

**THE EFFECT OF CULTURE AND BEHAVIORAL PERCEPTION ON  
SUSTAINABILITY THE ARCHITECTURAL STYLE OF CLAY  
BUILDINGS IN HADHRAMOUT REGION, YEMEN**

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**ABSTRACT**

The effect of culture and behavioral perception on architectural style can be achieved on two basic levels. The first level is conceptual-perceptual and the second level is physical-formal. The study of the effect of culture and behavioral perception on architectural style requires an objective tool for testing. It was found from previous literature that there is a special relationship between culture and behavioral perception and architectural style. Thus there is a clear conceptual status for the objective tool and method through which we

can study and examine the effect of culture and behavioral perception on architectural style. The thing that makes up this relationship, i.e., the statement of the problem in the present study. This study aims at highlighting the relationship between culture and behavioral perception on architectural style. The thing that can be used as a continuous detective method to study the architecture in a certain region. This can be carried out through the implementation of continuous observation tool in the architectural style in both levels conceptual-perceptual and the physical-formal. The main hypothesis of this study is based on the possibility of adopting architectural style as a method for studying and extrapolating the effect of culture and behavioral perception in the history of architecture. The thing that referred to as permanent system in this study. To approve the study hypothesis and achieve its main objective, the researcher has adopted a sequential approach based on an analytical and critical study of previous literature concerning with architectural style as to highlight its

conceptual properties. This might lead to finding out the relationship between culture and the perceptual and physical properties of architectural style, so as to achieve the concept of architectural continuity. The inhabitants' awareness of the architectural heritage environment will support the study hypothesis. Finally, this study seeks for certain guidelines for sustainable effect of culture and behavioral perception on architectural style of clay buildings in Hadhramout region.

**KEYWORDS:** Culture, behavioral-perception, architectural-style, architectural-continuity.

## INTRODUCTION

Perception is a word linguistically used to refer to the process of sense which differs from the psychological definition of the process of cognition. Besides, perception is used to refer to the mental process that enables human to feel compatible with the environment in an attempt to recognize:

- Human and natural environment and the different effects for the material and moral forces surrounding the man and his reactions towards them.
- Human motives and his perception on life.
- The effect of time, learning and education on human behavior.
- Human's capacity to adapt to different effects they are exposed to.

Perception is considered a complex process created by the current sensations as well as internal factors such as retention, imagination and past experiences, in addition to the external factors. However, sensation is considered as a warning factor activated by the sensational stimulus. Thus, in order to comprehend the process of perception and the individual behaviors in the community, we need to be aware of that the inhabitants in the industrialized and developmental countries hold special conceptions about the architecture spaces which are relevant to cultural and regional content of the architectural area they live in. Besides, these conceptions are related socially and culturally to their lifestyle. Moreover, they are related to the educational and economic level of the inhabitants of a certain area. The thing that constitutes the level of their awareness concerning architecture style. Besides, the self-perception process for the individual is affected by the physical, psychological and social factors. Furthermore, this process is also affected by the past experiences and beliefs and

present mood and future expectations, which are responsible for the difference in the perception process. The people's behaviors are not only related to the perception process as a whole but they also expressed by them. Hence, the perception directed behavior, and thus we can link between the general content of the perception process and individuals' behaviors and the development and achievement of the living requirements. These requirements are in turn reflected on the methods they adopt to change the architectural space (internal) as well as the horizontal facades and the urban space (external) which includes facades.

### **Type, Model and Style Triple-Class System**

According to the dictionary, the style is defined as a pattern, and a way of expressing something. In addition, it is a way to convert ideas into words. Style is a way of expressing the spiritual, cultural and human values. Besides, it is a language which is subject to the evolution and adaptation to the time. Thus architectural style is considered a language including the pattern or the design that turns ideas into forms. Therefore, whether models were outcomes of civilized, social, sensory, graphical, functional requirements, they are still governed by their absolute intellectual invisible and physical visual embodied dimension. The thing that shows the possibility of defining and interpreting the models in the light of the (Type & Topology). Type as defined by Rykwart (1963) and others, encapsulates the intellectual dimensional of something. However, it is vague and general and has full symbolic dimensions in mind. The Type is reflected physically in the Model, which represents a special case of a pattern with clear and limited features (Figure 1). The emergence of the architectural style is based on the evolution of a series of buildings with formal properties (Concept Forms) which commonly and intellectually have come to being. Such properties carried within them the solutions for intellectual, functional, religious, cultural and ideological requirements. According to Rykwert (1963), the initial or the original types or (Archetypes) are drawn from a series of architectural models to extract the formal conceptual common basics and elements of the internal structure of the form. However, the prototype characteristics can be deduced through the analysis of a group of architectural repeated models. Consequently, the potential possibilities of interpreting the concept of style is presented within the contexts of Typology Theory. For instance, Schelling, in the nineteenth century, stated that the style encapsulates two existed parts; the first one is intellectual and invisible which is centered in mind. This part is called the absolute part (Absolute) by Schelling. The second part is physical and visible which represents the physical form of the concept of the style.



