A VITAL PROPOSAL FOR REESTABLISHING POST-WAR RURAL HOUSING IN SYRIA

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ABSTRACT

The debate about post-war reconstruction has been ongoing during the last six years of the ongoing Syrian war. The increasing volume of destruction in different big cities has created a need for new ideas and innovative building solutions. Many studies have tried to suggest solutions comparing other countries ruined by wars such as post-WWII case studies from Germany, Poland, Italy, and also Bosnia after the Balkan War. The case studies have considered similarities and differences demanding innovative ideas and non-traditional solutions for the reconstruction of large Syrian cities such as Aleppo and Homs. With the recent political and military changes in Syria many Syrian refugees have started to return to relatively safe areas within Syria, especially from neighboring countries. New needs have emerged to accommodate and support people who have lost their homes in cities, towns, and villages. This paper is investigating an alternative solution building upon the local Syrian vernacular architecture and construction using existing traditions and methodologies as a possible feasible alternative to rebuild homes in rural areas. This building methodology is suitable for rural society not only for architectural appropriateness, but also for economic and social reasons. Ancient cities such as Aleppo and Homs have been destroyed and rebuilt several times during their long histories. The accumulated experience gained from building local vernacular architecture is being used as a source for future reconstruction efforts by adapting it to modern needs. The aim of this study is to investigate the possibilities of using traditional materials and construction methods in rural Syrian areas to build modular housing units for displaced Syrians. The goal is to provide a feasible transitional alternative to the tents in refugee camps. The proposed modular homes are more stable than tents, are easy to build, and provide a quick option to provide housing with living quality. The advantage of the proposed housing is the reintroduction of an existing building tradition with the same cultural and social values. The homes are intended for the returning inhabitants from the rural areas and urban Syrian refugees staying temporarily until the larger urban centers have some reconstructed infrastructure. The therapeutic effects of the countryside and the social connections established by working together to physically rebuild the homes are aspects considered in this reconstruction proposal.

Keywords: residential reconstruction, rural, innovation, vernacular architecture, traditions

I INTRODUCTION

The six years' war in Syria has created the "worst humanitarian disaster since the end of the cold war" [1]. As of January 2017, the war has driven almost seven million internally displaced persons (IDPs) according to the United Nations Office for the Coordination for Humanitarian Affairs (OCHA) [2], more than five million refugees are registered with the United Nations High Commissioner for Refugees (UNHCR), and almost one million of the registered refugees are in Europe [3]. Syria, a country that had a population of 22 million before the crisis, has had half of its citizens displaced. Syrians have been forced to leave their houses to seek safety and refuge either within the country in the comparatively safer areas, or externally, mainly in the neighboring countries of Turkey, Jordan, Lebanon and Iraq, and most recently, spreading out to safe havens globally.

In a country where people are living in "survival mode", the priority of the people is to survive from day to day. Words such as **society**, **community**, we, or us, no longer exist, dissolving the social fabric and at the same time creating new long-term problems such as children working instead of attending school, high crime rates, drug trafficking and consumption, and poverty. These problems are not isolated to IDPs but extend also to refugees living in camps in foreign countries.

Fleeing Syrian refugees have taken many risks to travel through war zones loaded with mine fields to reach neighboring countries, and some have continued their treacherous journey across the Mediterranean Sea in unseaworthy boats and rubber dinghies to reach the safe haven of Europe. The Syrian refugees have faced opposition in the receiving countries, with restrictive immigration policies for incoming refugees partially due to an upswing in conservative and right wing politics and also partially due to a large culture shock. Large cultural, social, and economic differences exist between the Syrian culture and the hosting countries. Restrictive policies during the asylum process have influenced some Syrian refugees to make arrangements to return home voluntarily [4]. The government's office for migration and refugees in Germany has reported that 37,220 refugees obtained government financial aid to return to their home countries in 2015 [5]. Moreover, refugees are encouraged to return due to the progress of Operation Euphrates Shield by the Turkish military and allied forces in Northern Syria. The military intervention is providing safer zones resulting in many Syrian refugees returning to their freed villages and towns. Five hundred returnees per day have been registered from December 2016.

