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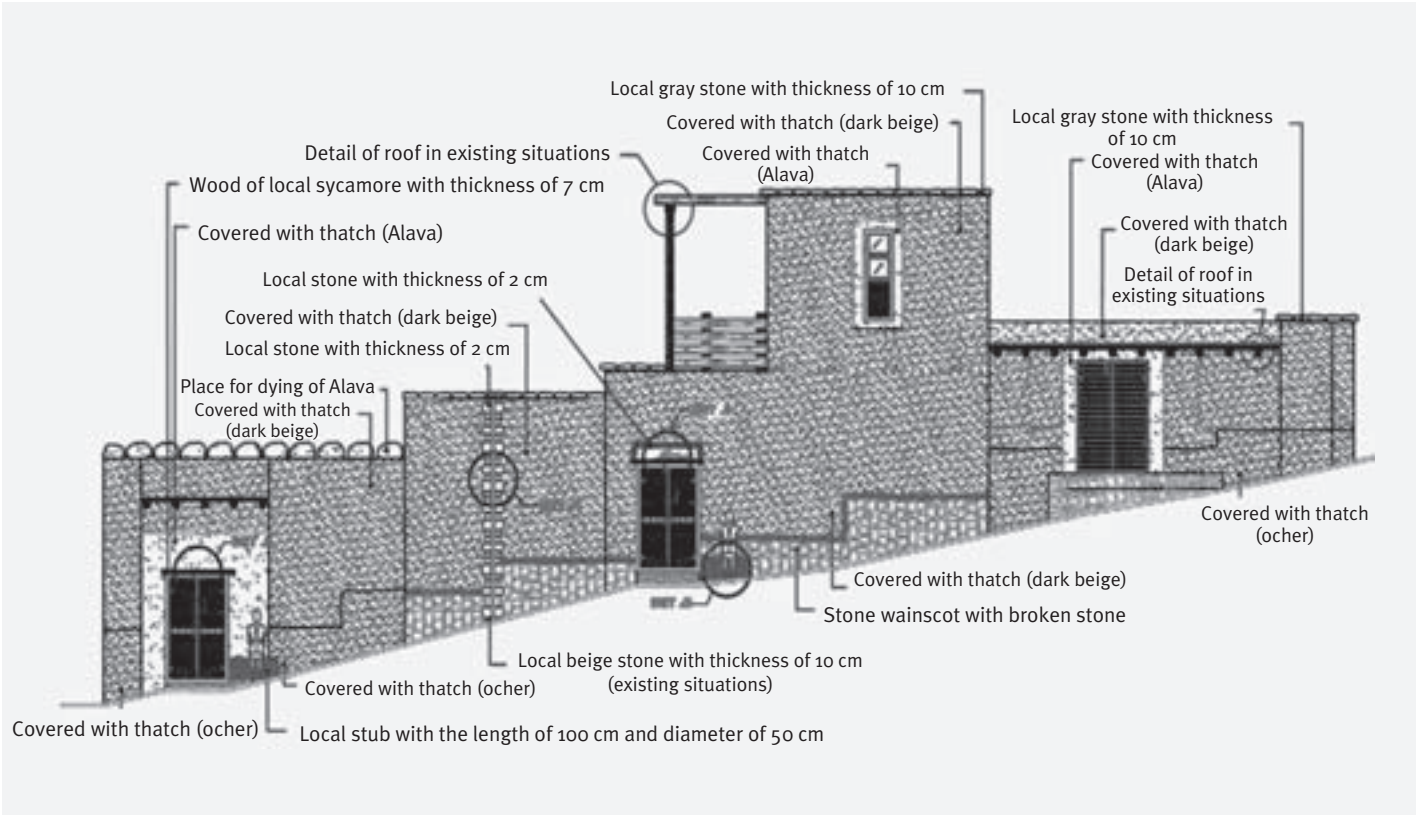

Fig. 1 Suggested façade for a wall, Kazaj
Sl. 1. Preporučena fasada za jedan od zidova, Kazaj

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Reconstruction of Rural Structures
Cases: Villages Kazaj & Zonouzagh in Iran

Rekonstrukcija ruralnih struktura
Na primjeru sela Kazaj i Zonouzagh u Iranu

Kazaj
restoration
valuable rural fabrics
vernacular patterns
Zonouzagh

Kazaj
restauracija
vrijedne ruralne strukture
tradicionalni obrasci
Zonouzagh

In general, valuable rural structures contain some vernacular patterns including details of traditional buildings and public spaces. These patterns evolve gradually based on the requirements and conditions of rural life. The method of pattern reconstruction for the restoration of rural structures is the conclusion of processes created by the passage of time. This study offers various examples of the formation of suggested objective patterns in restoration projects in the Iranian villages of Kazaj and Zonouzagh. The results show that the way to design patterns for the restoration of rural structures is through the use of one or combination of these three approaches: continuation of the pattern, modification of the pattern or new pattern-making.