**Figure 1: Style Holds tagged Values of Type.**

### **The Problem of Style in the Architecture**

The problem in architecture is similar to a lot of concepts related to architecture and its history and the problems of communication among others. This problem came as a product of the eighteenth century and beyond. Its novelty relatively referred back to, over generations, the experience of building which is being transferred from one generation to another. With such experience, special architectural traditions are transmitted in form and style. Thus, when human is unable to come up with a new addition to his experience, this experiment begins to decay and collapse. This has been confirmed by Collins (1971) who points out that until (1750AD), the architecture was concerned with the art of the construction according to the basic principles agreed upon. Besides, the architect's imagination and his artistic feelings can be expressed in full as long as they don't exceeded this framework of these well-known principles. The classic concept of the model have remained in place until the eighteenth century, for example, in the European Ages and early Renaissance, despite the variety and divergence of intellectual and cognitive orientations, the Classical Orders have remained as a basis for the formation of the building's outside, even as an ornamental style. The eighteenth century has witnessed intellectual transformations in terms of the theme of style in architecture. This century is followed by the nineteenth century which is transformed into an intellectual and selective architectural style. In those two eras, several thoughts have been emerged on the subject of style and they constitute an important link in the series of the intellectual development of architecture which has extended to the twentieth century to be the basis for a broader and more comprehensive approach.

### **The Problem of Architectural Style in Hadhrami Architecture**

Mud architecture civilization has prevailed in this region, which represents a great example for human positive relation with the environment in a creative and efficient way. Such civilization has combined with this region's diverse terrain and materials in the valleys and mountains resulting in witnessing a renaissance from its own mud, stones and straw. However, many of the buildings, which have architectural value, in this region have recently exposed to neglect, abuse, misuse, removal and vandalism due to the deterioration of the

areas in this region. Besides, the lack of conservation, renovation, and restoration in addition to neglecting the supervision of the work all lead to deterioration of the areas in this region. This study will shed light on the factors that have architectural and historical value with its various planning and architectural styles. Moreover, it will discuss the process of protection, restoration and renovation of such buildings to preserve their architectural identity. In addition, it seeks to bring back the roots and architectural authenticity and continuity as a starting point to preserve the Hadhrami home by linking it to its original nature and traditional environment as an urgent request. Furthermore, the study aims at reaching to implications for the materials that can be exploited to impart unique architectural style on the civilized or new-established areas which face changing circumstances experienced by the Hadhrami people who interact with the environment in such areas.

### **Approach to the Study**

In order to have a general understanding of the physical changes in architectural style for the structure of the clay buildings in the cities of Hadhramout region. This region has been divided into zones approximately. There is the old region (the traditional area), and the modern region (the random). This spatial division, however, is based upon the historical growth of the cities in this region and the events that had a clear impact on the physical structure of architecture style of the buildings of these cities. These events were caused by the immigrants who came from abroad with a new culture in the art of architecture.

### **The Study Hypotheses**

In this study, it is hypothesized that the continuous change of architectural style of clay buildings in the cities of Hadhramout region is reflected in constructing a random environmental settlement. Consequently, the physical architectural style of Hadhramout region is subject to degradation".

### **METHODOLOGY**

The methodology of this study is designed based on the study objectives which seek to examine the extent to which the random architectural style of the clay buildings has dominated the building form. Specifically, the present study methodology is based on:

- 1- Physical Survey: This is mainly concerned with the layout and facades of a sample of buildings.

- 2- Site Observation: This measure is adopted to record the physical conditions of the residential environment.
- 3- Physical Check-List: Physical check-lists and photographs are conducted with the major aim of collecting information about the physical site and the type of buildings in the zones.

### The Design of the Historical Zones

Case studies presented in (Figure 2) demonstrate the availability of public buildings in the locations situated in the outdoor spaces and not the most important squares in which extra buildings can be built. Therefore, a clear distinction between the private and public areas should be made. To distinguish between the aforementioned squares and to minimize the number of the inhabitants in the in the outdoor spaces, the following suggestions are made:

- 1- The public buildings after the planned extensions should be semi-private green areas that serve as back squares controlled by the residents, rather than being semi-public open green spaces run by local authorities. Such places as the green areas are constructible in places where not only closed spaces are required but also privacy.
- 2- The ground floors of buildings could be used as commercial places, as demonstrated and planned in the commercial center in amass public housing buildings. Consequently, several rooms in the houses located on main streets have been changed to be commercial shops. That would likely increase residents' income.

