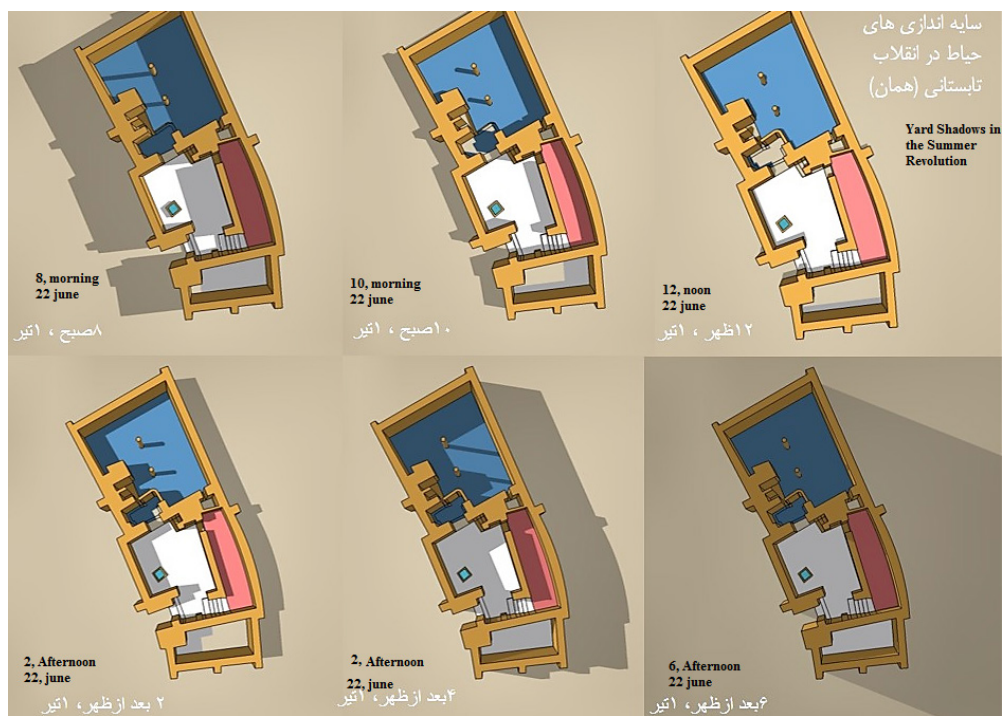


Fig. 9. Shadow pattern of residential walls on open space in Summer Solstice. Source: author.

members of this civilization have built their own environment based on the individual and collective needs and the limitations of the context. Both at residential unit and urban scale, their performance was based on their neighborhood units to complete it and form a continuous, non-singular texture.

Endnote

1. A period that begins at circa 5500 BC and continues almost to 4000 BC, it is called Bronze Age. In this period another metal is discovered.
2. Bampur is located in Sistan va Baluchestan province. The ancient site around Bampur has been discovered to be of 150 hectares wide. The archaeological discoveries in this site suggest that it belongs to the same period of Shahr-e Sookhteh and Jiroft.
3. Tappeh Yahya is an archaeological city located in Kerman Province, 200 kilometers from Kerman (Limberg-Karlovski, 1974).
4. Jiroft in southeastern part of Iran, 1500 kilometers from Tehran and almost 1000 kilometers far from southern part of Mesopotamia, that means south of contemporary Iraq is located in a wide geomorphological area, whose natural mouth opens to the Persian Gulf and the Oman Sea in the direction of the Strait of Hormuz. The mean sea level height of this region is 650 meters and from three directions of north, east and west are surrounded by high mountains. The height of mountains covered with snow reaches 4400 meters and therefore, in the whole year serves as a rich water source. It flows into the Jazmurian Quagmire after watering numerous small rivers.
5. Piero Meriggi (1977) studied the Proto-Elamite clay tablet of Burnt City. In this study, he received a sign similar to the sum of 322 and the letter h, which had previously been seen on three Elamite tablets found in Susa. For this reason, it is likely that this repetitive mark belongs to a particular institute or group of people (Seyed Sajjadi, 2002, 133). Meriggi has attributed the second sign on the clay tablet with uncertainty to a commercial good, person or an institute.
6. The directive of the plan as registered by UNESCO leaves the nature of background yard space. The map guide, available in the UNESCO World Heritage List, has not yet identified the backyard space.

7. The height of the walls is calculated based on the height of 3D volumes that exist in the pictures of Burnt City in UNESCO. Moreover, by considering the average height for humans, the usual height of the wall is considered to be 3 meters.

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