Vrijedne ruralne strukture općenito gledajući sadrže tradicionalne obrasce koji uključuju elemente tradicionalnih građevina i javnih prostora. Ti obrasci se postupno razvijaju prema potrebama i uvjetima ruralnog života. Metoda rekonstrukcije obrazaca za restauraciju tradicionalnih ruralnih struktura zaključak je procesa koji su stvarani kroz vrijeme. Studija predstavljena u ovom članku nudi raznolike primjere formiranja preporučenih objektivnih obrazaca u restauracijskim projektima na primjeru iranskih sela Kazaj i Zonouzagh. Rezultati pokazuju da je pravi način na koji se kreiraju obrasci za restauraciju ruralnih struktura upotreba jednog ili kombinacija sljedeća tri pristupa: nastavljanje korištenja obrasca, modifikacija u obrascu i kreiranje obrasca.

INTRODUCTION

UVOD

The majority of valuable and vernacular structures are found in rural residences. According to Sadigh, "Preserving and promoting the values, intellectual, local and vernacular properties, customs and patterns, and improving the social terms and keeping the architectural heritage and vernacular culture and living style in villages, are among the most important objectives of rural restoration."[1] Physical design is the most important part of texture restoration projects. "Urban- and rural-design can be defined as follows: ... the process of giving physical design direction to urban growth, conservation, and change."[2]

Using foreign forms and methods in valuable rural structures upsets the balance between needs and subjective patterns and the existing reality. These foreign forms disappear with the passage of time, because of their lack of harmony with the conditions of the environment, and the expenditure of time and money required for retaining them. The historical interaction between people and environment makes the patterns and forms meaningful. In rural societies, discovering and understanding the processes that form the existing patterns helps to suggest patterns that are based on the reality of the past and in accordance with the needs of the present. In this regard, it is better to focus on the thoughts behind the forms and physical shapes. Since there is a close relationship between objective forms and the reasons for their existence, we can find the background motivation for the existence of the objective forms and vice-versa. Sufficient knowledge of the effective factors in the creation of patterns can help us to distinguish desirable patterns. This capability enables the architect to use a suitable method for the reconstruction of patterns in the design phases. As a result, adaptability of the suggested patterns to the environment can be improved.

The restoration project of valuable rural structures in Iran is related to public spaces and utilities and is financially supported by the government. Therefore, the project's activities are limited to passageways, public and open spaces, and include three stages of wall (façade), floor (ground plan) and furniture reconstruction.

This research aimed to evaluate the pattern designs of restoration projects of valuable structures in the Iranian villages of Kazaj in Ardabil province and Zonouzagh in East Azerbaijan province. These projects are important because the author selected different and suitable methods for identifying existing patterns and reconstructing objective patterns.

In Vernacular Pattern Reconstruction (VPR) method, the suggested patterns are consistent with the identity of the patterns existing in rural life. Consequently, a desirable adaptation can be obtained between the suggested patterns and climatic, natural, economic, living, cultural and social factors in the village. Furthermore, the effective factors for an efficient project include the competence of the architect and his knowledge about the present and past conditions of structures.

RESEARCH METHOD

ISTRAŽIVAČKA METODA

Research method is practical-adaptive and evaluates the correspondence of practical samples with effective factors. The author used of the method of gathering information from natives and library studies for selecting information. The elements of research were as follows:

Valuable Structures – "The harmony between the components of economic, social, environmental and physical structure makes rural residential spaces valuable."[3] Also "one can posit that all successful urban- and rural-places are comprised of three sets of elements: 1) activity – economic, cultural, social,

1 SADIGH, 2000: 67
2 BARNETT, 1982: 12, quoted in: POERBO, 2001: 18
3 ALALHESABI, 2006: 88
4 MONTGOMERY, 2003: 295

2) form – the relationship between buildings and spaces, 3) meaning – sense of place, historical and cultural."[4]

Historical events, living style and production, conventions and habits, as well as management procedures of valuable rural and urban structures exist as subjective or objective patterns. Therefore, the functional relation between behavioural and objective patterns in rural societies makes these fabrics architectural and cultural heritage.

Physical Design – Reconstruction of objective patterns in passageways and public spaces of the village is the most important part of the restoration project because physical interference is very fast, tangible and effective.

During the design process, the architect first defines the scope of valuable structures in the village. Then, he selects designing priorities within the range of valuable structures. Many factors affect this selection, which could themselves comprise a study. The priorities mainly include important passageways and public spaces. These passageways and spaces are dominant over other public spaces in the rural layout for several reasons, and can provide a suitable background for development of the village in the future. By interfering physically in valuable structures, we can also correct behavioural patterns.