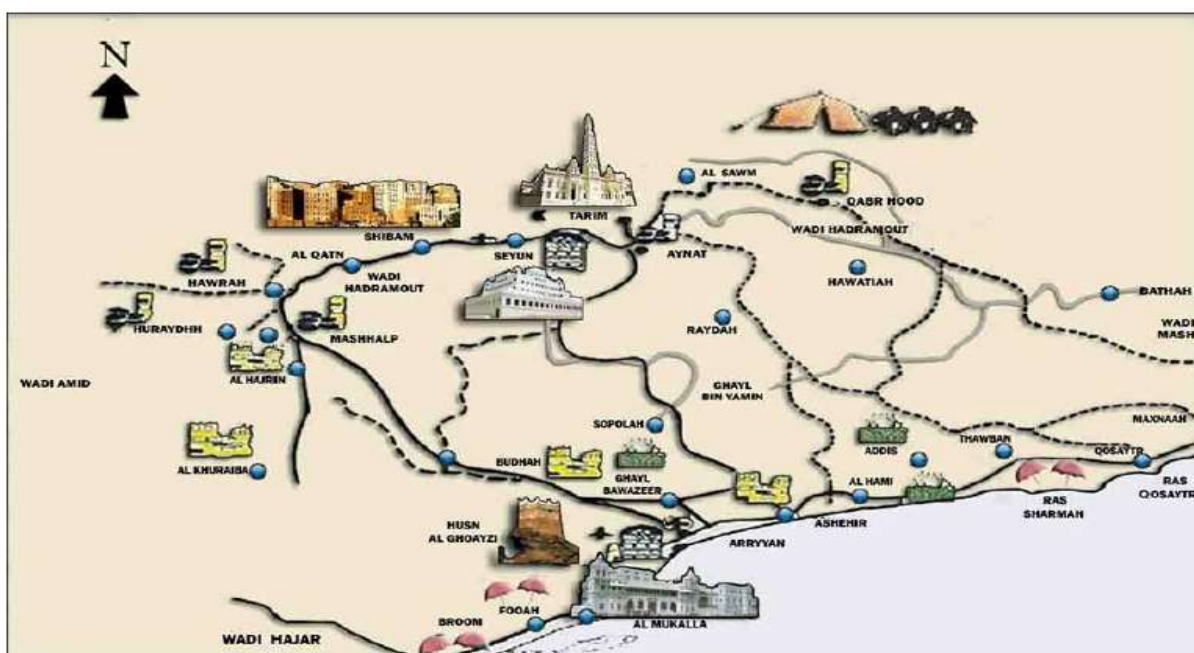
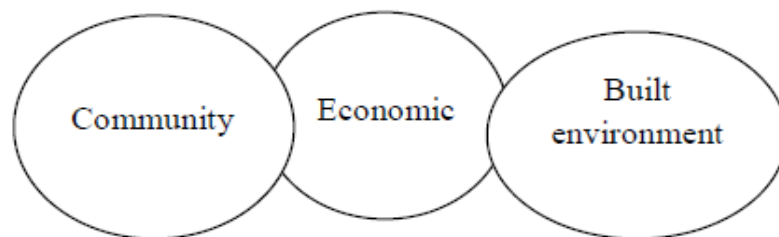


Figure 2: Main Map of Historical Zones in Hadhramout Region.

### Sustainability Factors in the Old Zones

The term 'sustainability' is a holistic term for being linked to the development of natural and human resources, particularly the pattern of human interaction with the environment (Chauhan 2008). Sustainability generally means conserving resources of various kinds so as to preserve the right of future generations to enjoy a dignified life. It is worth saying that sustainability ideology existed in earlier civilizations, yet, it was not carrying the same scientific terminology that is known in the current time. No doubt, man in earlier civilizations learnt by nature successful methods for dealing with environmental and human resources, achieving the best ways being sought to the present time in order to achieve sustainable and highly efficient buildings.

Long time ago, Hadhrami cities with their various components and its arrangement and planning to provide in a great measure for their inhabitants, socially, economically, environmentally and securely stable life based on the principle of deepening the relationship between man and his environment, reflecting the concept of sustainability with its three major aspects; economic, environmental and social (Figure 3). These cities managed to survive for hundreds of years due to their elements and characteristics that enabled them to achieve the main themes of sustainability with different dimensions.



**Figure 3: Main Axis's for Sustainability Factors.**

#### Environmental Factor

Environmental factor concerns about man's dealing with various environmental resources, in the process of construction, and also in terms of building's compatibility with the environment since its erection and during its use.

#### Social Factor

This aspect concerns about dealing with human resources in general, and in the scope of buildings, it focuses on the importance of building's compatibility with the social and humanitarian requirements in particular.

### **Economic Factor**

This aspect concerns about the relationship between the building and the economic aspects, the more the building is compatible with economic competency, and obtaining the facets that achieve frugality in construction costs and operating costs, the more the building is compatible with the sustainability requirements.

