The study of the principles and methods of architectural design in the protected context of Meymand Historic Village

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In the present study, we have tried to introduce and study the architecture of Meymand historic rocky village in Iran, its relationship with the surrounding nature, and its design constraints. The research is fundamental, descriptive, and analytical. Data collection methods include the use of books and published articles, field visits to Meymand village, and interviews with the villagers. Since Meymand village has been registered on the UNESCO World Heritage Sites list, this paper seeks to study the rules and regulations set for this cultural heritage, the methods and constraints of construction in the region, as well as its core zone and triple zones, and the three different lifestyles of the dwellers. According to the previous studies, the application of the regulations prescribed by the Cultural Heritage Organization in Meymand has led to the creation of a preservative precinct in the village so that anything that would cause destruction or damage to the core zone (including damages to the visual features) is prohibited. The construction of new buildings and pathways in the core zone is prohibited, and permissible interventions are limited to restoration, revitalization, repair, change of use, change of interior spaces, and the removal of newly-established and non-native buildings (to maintain the native look of the village). Everything must be done in such a way that it does not undermine the natural environment of the zone. It is imperative to preserve the historic monuments and cultural landscape within the core zone. The construction of new buildings is forbidden in zones 1 and 2, but infrastructure, welfare, and tourism services can be established, aiming to preserve the cultural, historical, and natural values of the region. Saraghol area in zone 3 is the only area where the construction of new buildings is allowed. In any case, any new construction should be in harmony with the surrounding environment. Therefore, the design should be indigenous and limited to the surface of the earth, and the height must not disturb the skyline of the area. Besides, to preserve the cultural landscape, the indigenous construction methods have priority over the modern ones.

Key words: Historic Village of Meymand, Protected Texture, Rocky Architecture, Iran
1. Introduction

In Meymand historic rocky village, houses have been dug in the mountains (Handcrafted architecture).\(^1\) Iran Cultural Heritage, Handicrafts, and Tourism Organization (ICHTO) has introduced some regulations to protect historic monuments and sites like Meymand Village. Compliance with these regulations leads to better coordination between architecture in the present era and the surrounding nature. In this research, we first examine the three lifestyles of the local people, the architectural textures, the types of materials used, and the way the local people interact with nature. Afterwards, we will examine the regulations introduced by the Cultural Heritage Organization and the design constraints in the historic site of Meymand Village. Finally, we will propose the best solution for dealing with Meymand historic site in terms of architectural design. This solution must meet the needs of the region, be in compliance with the regulations, and prevent the distortion of Meymand cultural landscape.

There are seven registered world heritage historic sites in Kerman Province and Meymand Village is one of them. Unlike the thousands of historic sites that have either been semi-ruined or totally turned into dust, the three-thousand-year-old Meymand village is still alive and inhabited hence recognized as a world heritage site. It has also received the Mercury Prize. This village portrays particular architecture, history, traditions, and culture, as well as the way people interact with nature.\(^2\)

2. Introduction to the village of Meymand

Meymand historic village is located 36 km northeast of Shahr-e Babak city, Kerman Province, Iran. It is bounded by Khatunabad plain in the south and Mount Khorin in the northwest. The village is located between the cities of Yazd, Kerman, and Shiraz, bounded in the north by Rafsanjan and in the southeast by Sirjan. The exploration and extraction operations in the region, especially those related to the copper mine, date back 6000 years. Based on the documentation of the discovered stone artifact images by a French group, this place has a history of about 12,000 years, and many believe that the village dates back to the Achaemenes period. The texture of this village is rocky and the dwellings are holes in the mountains.\(^3\) Meymand climate is mild mountainous. It has cold and rainy winters and mild summers.\(^4\)

2.1 The relationship between the natural context and living spaces in Meymand

Meymand region, with a 120-square-kilometer area, includes three types of settlements: Saraghol (corrals), oases, and Meymand Village (with a Hand-dug architecture) that have

5 https://maps.google.com
6 The vertical wall below the edges of the cliffs (arches) in the highest row of Meymand houses; there were some rooms there where people and their flocks lived. Today, they are abandoned; Authors, 2016
different architectural features, and the local people migrate to live in these three settlements in three phases.