Vernacular Pattern – If we distinguish the reasons for the existence of repetitive patterns in an environment, we can fully understand the structures. "Recognition of these patterns is important because our understanding of the environment is based on them and enables us to reach a determination of the effect of each pattern on human life."[5] "Pattern is a principle consisting of three parts that expresses the relation between the background, problem and solution, and it should be expressed in a way to help establish this relationship."[6]

Patterns exist in two forms, subjective and objective, and they evolve gradually based on the requirements and conditions of rural life. Subjective patterns are behavioural patterns, such as social conventions and habits present in any society, but objective patterns are tangible and exist as spaces, façades, furniture and architectural components. Designing objective patterns includes knowing and reconstructing the objective patterns within a set of vernacular patterns of a village. Sometimes this method results in correction or recovery of subjective and behavioural patterns. The project is successful only when the architect has full knowledge of the existing objective patterns.

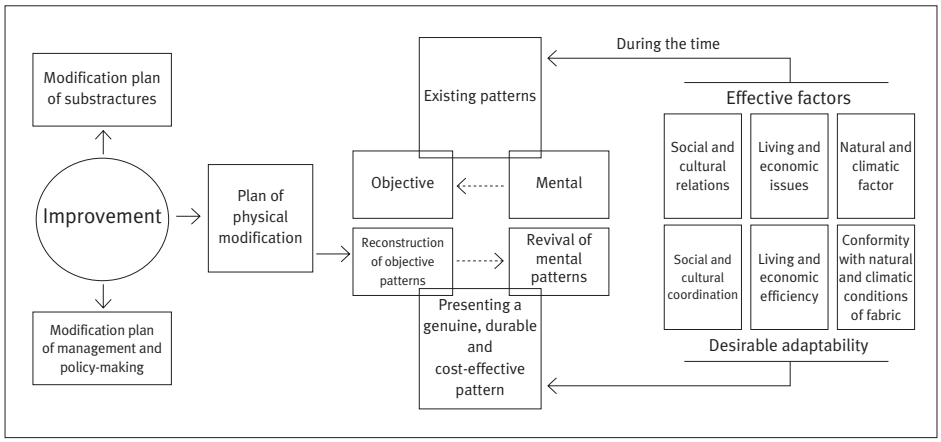

Table I Trend of Objective Pattern Reconstruction in Relation to Effective Factors and the Restoration project

Tablica I Trend rekonstrukcije objektivnih obrazaca u odnosu na efektivne čimbenike i projekt restauracije

Theoretical Framework of Vernacular Pattern Reconstruction of Valuable Structures

Teorijski okvir rekonstrukcije tradicionalnih obrazaca vrijednih struktura

During the project, design priorities are determined after assessing the value of the rural layout. The architect, then, must acquire comprehensive knowledge about the existing patterns for improvement of the pattern in order to be able to reconstruct the vernacular and traditional patterns. "Knowing a pattern depends on knowing the background and all the forces related to it"[7] and it includes three stages: 1) recognition of patterns, 2) understanding of objective function, and 3) discovering the subjective relationship. Comprehensive knowledge of objective patterns during field investigation at the beginning of the design process results in an understanding of the type of function and relation between the objective patterns and subjective patterns. Therefore, it is necessary to establish the relation between each existing pattern and the complex reasons for its existence and other patterns, both desirable and undesirable. This knowledge of patterns is important part of the project and it requires experience and special skills of the architect. Otherwise, some desirable patterns may remain hidden from the architect.

Table I show that "the present patterns are created by the passage of time through general relation with climatic, natural, economic, living, cultural and social factors".[8] These patterns come two forms, subjective and ob-

5 Bell, 2003: 12
6 Alexander, 2002: 215
7 Sameh and Einifar, 2008: 49
8 Hatami-Khanghahi, 2006: 5

FIG. 2 VIEW OF KAZAJ
SL. 2. POGLED NA KAZAJ

FIG. 3 VIEW OF SOME PARTS OF ZONOUZAGH
SL. 3. POGLED NA POJEDINE DIJELOVE ZONOUZAGHA

FIG. 4 GENERAL ELEVATION OF KAZAJ
SL. 4. POGLED NA ELEVACIJU KAZAJA

jective, and sometimes affect each other. Table I also shows that structural correction of of objective patterns within the restoration project, either directly or through the subjective patterns design, results in a non-linear correction of effective factors and achievement of a desirable adaptation.

After the recognition stage, in which the aim is to understand the function and relations among patterns, the architect can prepare a suitable method for pattern design. Reconstruction of objective patterns results in suggestions of form and materials for the project. The results obtained from this path complete the progress of restoration which ranges from the pattern reconstruction project to desirable adaptation. This research evaluates an executive sample for each of design methods from the villages of Kazaj and Zonouzagh.

CASES IN KAZAJ AND ZONOUZAGH

PRIMJERI SELA KAZAJ I ZONOUZAGH

"In traditional societies, especially in rural societies, the pattern guarantees the continuation of traditional and vernacular architecture."[9] This study presents the actions taken for the reconstruction of some objective patterns in the restoration of valuable structures in the villages of Kazaj and Zonouzagh. The goal of presenting these cases is to explain a specific method that can be generalised for all rural societies.