### **Architectural Style of Clay Buildings in Hadhramout Region**

The architectural style of Hadhrami architecture has received a great attention by Hadhrami architects (Figure 4). It has been dealt with in several ways by giving solutions that has been developed in accordance with the cumulative, knowledge-based, cultural architectural approach. The Hadhrami architectural engineer has processed the ultimate ability, which enabled him to deal with the temporal and spatial variables to form the most suitable style for the natural and social environment. Thus, it is through his experience, the Hadhrami architect was able to produce architecture which is consistent with the environment with regard to thermal and optical satisfaction in addition to the psychological satisfaction of its artistic style. However, many of the architectural elements of the mud building had been adopted at the beginning in the civilized regions. The architectural style of mosques were erected near tombs of saints or by wealthy returned merchants, their number increased greatly, until in Tarim alone there were said to be 360 mosques, (Lewcock, 1986). Consequently, such artistic style has been rapidly formed and has its own specific and distinctive features since the facades and spaces have formed a complete illustration of the perfect sense of human scale, functional, aesthetic, and visual relationships in the old zones were given a quick cosmetic paint with lime (*Al- Noorah*) to blend with new buildings, (Damluji, 2007). Rehabilitation work will help to sustain local interest and the value of the architectural style heritage, (Damluji, 1992). Thus the study of the principles and confirming the construction elements and the relationship of each of them and its relationship with the streets and the surrounding areas have been discussed.





**Figure 4: Architectural Style of Clay Buildings in Hadhramout Region.**

### **Towards the Architecture of the Continuity**

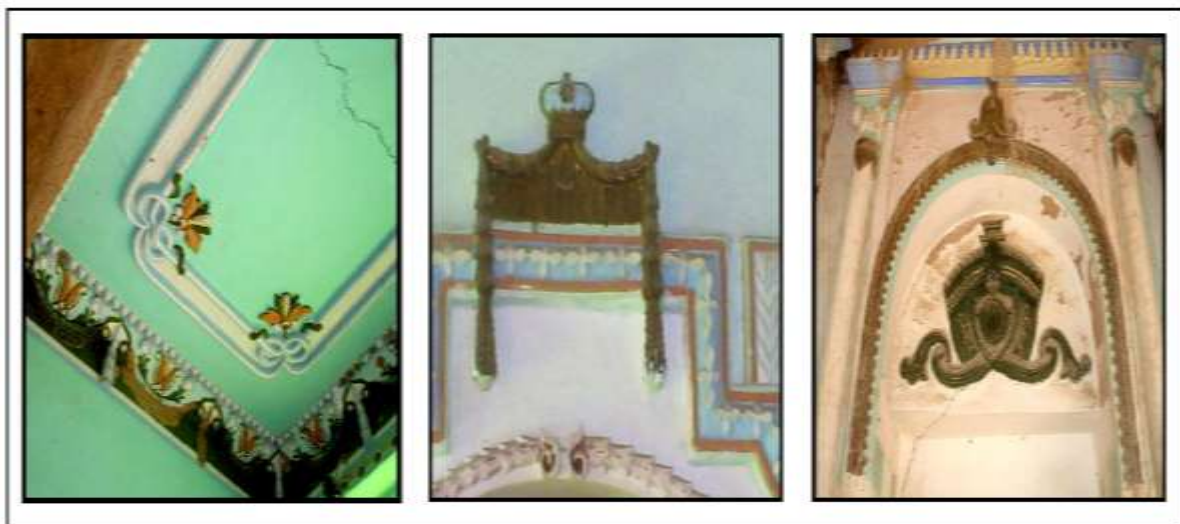
The previous examples implied that multi-storey public housing transformation is not unique in Hadhramout region and other regions in Yemen. Yet, authorities and professionals continue in implementing conventional, inflexible mass housing projects on the one hand, and the inhabitants also proceed in such projects due to the changing needs and lifestyle that continue to change their living physical environment on the other hand. (Turner 1976) argues that "housing is not what it is, rather it is what people do"... besides housing is not an outcome. This confirms the needs of design solutions that facilitate the actual structural expansion to be made without rapid degradations of the newly built housing areas. The concept of the design of continuity or the designs allowing transformation will be presented in the following examples (Figure 5).



**Figure 5: Continuity Architectural Style of Clay Buildings in Hadhramout Region.**

### The Role of Culture and Behavioral Perception on Residential Building

The cultural and personal concepts represent a key dimension in the analysis of social facts which cannot be compared with their counterparts. Such concepts are interpreted in the light of the mutual relationship between them and other types of cultural, economic, political, psychological, and historical facts. Thus the inhabitant in a certain housing unit both in civilized or developing societies is merely a member of a large community formed by groups of people living on one area of land which makes them in constant communication that allows interaction between individuals. This thing that shows the cohesion of society through a general social and cultural format that regulates their living activities and shows the cultural dimensions, and their distinct behavioral.