Chart 1: *The 3 types of settlements in Meymand region*7

2-1-1-Saraghol: In the first four months of the year (mainly spring), the people live in the Saraghol. The Saraghol is a semi-underground structure, safe from the winds and heavy spring rainfalls of the plain.8 In each Saraghol, there are several houses called “Markhaneh”,9 with one-meter-thick bases made of stone, and walls and a conical roofs covered with branches, bushes, and soil. In the warm summers, they build a wooden chamber in front of Markhaneh and with a higher ceiling, which they call Kepar.10 It is cool in the Kepars owing to the walls and ceilings covered with bushes. There are Didons in the Kepars and the Markhanehs. Some people have white tents instead of the Kepars. Water is a major problem for Saraghol dwellers. In the past, they stored the river water in ponds and this water was not clean and healthy, but nowadays, water is supplied by tankers or plumbing systems, or from wells.12 Other architectural elements of the Saraghol are: Kuz,13 and Darkuz; Korom; Sul; Talgard; Zendan; water ponds, water supply tanks, a place for keeping animal food rations, and forage storage.

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7 Authors, 2017
8 MEHRAN, M. Maintenance and design charter in the context of the Meymand Historical Village. Tehran : Faculty of Architecture (College of Fine Arts), 2006, p. 21.
9 The human dwelling space dug in the earth in the Saraghol, built with inner wall of stone piles and conical ceilings made of tree branches.
10 A vast and solid living area in the oases made of living plants or trunks and branches of trees and shrubs
11 The fireplace; It is the place where most household activities are done. It is inside the Kepar and on the platform opposite it.
12 EBRABHIMI, ref. 3, p. 11-117
13 Pits with a structure like a Markhaneh, but smaller in size used for keeping Khalmehs (lambs or other young animals)
14 The open and deep space in front of the Kuz and connected to it. It is used for keeping livestock. When people want to suckle Khalmehs, they take them to Kuz to be sucked by their mothers.
15 It is like the Kuz but much smaller. It is used for keeping Khalmehs that are only a few days old.
16 Modern corrals with stone walls and vault ceilings, which used to be built with logs and mud covers for keeping sheep in the winter
17 A circle or square space made with bushes. This space is for feeding and milking the livestock.
18 If a sheep avoids suckling its lamb, villagers put both of them in a small 0.5-meter-deep pit (Zendan) so that it is forced to suckle the lamb and get used to it.
Fig. 3: Markhaneh: facade and in section

Fig. 4: Perspective, plan, and cross-section of a Kepar

Fig. 5: Plans and spaces of a Kuz and a Darkuz

Fig. 6: Perspective, plan, and view of a Sul

Fig. 7: Plan of Saraghob
2-1-2-Oases (gardens): During the second 4 months of the year (summer), people stay in the oases. To avoid the summer heat, the structures are either very light (Kepar) or semi-light (Gombe) with non-dense roof coverings, built in the vicinity of seasonal rivers around the oases and in the shade of trees to moderate the temperature. Rocky and non-cultivated parts are allocated to dwelling spaces while gardens are located on river banks. There are 35 oases developed on the mountainside along mountainous paths, each home to 2 to 40 households. Water is obtained from the springs and the river. The river water is gathered in a pool and the spring water is led by a pipe to the Chaharkhaneh area. Kepars are among the architectural elements of the oases. They are structures with stone walls on which tree branches are placed to form the ceiling. The Kepar has a Didon, a rocky niche, and a Penabad. Its other architectural elements are Gombe, Telhareh, Mashkdan, Talgard, livestock, Kharman Kamari and Parvarband.

Fig. 8: Saraghbal.

Fig. 9: The Kepar and its interior; the use of light plant-based building materials in an agro-ecosystem.
2-1-3-Meymand (Hand-dug): Meymand is the winter settlement of the local people (from November until mid-March) with about 400 dwelling units (Kichehs[^40]) and more than 2,500 rooms dug in the heart of the mountains.[^41]

In Meymand, people make their houses by removing a mass of rock from the rocky hill. These houses may comprise one or more rooms and stalls. They dig holes in the walls of the rooms to make niches which they use to put their things in, like beddings, dishes, boxes, and lamps. Altogether, these parts make a Kicheh. The size and number of rooms in each Kicheh can be different from those of the others. Kiches are not arranged orderly. They have echelon patterns arranged in 5 step-like levels to avoid intersections and disturbances.