The village of Kazaj is located in the north of the Khurosh Rostam rural district of Khalkhal, in Ardabil province, 17.5 km from the town of Hashtchin and 57.5 km from Khalkhal. The village of Zonouzagh is the centre of the Zonouzagh rural district of Marand in East Azerbaijan province, adjacent to the town of Zonouz and 30 km from Marand.

The layouts of Kazaj and Zonouzagh villages are terraced, due to their mountainous sites. The villages are located on a slope stretching down to a river and surrounded by gardens. Traditional materials used for walls, flooring and furniture have in these villages been inspired by the beautiful of the steep and narrow landscape. Fig. 2 and Fig. 3 illustrate the landscapes of Kazaj and Zonouzagh. The religious and tribal features are seen as a social layer in addition to the beauty of the layout.

Among the patterns designed according to the VPR method in the valuable structures of Kazaj and Zonouzagh, the design motifs of the patterns of "grape gardens" and "resurfacing with thatch" in Kazaj and the "doorsills of houses" and "drainpipe" in Zonouzagh are offered as examples of different methods in the reconstruction process of objective patterns.

"Grape Garden" Pattern (Pattern Modification Plan) – Narrow crossings with impermeable stone surfaces and the presence of livestock in close proximity to humans in Kazaj have led to the creation and repetition of a grape garden pattern to fulfil the need for greenery in a specific form over the entire village. Of course, the identifying role of this pattern as the external representation of the house and expression of life inside the house is also significant, such that it is repeated on the doorsills of houses in the village (Fig. 5). The owner of the house nearest to the pattern is responsible for its care.

This pattern is called "grape garden", because grape is planted in this pattern. The dominant form of this pattern is semi-cylindrical, and it is adhered to the wall that separates the yard from the passageway. The materials used in the pattern primarily include stone, mud, wooden rods and wire mesh.

We have analysed the form and dominant repeated materials of the structures and offered our plan, relying on the collected data after observing, distinguishing and understanding the objective function and determining the background reasons for the existence of the pattern.

9 ZARGAR, 2005: 17

Fig. 5 Examples of the grape garden pattern, Kazaj
Sl. 5. Primjer obrasca vrta s vinovom lozom, Kazaj

Fig. 6 Execution of the suggested pattern for grape garden
Sl. 6. Realizacija preporućenog obrasca za vrt s vinovom lozom

Fig. 6 indicates the preservation of the previous shape and modification of the existing pattern, while preserving the engineering principles, durability and reparability. Mortar made of sand and cement was used in the suggested pattern instead of mud because of its durability, and metal pipes replaced wooden rods, so it was possible to change the damaged rods without destroying the pattern. Wire mesh and wooden rods were used to protect seedlings from possible damage by livestock. The form of the suggested pattern is similar to the present pattern but is more durable and economical. The use of natural forms and materials in the suggested pattern is the principle that Pirnia described as self-sufficiency.[10] The location of the pattern in the plan should be selected so that it does not disrupt traffic in narrow passageways. The rooms created as a result of the recession of the passageway walls mostly near the entrance of houses and gathering centres of the village are the best places for the establishment of this pattern. It has been dealt with in the furniture location plan but it is beyond the scope of this paper. This pattern belongs to the village of Kazaj and is unfamiliar in other villages. Fig. 6 shows a sample of the suggested pattern for grape gardens in Kazaj. Where grapes are planted near the doors opposite to each other, they are supported by wooden espaliers and form a green canopy over the sidewalk. In cases such as these, restoration can be conducted using the framework of a combined pattern by modifying the basic pattern. Gosling, for one, believes that use of combined patterns brings vivacity to the rural layout.[11]

Pattern of "Resurfacing with Thatch" (Pattern Continuation & Modification) – The mortar used in thatch is a combination of local clay and straw[12] mixed with water and cured properly. As these raw materials are cheap and act as insulators, they are widely used for covering façades of the buildings in Kazaj. A sense of identity, unity, and visual and functional balance of façade elements in passageways of the village are due to the intelligent application of different local soils, in combination with mortar for thatch in three colours. Therefore the use of thatch mortar made of three types of soils including ochre, beige and white soils for resurfacing in Kazaj gives a special beauty and identity to the layout of this village. Ordinary clay in the village, which is beige in colour, has been used as thatch mortar, and most of the surfaces of the buildings are covered with this material. The mortar obtained from fine ochre soil and straw has higher density than the mortar made of beige soil. High density of ochre mud mortar makes it a good moisture insulator. Because of this characteristic, this mortar was used in the lower parts of outer walls up to the height of 80 cm, which are exposed to moisture caused by rain and snow. The mortar in thatch that is produced from white soil (Alava in the vernacular language) is harder and more durable than the others and is easily cured, thus it is used for openings and for covering the main façade of the loggia facing the passageway, which is used as a summer porch. Regarding the cases mentioned above, it should be noted that the thatch does not have the required resistance to weathering, and this is the main problem in using thatch to cover outer walls. Considered the duty of women, restoration of thatch on the façades of buildings is an art and a regular part of the restorative activity in the village. Restoration is carried out twice a year before rainy seasons, and from the perspective of social relations it displays the taste and interests of the housewives and their skills in the art of restoration. The characteristics of the three types of thatch mortar were derived from the data collected from villagers, and from analysis of the relation between the need and method of using those mortars on buildings. Considering that the vernacular methods have been