**Figure 6: The Effect of Culture and Behavioral Perception on Interior Design of Clay Buildings.**

The members of a certain community vary in their behavior and ethical ideas that control their relations. Such relations include a set of rules and objective principles that are compatible with the logic of their time and approved by their community either voluntarily or as a matter of commitment to the laws. The members are agreed to respect these laws as long as they are for the benefit of the group. These laws include everything related to cultural and behavioral awareness, and legislation and laws that govern individual relationships with others. However, the behavior is usually influenced by traditional values, and the existing heritage of literary, poetic, artistic and philosophical concepts among others (Figure 6). Thus, the social researcher can know which social class a person belongs to through studying his social behavior and his behavioral poise.

### Factors Affecting Transformation

One of most important factors affecting the transformations in architectural design and style is the shortage of alternative accommodation when the building do not meet the function and social needs of inhabitants in urban housing, and thus it becomes difficult to find adequate dwelling (Figure 7). Therefore the housing buildings which are built according to a list of modern architectural factors are unlikely to be able to continue in the foreseeable future. If inhabitants need different accommodation, (in a way different from the traditional norm of living) therefore, they must alter what they have of technology of the original building, in addition to utilizing the amount of space available. Such factors are influencing the occurrence of transformation in multi-storey concrete buildings in preventing actual transformation in style and design in such buildings. However, concrete buildings are considered a structure exposed for a total transformation, the thing that results in changing such buildings to merely a building with one storey. Consequently, it is possible to see that urban expansion in building for cities do not need to be constructing in the same local original materials used in constructing such buildings. However, utilizing these materials helps in providing free wide areas around the buildings, which is considered a major factor in facilitating transformations in architectural design and style through building an additional random part in the house.



**Figure 7: New Buildings Affecting the Transformations in Architectural Style.**

Another factor in transformation is the social economic homogeneity of the families living in the same zones of cities. This factor is particularly important in the case of vertical expansion where it is expected that those families co-operate and contribute financially in constructing the initial structure of the building. Nevertheless, the changes in the original structure of the building may lead to unsafe construction. This particularly important in the case of the

buildings located within floods prone zones where informal building construction can be disastrous. Therefore, this reason may suggest a need for solutions with regard to the design which enables residents to change their building without facing problems of the strength and stability of structures.

### **First: The Study of the Dimensions of the Change Process in Residential Buildings**

This part deals with the analysis of the phenomenon of change in residential buildings, and the reasons why individuals resort to the decision of change and adjustment in the plans and facades of their residential units. The thing that leads to losing harmony and integration in these units which are considered two demands of at least the facade of one building.

### **The Conditions of the Process of Change in Residential Buildings**

With the identification of cultural and personal dimensions, and the behavior of individuals and society, and the individual perception and behavior in the community, we find that there is a considerable major relation between them and the interpretation of the process of change in the dimensions of the housing units. The following are some pictures that illustrate this point. (Figure 8).



**Figure 8: Conditions of the Process of Change in Residential Buildings.**

### **Second: Reasons for the Change in Residential Buildings**

The second part of the study deals with investigating the reasons for the change in residential buildings, through introducing the functional and constructional reasons, that connect residents of the residential units. In addition, these reasons will be highlighted through

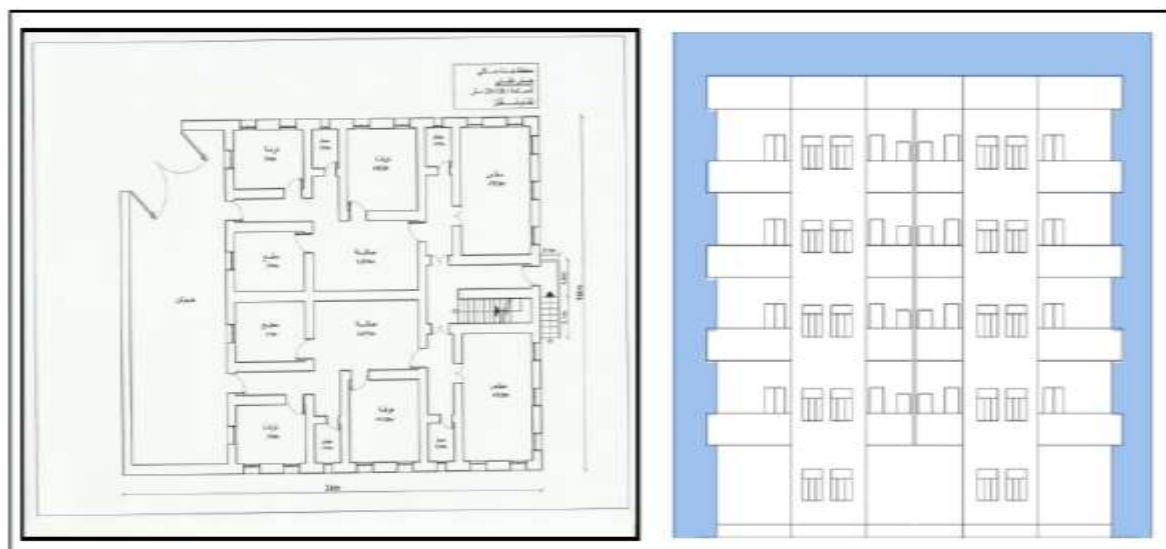
examining the performance of architects, and various structural and legislative conditions affecting the exterior buildings' facades. This in turn influences the urban spaces, through which the process of change and the nature and spirit of the place and time are reflected. The architectural change is influenced by the change in the time factor which is linked to the increased human development achieved by and moving to different developed and underdeveloped societies alike. This development goes along with another development in different social systems that determine the communities' attributes, and the members' ideas. This is to meet their requirements that are related to the reality of personal and cultural problem that forms the perception and behavior. What follows are some reasons for the change in residential buildings.