The main challenge for returning IDPs and refugees is securing suitable housing in war-devastated areas with citywide disruption, damage and breakdown of infrastructure [6]. Cities such as Aleppo and Homs have lost their infrastructure and buildings. According to World Bank President Jim Yong Kim's estimation in February 2016, 70 % of the City of Aleppo and 60% of the City of Homs have been destroyed, and reconstruction of both cities will cost billions of US Dollars and will take years to be habitable again [7].

This paper presents a project as an alternative strategy for suitable transitional homes. The housing is designed for Syrians returning to the rural areas of Northern Syria waiting for costly long-term reconstruction of large cities. The project proposes building upon the local building tradition to take advantage of the accumulated knowledge

gathered through generations of experience from building the local vernacular architecture and adapting the building design to modern needs.

II RELATED PROJECTS

All previous studies and efforts have focused upon humanitarian support to meet minimal survival requirements. Reconstruction plans have focused upon redevelopment of large and major cities. Rural vernacular architecture has not been investigated as a possible solution in similar cases [8]. In Syria, rural vernacular architecture was not studied before or during the war. CORPUS is a project financed by the European Union to document traditional Mediterranean architecture. It has documented some traditional forms and typologies of rural buildings in Syria [9]. However, few Syrian scholars and architects have themselves paid attention to the study of rural Syrian architecture as the migration from smaller villages and towns to cities has created an urgent need to solve urban housing problems [10]. All contemporary documenting efforts are focused on the documentation of the remaining traditional materials and construction in rural Syrian areas. However, historical studies have shown that the temporary migration of the urban population to rural areas was essential during the periods of reconstruction in large cities after major destruction was previously caused either by wars or earthquakes [11].

III RURAL HOUSING STRATEGY PROGRAM IN NORTHERN SYRIA

Rural communities in Syria were always presented as self-sufficient societies, economically, demographically, socially and even culturally. However, rural areas have had poor regional planning. Development efforts have concentrated upon urban areas. The dramatic gap of available services between rural and urban areas released a wave of migration to cities. The number of inhabitants in rural areas has decreased by 17% from 1960 to 2010. Table 1 shows the population distribution in Syria from 1960 to 2010 [12].

Table 1: Population distribution in Syria from 1960 to 2010.

	1960	1970	1981	1991	2010
Total number of inhabitants (thousands)	4.565	6.305	9.05	13.53	20.619
Rural inhabitants (thousands)	2.88	3.564	4.786	7.196	9.585
Rural inhabitants percentage (%)	63	56.50	52.80	53.10	46.50

Due to the war in Syria, the direction of migration has alternated for many reasons. The main reasons for migration to rural centers are due to the relative safety of rural areas and the less damaged infrastructure compared to the destruction in the cities. People originating from the rural areas surrounding the cities have also returned to their home villages and towns due to losing their city jobs and have also found the possibility to work in agriculture to secure their minimum needs for living, i.e. water, energy and food. For example, a village such as Dabiq in Northern Syria has grown from a population of 4,800 inhabitants in 2011 to 8,945 in 2015. With the liberation of the village from the control of ISIS, the population has increased as refugees return from Turkey and other areas in Syria and has reached a total population of 12,568 in January 2017. Syrians are similarly returning to the 1,476 villages and 1,312 farms in the areas

that have intact infrastructures and services in good condition. The number of migrating people to the rural areas is even causing a housing problem.