10 Pirnia, 2003: 31

11 Bahreiny and Aminzadeh, 2007: 120

12 About 45-50 Kg straw is used for each m^3 of thatch mortar.

FIG. 7 PATTERN OF DOORSILLS OF HOUSES, ZONOUZAGH
SL. 7. OBRAZAC PRAGOVA KUĆA, ZONOUZAGH

examined by trial and error during the time of the study, understanding of the pattern and coming to the conclusion based on it is appropriate for a rural community like Kazaj. However, if the suggested pattern is to be used widely in a rural community with similar specifications, tests should be carried out on the properties of each mortar.

After acquiring enough knowledge about the properties and the method of using thatch mortar for covering walls of buildings, the architect offered suggestions for the continuation and modification of the pattern for thatch mortar resurfacing. The architect wanted to preserve the apparent form of the village, which reflected its nobility and identity. Thus, the suggested method was an attempt to solve the existing problems of using traditional methods. Continuing use of the three different colours of mortar to reflect traditional materials and methods is the first suggestion the architect made for modifying the façade which required continuous restoration and maintenance. The modification method was suggested for solving the problems of some buildings, such as governmental, public and residential buildings, which are seasonal, and their incorrect maintenance can have undesirable effects on the general view of the village. However, this suggestion was offered within the framework of the expenses for executing the plan for public and governmental structures, and considering the personal expenses of the owners of seasonal property who can afford it. In modifying the pattern to solve the problem of the mortar's strength against weathering, the architect suggested replacement of the three-colour thatch with sand and cement mortar with added straw and concrete whose fabric and colour was somewhat similar to thatch. It seems that the use of 25-30 kg of straw in cement-sand mortar with some concrete colour considerably decreases the strength of the mortar. For this purpose, the wall of the building at the entrance of the village was covered with this mortar after the first bump appeared on the surface of about 200 m^2. As a test, the mortar lasted without considerable change for one year and three months, encouraging us to use it in more extensive areas in the village that were prepared for resurfacing. However, it is necessary to carry out the relevant tests to confirm the minimum required strength for generalisation and wide application of this mortar. It should be mentioned that the architect considered the undesirable effects of using this mortar which included the removal of the continuous façade restoration system conducted by the women in the village which could result in the reduction of the desirable symbols of competition among neighbours. Therefore a limited use of this method in public and private buildings is recommended. The economic reasons also reinforce the motivation of the villagers to use thatch that was made using traditional methods. Stone wainscoting with flaky ballast was another suggestion for walls up to 80 cm high that were exposed to deterioration from precipitation and passing of livestock through the passageway. This method was suggested because of limitations in the use of ochre mortar for the thatch, and the existence of some patterns of stone wainscoting in the village. This method was recommended in passageways, where the decrease in the width of the passageway as much as 40 cm does not create any problems in executing this pattern on both sides. Fig. 1 illustrates the suggested façade for one of the walls in Kazaj.

Pattern of "House Doorsills" (Pattern Continuation Plan) – Narrow and sloped passageways make it impossible for automobiles to enter the village of Zonouzagh. Thus carts and livestock are the main means of transportation of agricultural products and other goods. The doorsills of residential houses adapted to the slope of the passageways and marking the division of private property from public space, are repeated as a special pattern all over the village. Beside allowing carts