[^37]: Authors, 2017
[^38]: Authors, 2017
[^39]: Authors, 2016
[^40]: A hallway with a horizontal slope created on a mountain slope, to reach the appropriate depth for digging rooms.
[^41]: ICHTO, ref. 33, p.7
Each dwelling unit in Meymand consists of these elements: a *Kicheh*, a porch, rooms, a port, a warehouse, a stable house, niches, a corridor, and a closet, and the entire house as a unit has one entrance. On the landing, there may be a corral on one side and a living room on the other. A piece of cloth is used to separate the closet from the room or to cover the niches. The houses do not have yards, docks, and gardens. There is an open area in front of each *Kicheh* that connects it to the next *Kicheh*. In the past, ovens used to be inside the rooms, and the smoke from the burning firewood darkened the rooms. Today, some have converted the store rooms next to the main rooms or their old stables to kitchens. The toilet is out of the *Kicheh* with a base slightly lower than the ground, and with sidewalls and ceiling made of stone and mud. The temperature of the rooms is about 5 degrees different from that of the outside. The sizes of the rooms vary and they are typically about 3x4 meters each and with heights between 1.90 and 2.10 meter. There are no roads in Meymand, but just horizontal paths that lead to the cave-like dwelling houses. On each path, there are 3 or 4 rooms with no heaters, chimneys, or vents. The entrances are the only openings of these rooms. Each path ends in an open space called *Dalan* that plays the role of a porch. The mountains are such stiffened sedimentary rocks that they can be dug and engraved without the fear that they would come tumbling down. *Kiches* have closets, niches, 3 doorways, and platforms and the bigger ones, like the baths and the mosques, have pillars. These houses provide shelter from the outside heat, cold, and the erosion agents such as wind and rain, and strengthen the defense and security aspects. Heating and cooling take place naturally since there is little heat exchange with the surrounding environment. Water resources of the village include springs, 2 qanats, and seasonal rivers. There are no permanent rivers. Other elements of the village architecture are *Didon* (for cooking); *Toghol*; terrace or *Mahtabi*; *Barzenga*; stable; *Otaghe bani*; *Otaghe Ziri*; *Balakhaneh*; *Tagh*; *Patagh*; *Sar-sofe*; *Penabad*.  

![Image](Fig_14) 

Fig. 14: Placement of the houses on two slopes and the village being on a dead-end path

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43 EBRAHIMI, ref. 3, p. 14 and 44  
44 ATAEI et al., ref. 3, p. 114  
47 EBRAHIMI, ref. 3, p. 44 and 45  
48 MEHRAN, ref. 10, p.36  
49 ICITO, ref. 33, p.7  
50 *Toghol*: Terrace or *Mahtabi*; the flat space opposite or next to the *Kicheh* leveled with stones, used as a sitting space or for spreading nuts to be sun-dried.  
51 A short wall of stone piles around the *Kicheh* that is made without grout.  
52 A stone-piled area behind the lavatory for collecting human and animal waste to be used as fertilizer.  
53 A room used as a storeroom.  
54 A cavity in the room floor that is used as a storeroom.  
55 Small storerooms built up in the rooms inside the rocks to put objects into, usually reachable with ladders.  
56 An arch protruding over the *Kicheh*.  
57 A wooden ceiling above the porch built to prevent rainfall and sunlight.  
58 Authors, 2017
3. Iran Cultural Heritage Organization’s regulations and construction constraints for Meymand Village

There are various dimensions to the protection of historic sites; one of them is to designate such areas as historic zones within which historic buildings, properties, or sites need to be protected. Table 1 presents the boundaries of the four zones of Meymand as determined by the Cultural Heritage Organization.

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59 Authors, 2017
60 Authors, 2017
61 Authors, 2017
62 Authors, 2016
Table 1: Meymand Zones

<table>
<thead>
<tr>
<th>Meymand Zones</th>
<th>Core Zone</th>
<th>Zone 1</th>
<th>Zone 2</th>
<th>Zone 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This zone includes Meymand Village and the natural features around it like mountains, rivers, historic towers on top of the mountains, historic cemeteries; the area within the black circle. (Fig 19)</td>
<td>This zone is wider and includes the natural environment, important elements and historic monuments like old ossuaries, towers, castles, mills, and other valuable elements related to the Core Zone; the area surrounded with the red line. (Fig 19).</td>
<td>This zone starts from the ridges of the surrounding mountains and extends up to the Shahr-e Babak-Paghal'eh tarmac road and includes the vegetation and cultural landscape of Meymand Village; the area within the blue line. (Fig 19).</td>
<td>This zone includes the geographic, natural, and historical features around the village and saraghols; the area marked with the pink line. (Fig 19)</td>
</tr>
</tbody>
</table>