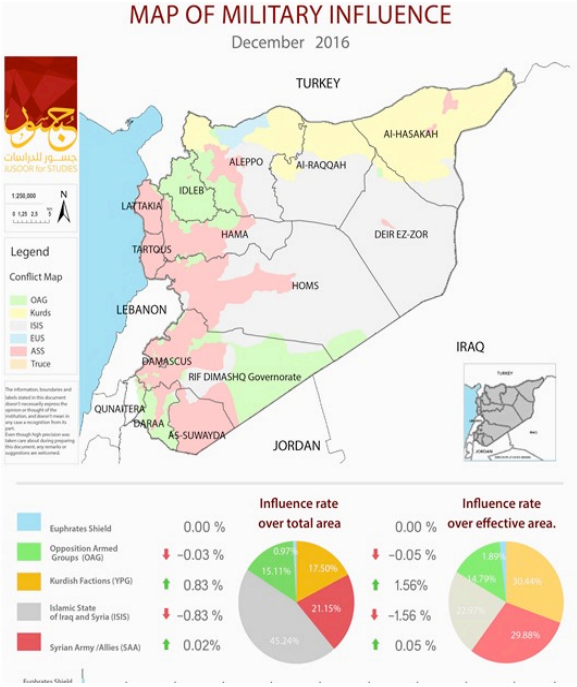

Figure 1: Military influence map in Syria. Source: Jusoor, 03.01.2017.

This project proposes to provide transitional housing in rural areas for the returning Syrians to answer the above defined housing need in the rural areas, and also to align with the United Nations 2030 Agenda for Sustainable Development for rural development as outlined in Agenda points 24 and 34, as well as Goals 2a and 11a [13]. Assuming that approximately 20% of the Syrian exiles from the Aleppo region currently residing in Turkey would like to return to Syria and do not have a residence, if evenly distributed, 70 people will need new houses in each rural center meaning that eight to ten houses will be required per rural center.

The difficulty to import and transport building materials into the region favors the use of locally available materials and traditional construction and building techniques. The design concept is to integrate the local rural vernacular architecture of Northern Syria for transitional housing while considering the contemporary needs of the new and previous residents of the rural centers. To achieve this goal, the project studies, analyzes, and experiments with different possible design concepts based upon the local adobe building tradition. The design solution will integrate an easy to construct building concept as an alternative to tents camps, “which often are militarized in the sense that fighters are recruited among the refugees by insurgents, which may even transform refugee camps into training camps and bases for rebel groups” [14].

IV TRADITIONAL RURAL HOUSES IN NORTHERN SYRIA

The typology of rural houses in Northern Syria is similar to Southern Turkey. The housing is classified in four main types: a basic house, a house with a porch, a house with an “Iwan”, and a house with a courtyard.

A- The basic house: This is the most elementary typology. The house consists of four walls of stone or mud, earth roofing binds joists and beams, and posts are inside arches. It is a single room and represents the most basic original and traditional Syrian home, Figure 2.

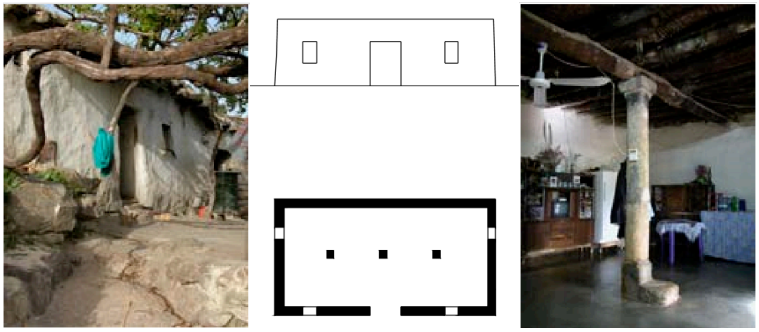

Figure 2: Basic rural Syrian house: exterior view (left), plan and elevation (center), and interior view (right). Source: CORPUS Project.

B- The house with a porch, Riwaq: This house is developed upon the basic house by adding an arcade gallery, which opens to the outside. It also has a main furnished area that serves as an access point to the house and the other rooms. The Riwaq (porch) is on the front façade of the building, or within the very volume of the house. Each room has a window or another opening to the outside in addition to the Riwaq. Figure 3 shows the house with a Riwaq.