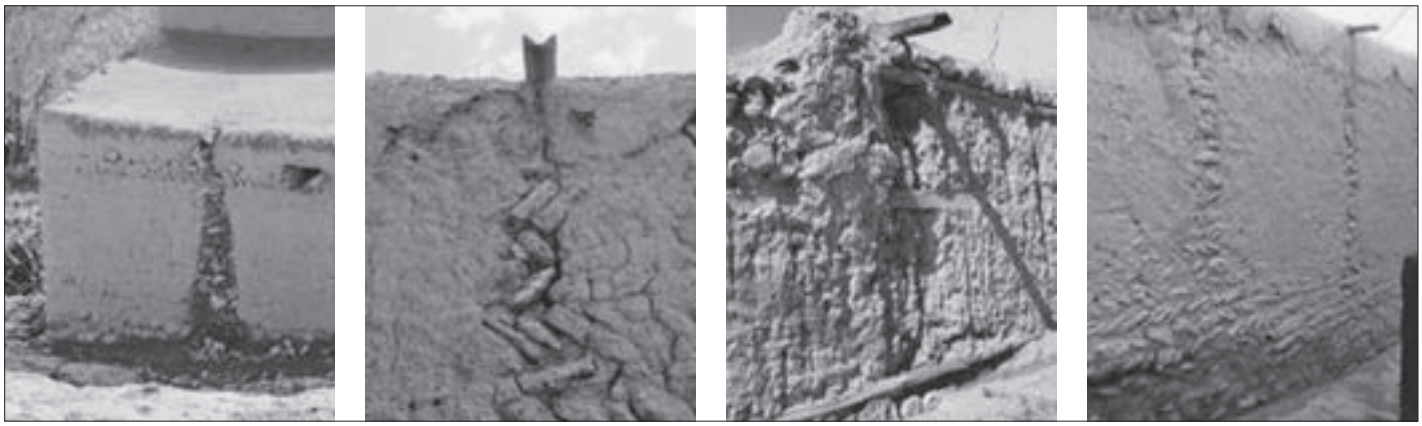

Fig. 8 Examples of moisture penetration in walls of buildings through gutters
Sl. 8. Primjeri penetracije vlage u zidove građevina kroz žljebove

and livestock to enter the houses this pattern also identifies the entrance of the house. Its proper orientation toward the most accessible side is significant for the family. The form of this pattern is a rectangle attached to the entrance door, and the materials used include primarily local stone, which is flaky but strong. The length of the rectangle of the doorsill is equal to the width of the entrance, and its width varies from 50 to 70 cm among different required samples. Vertical flaky stone constitutes the body of the rectangle, and its horizontal form constitutes the floor of the doorsill.

As is seen in Fig. 7, the floor of the doorsill is hollow when traffic comes primarily from the lower part of the slope of the passageway toward the entrance and carts can enter the doorsill directly from the lower part and without stairs and then enter the house. When the garden or the agricultural products are the centre of the family, and the permanent path of livestock are such that traffic flows from the upper part of the slope of the passageway toward the entrance, the pattern of the doorsill floor will be a rectangle extruded from the floor so carts can enter the doorsill directly from the upper part of the slope without stairs.

After gathering enough knowledge about the properties and the method of house doorsills, the architect offered suggestions for the continuation of the existing pattern. This assumes sufficient knowledge about the needs related to the type of living situation and other factors that affect formation of the pattern of house doorsills in Zonouzagh and also the form and materials used in the pattern. The section suggested in Fig. 7 includes two types of doorsills: higher and lower than the level of the passageway. The suggested method for the continuation of the existing pattern, and preserving the local forms and materials, uses only mortar of sand and cement in replacing the flaky stones to increase its strength. Other examples, including doorsills in combination with the Pirneshin (where old people sit) and doorsills at the entrances to public places, also use this plan, but they are excluded from this paper. In some cases where the passageways are not sloped, the suggested doorsill level in relation to the passageway and its flooring is different from that of the passageway because of an emphasis on its identity and definition of the entrance.

"Drainpipe" Pattern (Pattern-Making Plan) – The pipes in Zonouzagh are usually gutters placed on eaves, and due to incorrect construction of the details of these pipes, water and moisture penetrate the building and destroy the thatch façade (Fig. 15). In addition, the water pouring from these pipes spreads over the entire passageway and its walls and gradually destroys the façades of the building. This problem has negative effects on the life and the beauty of the village. Taking into account the characteristics and problems in Zonouzagh, it is necessary to develop a new plan for drainpipes. The acceptance of the new pattern is guaranteed by its conformity with the objectives resulting from comprehensive knowledge about the present conditions and needs of the structures, thus the suggested pattern should be a combination of vernacular and traditional materials and methods to preserve its harmony with other elements of the structure in terms of materials and methods of execution.

Taking into account the requirements related to the climate of the region, construction problems and undesirable effects of the existing drainpipes on the valuable structures of Zonouzagh, the proposed plan is presented as a new pattern. The suggested pattern conforms to the form of damage in terms of its shape and covers the form of the site of the damage with a strong layer of vernacular flaky stones. It is planned as a 4° slope on the vertical surface, such that the water resulting from precipitation reaches the surface of the passageway on the sloped surface. The use of flaky stone to connect the drainpipe and floor of the passageway acts as a culvert and prevents floor damage. Natural stone materi-

als and their method of construction are vernacular and economical and are adaptable to the environment in terms of form and fabric. By using the suggested drainpipe plan, the problem of water penetration and destruction of the wall will be eliminated and the vertical traces under the drainpipes on the façade will be removed in order to preserve the visual identity of the structure.

CONCLUSION

ZAKLJUČAK

The method of vernacular pattern reconstruction (VPR) is the result of practical experience of the author in the restoration method planning of valuable structures in the villages of Kazaj and Zonouzagh in Iran. This method reconstructs patterns based on comprehensive knowledge about all factors that affect the formation and function of the existing objective patterns of structures and takes into account the examples as presented. The results obtained from the study of formation trends of the suggested patterns shows that the way to design patterns for the restoration of rural structures is by use of one or combination of these three approaches. First, the pattern continuation plan. Considering the desirability of the existing pattern and adjusting it according to the conditions and requirements of the present, the suggested pattern is presented without any change or with minimum changes for the purpose of increasing the strength of materials used. Second, the pattern modification plan in which the existing pattern is applied to the structure with changes in materials and modification of pattern construction methods preserving its general from as a modified and desirable pattern. Third, the pattern-making plan, where a new plan that is adaptable to the environment, is designed and applied to the structure to fulfil the needs and solve the problems of the valuable structure.