### **The Economical-Functional Reasons**

The researcher traced the economical functional reasons as follows.

### **The External Change made by Inhabitants**

The change and the evolution of social conditions have an effect on the family and the form of elements of the residential unit. The thing that leads to population increase, and inability to move into more spacious residential units for the reason that there is only few units offered for sale, and the lack of financial capacity to get more space. Thus the urban architectural change in the residential unit comes as a result of economic reasons with the motivation to increase space of a room or adding another useful unit. This can be shown in the horizontal plan (layout) (Figure 9).



**Figure 9: Plan of Clay House after Changes by Inhabitant.**

### **Justification for the Change by the Inhabitants**

The reasons for the change appears in the facades of residential buildings by the inhabitants who live in these buildings. Such reasons are made clear through cognition factors, personal behaviors, psychological and personal features that reflect the different social, economic and cultural conditions. These reason are reflected through various methods as follows:

- The desire to be distinct in the community, the thing that leads to the development and civilization of the societies if they are in the right track. However, this factor has created inappropriate change in the imitation process of the local tradition in architectural nature.
- The will of being distinct in the community through the use of frontage which has led to the use of the most expensive and newer materials than the original ones in the buildings even if there was no need to use them.
- There are also some political and psychological reasons due to the attempt of the ordinary people to be distinct in an environment characterized with monopolizing power and absence of freedom of expression. Therefore, there is no way to express themselves except by making a difference in the front part of the house, even by painting it with a different color.
- The change of personal vision and taste with the course of time as a result of the private experience gained with the increasing migration of Hadhrami people to abroad, where there is an openness to different cultures.

### **The Change the Facades by the Buildings' Owners**

The process of changing the residential construction is considered a common phenomenon brought about by the buildings' owners. Thus, this change is made clear in the shape of the facades which are different from the local traditional characteristics of old buildings. This leads to a distortion of the exterior part of the building. Besides, the change may lead to a difference in the architectural character of the new buildings which appear different from the rest of the traditional old buildings due to the absence of legislation for the construction process.

### Construction Reasons

Different human societies are exposed to a range of economic, social and technological developments. The thing that is reflected on the loss of cultural features and originality in environmental design concepts such as architecture, and functional construction. Further, these developments lead to many attempts to meet the needs of the inhabitants of the residential units and the attempt to reach the standards and factors of aesthetic values that achieve comfort. At the present time, we are experiencing difficulties and cons most important of which is the abandon of our architectural heritage originality and the unawareness of aesthetic sense. Consequently, patterns of architectural buildings which lack originality have appeared. Such buildings reflect the ease of making changes in the facades of residential buildings. Further, the inhabitants do not resort to any regulatory organization concerning with the system of residential buildings ownership and organizing the relationship between the landlord and tenant with regard to maintenance and continuity condition. The absence of urban planning of buildings, and the presence of exceptions and the weak supervision of construction regulation laws that are consistent with the modern developments of construction methods have led to infringement and contrast in facades construction. Thus, if the models of the buildings' facades are renewed and clean, and the heights and the styles are similar and close, this indicates the existence of a society governed by rules and regulations that consider architectural details and master them. This can be added to the existence of a strict executive body that monitors what is happening and punishes the wrong doers. Among the most prominent reasons leading to the spread of the change in residential buildings are the following:

1. The absence of binding rules by the authorities responsible for issuing license, the thing that necessitates consistency between the elements of unity in the buildings and the design of raw materials and colors, in addition to the lack of respect for laws and legislation governing the construction process.
2. There is no specification for giving certain characteristics or style for the area and the zone within the framework of architectural conditions of each region that considers the heights and the distances between the borders of neighbors.
3. The absence of commitment in the part of the owners of residential units and being careless regarding the law and its consequences, which state not to allow anything to change the external facades or making slots without prior approval.