Fig. 19: Meymand zones as designated by Iran Cultural Heritage Organization

63 Authors, 2017
64 MEHRAN, ref. 10, p.161
1. Regulations of the Core Zone

- Anything that would lead to the destruction of or damage to the core zone is prohibited. Such damage includes that to the visual features of the landscape.
- It is forbidden to construct new buildings within the Core Zone. Any repair, widening, or renovation of the old pathways will only be permissible after the submission of the relevant proposal to the ICHTO and obtaining its approval.
- Any developmental activity and organization in order to preserve the cultural and historical values of the village, including restoration, revitalization, development, repair, alteration, or change of functions in a part of or in the entire Core Zone will only be permissible after the submission of the relevant proposal to the ICHTO and obtaining its approval, and by strictly complying with the provisions of the approved plan.
- Exploitation of springs and rivers to supply water to the agricultural lands and gardens is permitted provided that the natural environment of the Core Zone is not damaged.
- Mining of stones and sand, carving and cutting through mountains, and leveling are prohibited in the Core Zone.
- Providing infrastructure services, facilities, and amenities such as water and electricity supply, sewage, gas, telephone line, etc. will only be permissible after the submission of the relevant proposal to the ICHTO and obtaining its approval.
- Public and heavy motor vehicles are not allowed into the village.
- Archeological and scientific research and the supervision of all such research plans and projects are exclusive to the ICHTO.
- Historic towers on top of the mountains and historic cemeteries within the Core Zone are elements of historical value that should be protected and preserved in their present conditions.
- The preservation of the cultural landscape in the Core Zone is mandatory and the cultural activities can go on the same way as before.
- It is emphasized that the new buildings like those of the Education Camp, Telecommunications Co., the new public bath, public sanitary facilities, the Health Center, and the newly-built school, and the inharmonious residential buildings in the Core Zone as well as all other buildings that cannot be localized should be either refurbished according to the prescribed criteria or removed.
- Conclusion: The cultural landscape and the antiquities in the Zone should be preserved; no new buildings can be constructed; and only the restoration, revitalization, repair, alteration, etc. of the existing buildings are allowed provided that they are done with the approval of the ICHTO; newly-built buildings should be removed.

2. Regulations of Zone 1

- No construction is allowed in Zone 1, except for special cases where the written permission of the ICHTO will be required.
- Any civil development activity such as mining of stones and sand, carving and cutting through the mountains, and installation of power and telecommunication
towers, satellite and television antennas, advertising billboards, etc. that would lead to the degradation of the landscape and the natural environment is prohibited.

- Any organization and landscaping project, and provision of amenity, recreational, and tourism services in Zone with the intention of preserving the cultural, historical, and natural values of the Zone will only be permissible after the submission of the relevant proposal to the ICHTO and obtaining its approval, and by strictly complying with the provisions of the approved plan.
- All historic monuments in the zone, including the ancient ossuaries, towers, forts, and cemeteries, mills, and other valuable elements are related to the Core Zone (the village) and should be protected, restored, and fixed to maintain their present status.
- The exploitation of rivers, springs, and other natural elements is permitted, provided that it does not alter the natural environment and damage the landscape.
- Maintaining the agricultural lands and gardens of the zone is mandatory.
- It is forbidden to change the land usage. It is obvious that maintaining the use of agricultural lands and gardens is mandatory.
- Conclusion: The construction of new buildings is forbidden in Zone 1, but the restrictions are less tight than those set for the Core Zone. Provision of amenity, recreational, and tourism services with the intention of preserving the cultural, historical, and natural values of the zone is permitted.

3. Regulations of Zone 2

- Any construction of buildings is prohibited in zone 2. In special cases, the written permission of the ICHTO will be required.
- The organization and establishment of any welfare services and facilities such as water, electricity, telephone, gas supply etc. will only be permissible after the submission of the relevant proposal to the ICHTO and obtaining its approval and under the direct supervision of the ICHTO.
- All historic monuments in this zone, including the ancient ossuaries, towers, forts, cemeteries, mills, and other valuable elements are related to the core zone (the village), and should be protected, restored, and kept in their present conditions.
- Implementation of any proposed project of any nature, such as the widening or construction of roads and bridges, afforestation, dam building, watershed management, etc. will only be permissible after the submission of the relevant proposal to the ICHTO and obtaining its approval.
- It is suggested that study projects be carried out in cooperation with the relevant organizations (like the Ministry of Agriculture) in order to reinforce the plant and animal species in the region, and that the resulting solutions and plans be implemented after the final approval of the ICHTO.
- Animal husbandry and construction of corrals are permitted in Zone 2.
- In order to preserve the natural resources and features of the area, any manipulation of or damage to the natural environment of the area, such as the alteration of the slopes and topography of the lands, the soil, gardens, fields, river paths, qanats, springs, and vegetation is prohibited.65

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65 ICHTO, ref. 33, p. 1-6
• Conclusion: It is forbidden to construct new buildings in Zone 2. The establishment of welfare and tourism services and facilities is allowed providing that the cultural, historical, and natural values of the region are maintained.