In these methods, the skill of the architect is critical for discovering various dimensions of the relations that govern rural life and for creating awareness of the background of the existing patterns. This awareness helps the architect identify the repetitive components of the village layout and provides suggestions for rural societies that are appropriate for unique specifications of any village. Reconstruction of objective patterns that takes advantage of the environmental experiences of the village over time increases conformation of the patterns and suggested projects to economic, living, cultural, social, natural and climatic factors. The acceptance and participation of the community in the execution and organic continuation of the plan are the result of desirable adaptability of the suggested plans. To minimise problems in detailed design, managers of the restoration project should reinforce the beliefs of local authorities. It is additionally helpful if the architect is continuously present in all phases of execution.

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SOURCES

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ILLUSTRATION SOURCE

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FIG. 1-8 Author

Summary

Sažetak

Rekonstrukcija ruralnih struktura

Na primjeru sela Kazaj i Zonouzagh u Iranu

Vecina važnih i vrijednih narodnih struktura nalazi se upravo u ruralnim rezidencijskim područjima. One sadrže neke od narodnih obrazaca u detaljima koji pripadaju tradicionalnim gradnjama i javnom prostoru. Obrasci se pojavljuju u dva oblika, subjektivnom i objektivnom, a postupno se razvijaju prema potrebama i uvjetima ruralnog života. Subjektivni obrasci su obrasci ponašanja, poput društvenih konvencija i običaja koji postoje u nekoj zajednici ili društvu, dok su objektivni obrasci materijalni i egzistiraju kao prostori, fasade, namještaj i dijelovi arhitekture. Projekt restauracije takvih struktura uključuje poznavanje i rekonstrukciju objektivnih obrazaca unutar određenog broja narodnih obrazaca ruralnog tkiva. Metoda rekonstrukcije narodnih obrazaca (Vernacular Pattern Reconstruction, VPR) u restauracijskom projektu ponajprije ističe prednosti i nedostatke u objektivnim obrascima pojedine građe. Nakon faze prepoznavanja koja za cilj ima razumijevanje funkcija i odnosa među obrascima, arhitekt može početi s pripremom primjerenih metoda za kreiranje obrazaca. Rekonstrukcija narodnih obrazaca u svrhu restauracije narodnih ruralnih struktura je zapravo završni stupanj procesa koji su se kroz vrijeme razvijali u autohtonom ambijentu. Ne samo da su ove metode ekonomične, nego su i materijali i tehnike kojim se izvode autohtoni i financijski nezahtjevni.

Metoda istraživanja je praktično-adaptivna i valorizira usklađenost praktičnih primjeraka s efektnim čimbenicima. Autor je informacije sakupio od lokalnih ljudi, a selektirao ih je bibliotekarskom metodom. Kreiranje i nadzor nad restauracijskim projektom vrijednih struktura u selima Kazaj i Zonouzagh u Iranu je tijekom tri godine provođen od strane autora i njegovih suradnika. Među obrascima koji su kreirani na temelju metode rekonstrukcije narodnih obrazaca na strukturama Kazaja i Zonouzagha, u ovoj su studiji kao primjeri različitih metoda u procesu rekonstrukcije prikazani obrasci „vrt s vinovom lozom" i „prekrivanje fasada slamnatim pokrovom" u Kazaju te „pragovi kuća" i „odvodne cijevi" u Zonouzaghu.

1) Obrazac vrta s vinovom lozom. Pojavu i ponavljanje obrasca vrta s vinovom lozom u selu Kazaj uzrokovali su uski prijelazi popločeni nepropusnim kamenom i prisutnost stoke u blizini ljudi te se obrazac koristio kako bi se zadovoljile potrebe za zelenim prostorima u specifičnom obliku i u cijelom selu. Obrazac se naziva „vrt s vinovom lozom" jer sadrži nasade vinove loze. Plan koji se predlaže za ovaj obrazac je zadržavanje prethodnog oblika i modifikacija postojećeg obrasca, uz očuvanje principa gradnje, trajnosti i obnovljivosti. U preporučenom obrascu na konkretnom primjeru koristila se žbuka od pijeska i cementa umjesto blata i to zbog svoje trajnosti. Drveni prutovi su zamijenjeni metalnim cijevima tako da je bilo moguće promijeniti prutove bez uništavanja obrasca. Žičana mreža i drveni prutovi korišteni su za zaštitu nasada od štete koju bi potencijalno mogla nanijeti stoka.