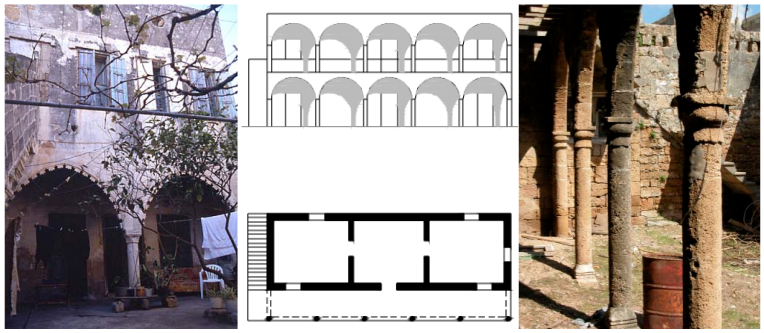

Figure 3: Rural house with Riwaq: exterior view (left), plan and elevation (center), and view from the Riwaq (right). Source: CORPUS Project.

C- House with an Iwan: The Iwan is a central space formed by a very large arch. The arch plays a central role in the organization and distribution of the various rooms in the house. This central space is in open to the outdoors on one side, and is flanked with two rooms, Figure 4. The Iwan originated from Persia and can also be found in some houses with courtyards.

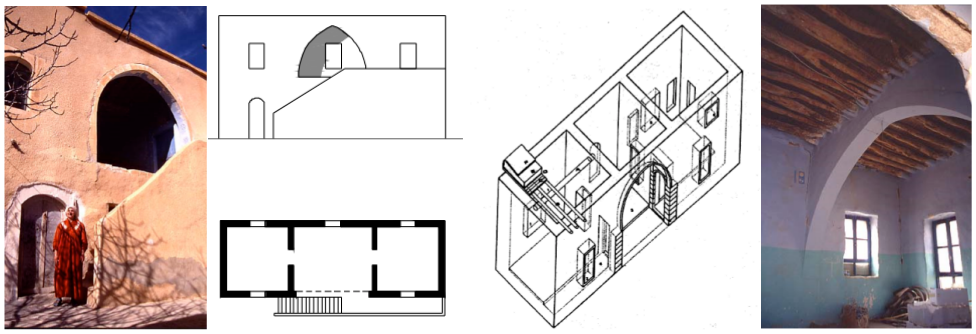

Figure 4: Rural house with Iwan: exterior view (left), plan, elevation and 3D section (center), and interior (right). Source: CORPUS Project.

D- House with a courtyard: This house is characterized by a layout of rooms built around a courtyard. Each room is variable in size and geometry, Figure 5. This typology is found in all traditional villages or rural environments. It is a simple model adapted to the local environment and answers the social and professional needs of a rural population. Two different social groups can use the house such as simple farmers and wealthy landowners. These large houses are equipped with many architectural elements.

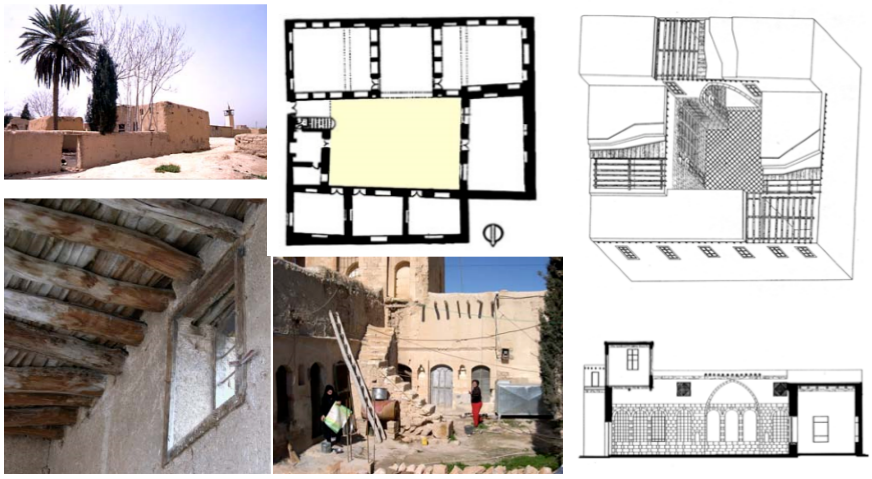

Figure 5: Rural house with courtyard: exterior view (top left), interior detail (bottom left), plan (top center), interior courtyard (bottom center), bird's eye view (top right), and cross-section (bottom right). Source: CORPUS Project.