4. Regulations of Zone 3
• The construction of buildings in zone 3 is permitted if done under the supervision of ICHTO.
• Establishment and organization of any welfare services and facilities such as water, electricity, telephone, and gas supply, road construction, etc. must be approved by ICHTO.
• All historic monuments and sites in this zone, including the cemeteries, forts, and other sites of historical value should be protected, restored, and sustained in their present conditions.
• Archaeological and scientific research is possible with the approval and under the supervision of the ICHTO.
• Animal husbandry and the construction of corrals are permitted in zone 3.  

Conclusion: It is only in this zone that the construction of new buildings is permissible.

4. SWOT Analysis of Meymand Village
The following SWOT tables are the outcome of the interviews with the employees of the ICHTO office at Meymand and Meymand villagers, the study of the resources (books and theses), and the researcher’s analyses.

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<td>The entrance</td>
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<tr>
<td>Service spaces</td>
</tr>
<tr>
<td>Resorts and pause spaces</td>
</tr>
</tbody>
</table>

66 MEHRAN, ref. 10, p. 81 and 82
67 Authors, 2017
Repairing old buildings and saving them from destruction

Mismatch between some spaces and their uses, and insufficient spaces

Conversion of the unused spaces into usable ones

Demolition of the ceilings of the spaces due to the spaces not being used

Possibility of creating a new parking lot

Developing the parking spaces and damaging the cultural landscape

Building a new parking lot

Table 3: Strategic Planning Table68

<table>
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<tr>
<th>Executive issues</th>
<th>Current status</th>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
<th>Ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pavement</td>
<td>Asphalt, un-paved tracks, and stone</td>
<td>Matching the type of pavement with its use</td>
<td>Difficulty of movement due to pavement</td>
<td>Creating natural landscapes and attracting tourists</td>
<td>The possibility of injuries and damages while in traffic</td>
<td>Improving the traffic facilities by suitable pavement</td>
</tr>
<tr>
<td>Walls</td>
<td>Natural and man-made rocky and stone walls</td>
<td>Creating shelter from the wind and protecting the architectural spaces</td>
<td>Restricting the landscape views of architectural spaces</td>
<td>Protection against wind and sun</td>
<td>The possibility of the collapse of the walls and prevention of plant growth</td>
<td>Creating diversity with small gardens in the stone walls</td>
</tr>
<tr>
<td>Stairs and ramps</td>
<td>Stone stairs and ramps</td>
<td>Creating diversity and visual beauty</td>
<td>Difficulty in traffic</td>
<td>More ramps instead of stairs</td>
<td>Damage to the beauty of the spaces with the destruction of stairs</td>
<td>Designing ramps with appropriate slopes</td>
</tr>
</tbody>
</table>

Table 4: Strategic Planning Table69

<table>
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<tr>
<th>Equipment</th>
<th>Current status</th>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
<th>Ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furniture</td>
<td>Stone platforms to seat people and signs in The area</td>
<td>Creating rest spaces</td>
<td>Lack of sitting spaces, shade, and trees</td>
<td>Increasing interaction</td>
<td>Damage to the village cultural landscape</td>
<td>Planting trees to create shade</td>
</tr>
<tr>
<td>Lighting</td>
<td>Power and light poles</td>
<td>Lighting of the area</td>
<td>Lack of adequate lighting at night, visual pollution</td>
<td>Livening up of the spaces at night with prop-er lighting</td>
<td>Damage to the village’s cultural landscape</td>
<td>Proper lighting, re-moving light poles, passing wires from under the ground</td>
</tr>
<tr>
<td>Drinking fountain</td>
<td>Stone fountains</td>
<td>Meeting the needs for water and fresh air</td>
<td>Lack of fountains</td>
<td>Building more fountains</td>
<td>Difficulty in collecting the wastewater</td>
<td>Increasing the num-ber of fountains, especially in pause places</td>
</tr>
</tbody>
</table>