4. There is a lack of the cultural clarification among a large part of the members of the society who do not consider the importance of the architect's role in architecture. Consequently, people resort to other workers to do the same role of the architects regardless of their specialization. This results in many serious deficiencies in design and making the unit's owner exert effort to repair things to increase the lighting, ventilation and areas... etc. In addition, there is a neglect among some architects to give enough time to study their projects.

### **Environmental Reasons**

Among the environmental reasons that led to the spread of the phenomenon of change in residential units are the increased population, and the high density rate of buildings represented by the emergence of high-rise towers. Consequently, there is a decrease in privacy and lack of vision in the outdoor spaces and the green spaces. Besides, there is a low level of cleanness in the part of the inhabitants and their neighborhoods for which they are responsible. Furthermore, the streets are crowded with cars, noise and pollution, making the area a source of inconvenience and noise.

### **RESULTS AND ANALYSIS**

Based on what has been mentions before, the study has revealed that there are some effects that influence human behavior, the thing that plays a major role in the realization of the user on how to deal with its own housing unit. Moreover, the study found that though there are some differences in the perception and behavior among the inhabitants of residential units according to differences in culture, all of them have certain needs as follows:

#### **Environmental Needs (Climate and Natural Environment)**

These needs include the appropriate and adequate house that provides protection from climatic factors of temperature, humidity and rains throughout the year periods without disruption regarding any of the needs (socio-economic). Moreover, the house should be an appropriate dwelling that provides the ordinary needs of inhabitants such as the lighting, the ventilation as well as the sense of being a human being.

#### **Social Needs**

These needs include appropriate psychological environment of the home internally and externally. Such home environment should provide security and privacy and residential place for the inhabitants. Further, it should achieve consensus and harmony among residents and



neighbors in the residential dwelling unit, and the neighboring building and zone through having almost the same social level and manners. In addition, it should provide security and basic tranquility for the inhabitants to contribute to family stability and achieving the desire of owning their homes and maintaining, improving and developing it.

### **Economic Needs**

This refers to the appropriateness of the residential unit to its inhabitants in terms of construction, cost and the cash value of exploiting it. Besides, it should be compatible with the inhabitants' financial level in terms of doing maintenance and furnishing it internally in a way compatible with the spacing specified for furniture. Therefore, there must be a link between the general development of the interior of the residential unit and the change in its price.

Thus, there are some outcomes of the change process in the horizontal facades or the frontage in the residential unit as follows:

1. The change in the residential unit reflects the inhabitants' needs for a certain functional requirements inside the unit. Consequently, they ask the architect to consider these requirements when building it. The thing that is reflected on the outside form of the residential unit.
2. The prevalence of individual's desires over other considerations to do changes in the interior part of the residential unit is reflected in turn in its exterior part. Consequently, many negative effects are resulted and shown in the demolition of the architectural values of the facades' design as a whole. This in turn leads to incompatibility among the flats in the exterior part of the residential unit, in addition to using various materials for constructing the openings. Further, there would be contrast and difference in colors of paints of the materials used in finishing the exterior part of the residential unit.
3. Considering the fact that the process of change should be thought of as a predictable phenomenon. Besides, it is linked to the time evolution and social needs of man.
4. The process of observing the methods and procedures of the architectural design which occur in the exterior facades of the residential buildings clarifies that the inhabitants of those buildings are unaware of the collaborative thinking that form their perceptual,

behavioral, and cultural aspects. These aspects are built upon comprehending the aesthetic, and artistic taste which is necessary to preserve the general design of buildings.

### **The Outcomes Resulted from the Process of Change in Residential Buildings**

- Random and irregular work leading to disrupting the element of homogeneity in the buildings.
- The high cost of buildings due to implementing the work conditions twice by the contractor and then by the inhabitant of the residential unit.
- General pollution which includes: environmental pollution, visual pollution, and health pollution.
- Wasting the artistic taste of individuals, which is the opposite of considering aesthetic values.
- Losses in materials, time and effort as a result of repeating architectural work and modifying the inside part of the residential building.

### **Recommendations**

There are three basic elements to control the process of change in residential buildings as follows:

#### **The Design Element**

- Designing facades that are difficult to modify or close terraces located in them.
- Flexibility for future design with the anticipation of possible adding of spaces in plan and changing in a specific direction.
- Utilizing some materials whose colors are difficult to change.

#### **The Social and Cultural Element**

There should be upgrading for the culture of individuals in all stages of education and raising their awareness of the importance of preserving buildings that have architectural and historical value. This can be done through giving lectures, seminars and information about them. Besides, exhibitions can be held to contribute to familiarizing inhabitants with the construction of certain material (mud) and preserving the architectural style.