This typology is found in the vicinity around Aleppo in the Alsafira area. The dominant building material is a clay structure with roofs composed of wood beams covered with mud, or mud domes spanning uniformly sized rooms, normally 4 m x 4 m repeated around a central courtyard forming the known beehive houses, Figure 6.

Figure 6: Beehive house village near Blas, south of Aleppo, Syria (left), and Şanlıurfa, Harran, Turkey (right).

V DESIGN CONCEPT FOR RURAL HOUSES IN NORTHERN SYRIA

An alternative design concept is being developed using the beehive house as a basis that is dependent mostly on the availability of local material that is adapted to the environment. The design incorporates the utmost respect of the modern users needs and the modules can be built with minimal construction knowledge. The building plan has a simple rectangular form of approximately 4 x 4 m. The wall structure will be supported by a wood construction in order to reinforce the building against earthquakes instead of only being composed of adobe bricks as is built in conventional housing. The main building material will be earth mixed with water and straw. The composition may differ using dung, sand, silt, clay, small pieces of gravel, or even recycled rubble from

destroyed buildings. A reciprocal structure will be employed for the roof, since it allows larger spaces to be built with smaller dimensioned building elements. Therefore, there will be locally available and appropriate building materials reducing the need to import prefabricated elements and/or nonnative construction materials. The use of smaller timber members will make transportation of the roof material easier.

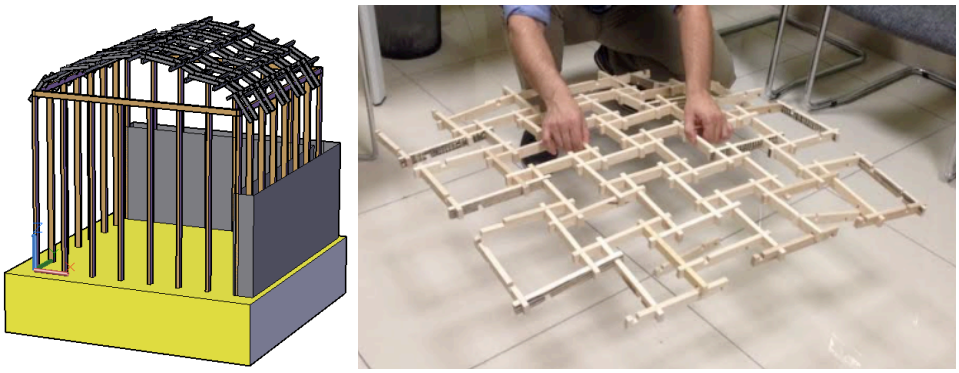

Figure 7: 3D concept model (left), scaled roof test model (right). Source: Author's own photos.

Conclusions and Future Work

A sense of society and reestablishment of the bonds between the different components of the Syrian community will be reestablished by training the returnees to build their own houses together with the cooperation of the other village residents. Developing the beehive clay houses to use local and also recycled materials from destroyed buildings is a solution to overcome the scarcity of building material and construction machinery. It also helps to solve the problem of clearing war-produced waste materials in the long-term. Moreover, historically as men have initiated destructive wars, women have taken the role as post war re-constructors, not only in the obvious case of post WWII Germany, but even during the long history of Syria. For example, Aleppo was destroyed 14 times across history by wars or earthquakes and women always played a central part during reconstruction. Rural areas were the traditional refuge for those escaping from the cities. This will clearly be repeated in the current Syrian war opening the possibility for women to participate centrally in social reconstruction efforts.

The new single-family houses in Syrian villages will have the advantage of secured places with existing infrastructure systems and less war-damage. In a more integrated society with similar culture and traditions, an additional benefit of building houses in villages is that the settlers can benefit from the land in terms of agriculture and livestock, reestablishing their economic and social self-sufficiency. The modular design of the new homes will allow the occupants to enlarge their spaces depending upon their needs.

An investigation for the best design, not only for the residential needs, but also further analyses will be conducted during a future phase of the project focusing on the structural and seismic performance, energy performance, annual energy demand and cost-effectiveness. The design will be refined according to test outcomes, establishing guidelines for best practice during resettlement and construction periods.

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