68 Authors, 2017
69 Authors, 2017
Table 5: Strategic Planning Table

<table>
<thead>
<tr>
<th>Social, cultural, tourism and economic basis</th>
<th>Current status</th>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
<th>Ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social</strong></td>
<td>The presence of tourists, residence in the village</td>
<td>The richness of the cultural, natural, and historical heritage, how people interact with the environment</td>
<td>Lack of information about features of the region, the density of tourists in some places and damage to the region</td>
<td>A proper place for experiencing the native life</td>
<td>Impossibility of proper preservation of the region due to low awareness of the regulations, like unauthorized construction…</td>
<td>Creating spaces for the settlement of tourists, informing them how to protect the region</td>
</tr>
<tr>
<td><strong>Cultural</strong></td>
<td>Residence in the region and introduction of its culture and architecture</td>
<td>Existence of ancient natural and historical works with several-thousands-year-old culture</td>
<td>Lack of space for cultural exchange between native people and tourists</td>
<td>Changing the uses of spaces to create the necessary spaces</td>
<td>Impossibility of construction of new spaces due to the rules set by ICHTO</td>
<td>Creating places for displaying handicrafts and introducing the local culture</td>
</tr>
<tr>
<td><strong>Tourism</strong></td>
<td>Tourism and tourist attraction</td>
<td>The scenery and ancient monuments, the historic Meymand Village and saraghol</td>
<td>Lack of places for tourist accommodations</td>
<td>Create recreational and tourism spaces</td>
<td>Reduced tourists due to lack of facilities</td>
<td>Building accommodations for tourists</td>
</tr>
<tr>
<td><strong>Economic</strong></td>
<td>Tourism, people’s collecting of mountain stones for the ICHTO</td>
<td>Limited stay of tourists in the region and visits to the region</td>
<td>Income is only earned through gardening, animal husbandry, and handicrafts</td>
<td>Creating attractions and facilities for tourists</td>
<td>Depopulation due to reduction of sources of income</td>
<td>Creating places for employment and new sources of income</td>
</tr>
</tbody>
</table>

Table 6: Strategic Planning Table

<table>
<thead>
<tr>
<th>Access paths</th>
<th>Current status</th>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
<th>Ideas</th>
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</thead>
<tbody>
<tr>
<td><strong>First group</strong></td>
<td>Asphalt road in the south</td>
<td>Convenient access, light traffic, no air and noise pollution</td>
<td>Passing livestock Closing the road</td>
<td>Stay in a calm environment and away from the noise</td>
<td>Lack of facilities</td>
<td>Changing livestock movement paths, creating welfare facilities (with no damage to the landscape)</td>
</tr>
<tr>
<td><strong>Second group</strong></td>
<td>Dirt road in the middle of the village</td>
<td>Access to the village</td>
<td>Creates dust along the route</td>
<td>Access to different parts of the village</td>
<td>Difficulty of transport on the road</td>
<td>Asphalting some parts of the route</td>
</tr>
</tbody>
</table>

70 Authors, 2017
71 Authors, 2017
Table 7: Strategic Planning Table\textsuperscript{2}

<table>
<thead>
<tr>
<th>Pollution of the area</th>
<th>Current status</th>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
<th>Ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Pollution</td>
<td>Existence of a copper smelting factory near Meymand</td>
<td>Freshening the air with vegetation</td>
<td>The detrimental effect on livestock</td>
<td>Possibility of planting and spreading native plants</td>
<td>Livestock loss, change of ecosystem</td>
<td>Planting trees, forcing the factory to reduce pollution</td>
</tr>
<tr>
<td>Water pollution</td>
<td>Existence of a factory near Meymand, human activities</td>
<td>Using qanat water through plumbing and portable containers</td>
<td>Pollution of drinking water</td>
<td>Optimal use of water</td>
<td>Loss of livestock</td>
<td>Using purified water</td>
</tr>
<tr>
<td>Soil contamination</td>
<td>Existence of a factory near Meymand</td>
<td>Vastness of the area in proportion to the amount of pollution</td>
<td>Pollution of soil and its destructive effects</td>
<td>Using less harmful materials</td>
<td>Loss of livestock and vegetation</td>
<td>Planting trees, forcing the factory to reduce pollution</td>
</tr>
<tr>
<td>Visual pollution</td>
<td>Power poles and wires</td>
<td>Supplying electricity</td>
<td>Distortion of natural and cultural landscape</td>
<td>Providing welfare facilities</td>
<td>Visual pollution and damaged natural landscape</td>
<td>Removing the poles and passing wires from under the ground</td>
</tr>
<tr>
<td>Noise Pollution</td>
<td>Sounds of live-stock and birds</td>
<td>Hearing natural sounds</td>
<td>No sound control</td>
<td>Relaxing and calming the soul</td>
<td>Disturbance when resting</td>
<td>Insulation of walls, doors, and windows</td>
</tr>
</tbody>
</table>