2) Obrazac prekrivanja fasada slamnatim pokrovom. Korištenje žbuke za slamnati pokrov od tri tipa zemlje, oker, bež i bijele, za prekrivanje fasada u Kazaju doprinosi specifičnoj privlačnosti i identitetu sela. Slamnati pokrov ne posjeduje nužnu otpornost protiv klimatski uzrokovanog trošenja što kod korištenja slamnatog pokrova za prekrivanje vanjskih zidova predstavlja središnji problem. Nakon dovoljno dobrog upoznavanja s karakteristikama materijala, arhitekt je dao preporuku za nastavljanje i modifikaciju obrasca slamnatog pokrova sa žbukom. Koristeći i dalje trobojnu žbuku kao odraz tradicionalnih materijala i metoda, prva je arhitektova preporuka bila modifikacija fasada, i to onih kojima je kontinuirana restauracija i održavanje bilo neophodno. Modifikacijska metoda je predložena za rješavanje problema građevina kao što su državne, javne i stambene zgrade koje su sezonske i kod kojih nepravilno održavanje može imati neželjene posljedice na opće viđenje sela.

3) Obrazac pragova kuća. Pragovi stambenih kuća u Zonouzaghu, koje označavaju liniju podjele na privatan i javan prostor, ponavljaju se kao specifičan obrazac u cijelom selu. Prilagođeni su nagibu ulice, a oblik obrasca je pravokutnik koji prianja uz ulazna vrata. Korišteni materijali ponajprije uključuju lokalni kamen koji se ljušti ali je čvrst. Pod praga je udubljen kada promet dolazi s dna strme ulice prema ulazu. Kada se, na primjer, stoka krece od vrha ulice prema ulazu, obrazac praga poda će biti pravokutnik koji se uzdiže tako da kola mogu ući direktno preko praga s vrha nagiba. Kod predložene metode kontinuiranog korištenja postojećeg obrasca i očuvanja lokalnih oblika i materijala, koristi se samo žbuka od pijeska i cementa te zamjenjuje kamen kako bi se povećala čvrstoća.

4) Obrazac odvodnih cijevi. Odvodne cijevi u Zonouzaghu uglavnom čine žljebovi na strehama građevina. Zbog nepravilne konstrukcije dijelova tih cijevi, voda i vlaga penetriraju u građevinu i uništavaju fasade prekrivene slamnatim pokrovom. Uzimajući u obzir potrebe koje zahtijevaju klimatski uvjeti regije, konstrukcijske probleme i neželjene efekte postojecih odvodnih cijevi na vrijednim strukturama Zonouzagha, preporučeni plan je korištenje novog obrasca. Predloženi obrazac prilagođen je oštećenju u vidu oblika i pokriva oštećeno mjesto sa čvrstim slojem lokalnog kamena. Plan podrazumijeva izvedbu nagiba od 4 stupnja prema vertikalnoj površini tako da vlaga i voda od padalina nagibom biva usmjerena prema površini ulice. Korištenjem predloženog plana za odvodne cijevi, problem penetracije vode i uništavanja zidova se eliminira.

Rezultati dobiveni studijom predloženih obrazaca pokazuju da je pravi način na koji se kreiraju obrasci za restauraciju ruralnih struktura uporaba jednog ili kombinacija sljedeća tri pristupa. Prvi je nastavak korištenja obrasca. S obzirom na poželjnost postojećeg obrasca i njegove prilagodbe uvjetima i potrebama sadašnjice, preporučeni obrazac ne predlaže nikakve promjene ili tek minimalne izmjene u svrhu povećanja čvrstoće korištenih materijala. Drugi je modifikacija obrasca. Postojeci obrazac se primjenjuje na strukture s promjenama u materijalu i modifikacijama obrasca konstrukcijskih metoda s očuvanjem njegovog općeg oblika kao modificiranog i poželjnog. Treci je kreiranje novog obrasca. Kod trećeg obrasca se izrađuje novi plan prilagodljiv okolini i primjenjuje se na strukture kako bi zadovoljio potrebe i riješio potencijalni problem strukture. Ova metoda poboljšavanja vrijednih ruralnih struktura rezultira poželjnim prilagodbama preporučenih obrazaca klimatskim, prirodnim, životnim, ekonomskim, društvenim i kulturnim uvjetima.

Tohid Hatami-Khanghahi

Biography

Biografija

Tohid Hatami Khanghahi, Dipl. Eng. Arch., graduated in 2001 from the Faculty of Architecture in Imam Khomeini International University, Iran. Since 2001, he has worked at the Faculty of Architecture at Mohaghegh Ardabili University, Iran. Since 2003, he has been researching restoration of traditional and valuable urban and rural structures. He is doctoral student at the Faculty of Geography and Urban Planning at Tabriz University in Iran.

Tohid Hatami Khanghahi, dipl.ing.arh. diplomirao je 2001. godine na Arhitektonskom fakultetu Međunarodnog Sveučilišta Imam Khomeini u Iranu. Od 2001. godine radi na Arhitektonskom fakultetu Sveučilišta Mohaghegh Ardabili u Iranu, a od 2003. godine bavi se proučavanjem restauracije vrijednih tradicionalnih urbanih i ruralnih područja i struktura. Pohađa doktorski studij na Fakultetu geografije i urbanizma na Sveučilištu Tabriz u Iranu.