- Understanding the historical and artistic value of the area in which the buildings occur through giving more attention to the restoration of mud buildings and the preservation of this unique style.
- Highlighting the modern architectural projects which are built using mud in the developed countries in order to correct the erroneous impression that is held by many people in the developing areas where there is a link between using this material and poverty, underdevelopment and disease.
- Teaching the use of the mud material as construction material in the syllabuses of architecture and engineering colleges and institutes at the university. Consequently, this will give students some technical information about this material and its characteristics and some simple possible ways to develop them.
- Raising the interest of people through the media with the development of aesthetic taste and artistic sense of the individuals and the community. This thing is reflected in the surrounding environment at all levels.

### **Economic and Environmental Component**

Highlighting the economic aspects of mud building at all levels through specialized studies, both in the initial or operational cost that include energy consumption, maintenance among others. In addition to comparing such buildings and their cost with other similar buildings constructed with other materials as to contribute to the adoption of mud buildings as a solution to the housing problem that many developing countries suffered from. Focusing on the environmental dimension of mud building, especially in industrialized countries, and highlighting the environmental aspects of this material (mud) both with regard to production issues and the use of appropriate technology that reduces pollution or any other related waste which is considered not harmful and not distorted to the environment resulting from the construction process using this material and taking the necessary means to highlight it.

### **ORGANIZATIONAL ELEMENT**

- Observing and controlling all elements of the amendments, both on the horizontal plan or the facades.
- Binding the offender to pay the costs to re-construct the amendments to its former status.

- Imposing Fines on all violations of the change when the inhabitant does not refer to the building's owner or when breaking the construction laws.

## CONCLUSION

This study has highlighted the relationship between culture and behavioral perception on architectural style and how this transformations phenomenon of residents' buildings from traditional to random design happened. Below are some conclusions of the present study:

- 1- Transformation activities of buildings range from simple closing balcony to major extensions to suit the original building size. Besides, extra area is used to meet the inhabitants' needs. They may resort to use public place outwards or even upwards hanging from the original the layout of the buildings. Extra space is used to meet household needs and the changing lifestyles.
- 2- The original tendency of the housing policy in Yemen generally and Hadhramout region especially affects the construction of random housing projects.
- 3- The absence of housing policy and committing the building owners to implement layouts of buildings approved by the Ministry of Housing and Urban Planning and preventing random housing projects.
- 4- Extending the design known as the "continuity design" and the suggestions presented through both planning the design of the neighborhood and the actual expansion of the external structure of the building and through the internal private spaces.
- 5- This study recommends planned transformation approach in order to allow the residents' participation supported by the participation of the concerned people so as to avoid a rapid degradation of the newly built housing environment.
- 6- The spatial organization for the blended urban built environment of the cities and considering the random type of housing as a feature of degradation in the housing environment.
- 7- This deterioration in the traditional housing derived mainly from a lack of understanding the random settlement problems. Random settlements were considered as a choice of misery belts. They are populated by new migrants from the country, who were not aware

of the conception of transformation as a revolution in the transformation done in the forms and styles of architectural design. However, random settlements are observed today as a major solution of the housing problem of the poor people living in the urban areas. Therefore, there is an urgent need, at the national level, to find out and recognize the causes and consequences of the rapid and massive urban transformations and changes in the cities. This is also, at the local level, where there is a call for continuous field monitoring, careful evaluation of existing random housing problems and for the mobilization of buildings energies. To sum up, the cities will grow and the needs for buildings will continue. Instead of being chaotic and uncreative in the random settlements, buildings need to be built in a compatible way. The thing that can be supportive, contributive to a new generation to enhance the life of residents in the housing areas.

## REFERENCES

1. Collins, P (1971). Changing Ideas in Modern Architecture, p61. McGill University, Canada.
2. Chauhan, A.A.A (2008). Cost and its impact on the application of the principles of sustainability in buildings in Kingdom of Saudi Arabia. Master Thesis, School of Architecture and Planning, King Saud University. Riyadh.
3. Damluji, S.S. (1992).The Valley of Mud Brick Architecture Shibam, Tarim and Wadi Hadhramout. (1992). London: Garnet Publishing.
4. Damluji, S.S.(2007). The Architecture of Yemen: From Yafi to Hadhramout. London: Laurence King Publishing Ltd.
5. Lewcock, R. (1986). Wadi Hadhramout and the Walled city of Shibam. UNESCO Publishing, UK.
6. Rykwart, J (1963). Trans, on the Topology of E. Architecture. Ibid London.
7. Rykwart, J (1963). On the Historical Typologies. Ibid London.
8. Turner, R.E (1976). Housing by people: towards autonomy in building environments. Publisher: Marion Boyars, 1976.

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