Table 8: Strategic Planning Table\textsuperscript{3}

<table>
<thead>
<tr>
<th>Vision and landscape</th>
<th>Current status</th>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
<th>Ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>From the village to the surroundings</td>
<td>Seeing the scenery</td>
<td>Favorable view of the natural environment</td>
<td>Feeling of presence in a vast area, creating a sense of insecurity at night</td>
<td>Relaxing the soul by the charm of the landscapes</td>
<td>Lack of adequate light at night, the sense of fear</td>
<td>Create a proper lighting at night</td>
</tr>
<tr>
<td>From the surroundings to the village</td>
<td>Seeing the houses as small doors in the mountains</td>
<td>Preserving the primary cultural landscape of the village</td>
<td>Feeling of presence in a vast area, creating a sense of insecurity at night</td>
<td>Learning to interact with the nature</td>
<td>Lack of adequate light at night, the sense of fear</td>
<td>Create a proper lighting at night</td>
</tr>
</tbody>
</table>

\textsuperscript{2} Authors, 2017

\textsuperscript{3} Authors, 2017
<table>
<thead>
<tr>
<th>Climate issues</th>
<th>Current status</th>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
<th>Ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td>Storms</td>
<td>Protection against winds by trees and land</td>
<td>No use of wind in the interior spaces due to lack of wind-dows</td>
<td>Use winds for cooling</td>
<td>Winds reduce the activities</td>
<td>Planting evergreen trees and creating shelters from the wind</td>
</tr>
<tr>
<td>Temperature</td>
<td>Cold winters and mild summers</td>
<td>Natural cool summers</td>
<td>Cold winters and reduction of activities</td>
<td>Reducing the fuel used to provide cooling and heating</td>
<td>Reduced winter activities</td>
<td>Use of trees and land for protection against heat and cold</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunlight</td>
<td></td>
<td>Angled sunlight close to the vertical line</td>
<td>Placing the spaces on the southern slope and the use of sunlight</td>
<td>Direct sunlight in the summer</td>
<td>sunlight entering the interiors</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average monthly relative humidity: 34%</td>
<td>Desirable air in the summer</td>
<td>Increased moisture in the ground during the winter</td>
<td>Use of plants and ponds to increase moisture</td>
<td>Creating problems for indoor spaces by in-creasing moisture</td>
<td>Planting trees and creating ponds in the area for summer air moderation</td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td>Reduced healthy water</td>
<td>Use of purified qanat and river water</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groundwater, River/Qanat</td>
<td>Use plumbing systems to supply water</td>
<td>Using qanat water through plumbing and portable containers</td>
<td>Impossibility of using river water in dry seasons</td>
<td>Use of rich groundwater resources</td>
<td>resources</td>
<td></td>
</tr>
<tr>
<td>Water resources</td>
<td>River, well, atmospheric precipitation, underground waters and plumbing systems supply</td>
<td>Various sources of water supply, rich underground water reservoirs</td>
<td>Not all water resources contain healthy water</td>
<td>Using rich underground water reservoirs</td>
<td>Lack of water supply</td>
<td>Purification and use of existing water resources</td>
</tr>
</tbody>
</table>

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### Table 10: Strategic Planning Table

<table>
<thead>
<tr>
<th>Environmental issues</th>
<th>Current status</th>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
<th>Ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetation</td>
<td>Foothill steppe, short shrubs and forest trees</td>
<td>Preserving water in the ground</td>
<td>Limited vegetation in proportion to the vastness of the area</td>
<td>Air purification, protection against winter winds and summer sunlight</td>
<td>Destruction of plants due to contamination and reduction of water resources</td>
<td>Use of vegetation and improving the spaces by creating shade</td>
</tr>
<tr>
<td>Natural disasters, faults/earthquakes</td>
<td>Existence of 18 active faults in the province; the closest fault to the site is Shahr-e Babak city fault</td>
<td>No major fault within the site</td>
<td>Risks due to the relief facilities being remote</td>
<td>Low population and light traffic, being located in an open area</td>
<td>Difficulty of fast transport in emergency due to unpaved roads</td>
<td>Paving the road to speed up traffic, establishment of facilities in the area of Meymand Village</td>
</tr>
<tr>
<td>Slope and topography</td>
<td>Slope of the area from the north (steep) to the south (gentle); (6-12%)</td>
<td>Possibility of creating architectural spaces within the rocks</td>
<td>Difficulty in traveling</td>
<td>Play with the site and creation of diverse spaces</td>
<td>Difficulty of traffic and relief in emergencies</td>
<td>Creating routes along slopes in the form of ramps for disabled people</td>
</tr>
<tr>
<td>Land</td>
<td>Rocky; made of pyroclastic materials</td>
<td>Robustness of the rocks for excavation and rock digging</td>
<td>Impossibility of creating an opening (other than the entrance)</td>
<td>Preserving the cultural landscape by observing the regulations of the ICHTO</td>
<td>Impossibility of creating new buildings due to the regulations of the ICHTO</td>
<td>Using modern equipment in the construction of rocky spaces</td>
</tr>
</tbody>
</table>

5. Conclusion

The aim of this paper was to study the rules and regulations set by Iran Cultural Heritage Organization and the construction methods in Meymand region as a globally-recognized site, and to study the core zone and the triple zones of Meymand region and the three different lifestyles there. In the surrounding zones of Meymand village, any action that would result in the destruction of or damage to the core zone (including damage to the landscape views) is prohibited. The construction of a new building in the core zone is prohibited and permissible interventions are limited to the restoration, revitalization, repair, change of use, change of interior spaces, as well as removal of newly-established and non-indigenous buildings (which damage the village’s landscape). All actions must be such that the natural environment of the site is not undermined. It is imperative to preserve historic monuments in the core zone and the cultural landscape as well. New buildings should be removed. In the first and second zones, construction of buildings is forbidden and only facility, welfare, and tourism services can be established with the intention of preserving the cultural, historical, and natural values of the region. Only in the third zone, the construction of new buildings is permitted. Compliance

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with these rules in Meymand must be taken seriously in order for the coexistence of nature, architecture, tradition, history, culture, and the way people live.

Regarding the triple lifestyles of the people in Meymand Village, the people have interacted with the surroundings by building their required spaces in the rocks in the village, under the ground in Saraghols, and with appropriate light materials in the oases. So, they have used the environment to meet their needs with the least manipulation of and damage to it. In Meymand Village, priority is given to preserving the cultural landscape and the indigenous actions and the native inhabitants of the region. This means that, at first, the required spaces should be created by restoring or altering the use of the existing structures via indigenous methods. Then, in case of insufficiency, modern technologies and solutions are used to create the required new spaces which should be in harmony with the cultural landscape of the region. There are some threats to the life of Meymand Village. These threats include reduced number of inhabitants in the village, lack of utilization of the Kichehs leading to their gradual loss and destruction, reduction of water resources, pollution of air, water, and soil. If these threats are ignored, the cultural landscape of Meymand Village will be gradually destroyed. Therefore, by changing the usage and repairing the rocky spaces, creating the required spaces in the third zone in accordance with the needs of the village, it is possible to create new jobs and return the population and life to the village and prevent Kichehs from being destroyed. The return of the population to the region makes the area more famous, and it will draw more attention to the village, and will lead to attempts to create appropriate facilities. For example, modern and environment-friendly buildings can be created. The old school can be converted to the Cultural Heritage Office. Building new sanitary services inspired by the Gombe architecture for the Cultural Heritage Center in the part of the village where sewage disposal is possible is another example. Finally, to sum up, the general architectural features in Saraghols, the oases, and the Village of Meymand (hand-dug) are as follows:

- **Saraghols**: 1. Use of light materials (mostly wood, soil, and stone) in the construction of architectural elements 2. Integrated small spaces without internal divisions 3. Use of local materials including plant wastes and residual branches of pruned trees without industrial processing, to cover architectural elements 4. Digging holes in the ground and building architectural elements, using the thermal balance of the ground, and reducing connection between inside and outside air.

- **Oases**: 1. Use of light materials and structures (mostly wood, soil, and stone) in the construction of architectural elements 2. Construction of houses in the vicinity of seasonal rivers and under the shades of trees 3. Use of local materials, including plant wastes or residual branches of pruned trees without industrial processing to cover architectural elements.

- **Village of Meymand (hand-dug)**: 1. Openings and skylights are limited to entrances of the dwelling units 2. Creation of external access between the different functions of a dwelling unit 3. Creation of a simple space in the form of a room and the overall composition by putting several such units together 4. Trying to minimize Man-made walls 5. Dense rural texture 6. Digging under a volcanic hard layer as the main cover of the setting which makes it resistant and firm so that it would not collapse while digging 7. Use of materials with high thermal capacity in the parts that walls need to be built 8. Following the natural stratum of the environment 9. Use of man-made rocky walls alongside natural bases and walls 10. Creating spaces inside the...
rocks and benefitting from their thermal insulation characteristics which reduce the need for heaters and coolers. 11. Minimum manipulation of the natural environment in creating the required spaces.

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