

Review of Literature for the Concept of Post-Disaster Housing in Turkey

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ABSTRACT

There have been implementations of post-disaster housing even in historical ages and mentioned in studies concerning a specific period in time in which the disaster occurred in Turkey. With a brief overview of such history of post-disaster housing, the studies were reviewed based on the relationship between approaches and time periods concerning the architectural literature of post-disaster housing in Turkey between 1977 and 2005. There are mainly two types of architectural studies about this concept; observations and analyses about the general policy in Turkey, and case specific studies. These two types of studies can also classified within their writing style as well; descriptive style and analytical style of writing is used for a basis for the comparison of approaches used in the studies. The term 'architectural literature' used in this article were used for the works published by the architects and/or studies published in architectural magazines. From this analysis, it could be concluded that the architectural society in Turkey changed its point of view to more humanistic solutions in post-disaster housing after the 1999 Marmara Earthquake.

Key Words: Post-disaster housing, Housing reconstruction, Reconstruction approaches.

1. INTRODUCTION

Post-disaster housing is defined by United Nations Disaster Relief Co-ordinator (1982) as housing policies and applications following a disaster for meeting the urgent, temporary and permanent sheltering needs of the survivors of the disaster [1]. The construction of the post-disaster housing entails a process radically different from the construction of housing in normal times, since the recovery and reconstruction phases in the aftermath of disasters consists of activities to be implemented in time of major crisis. There are two basic approaches in the post-disaster reconstruction which comprise of the 'technology-based approach' and 'community-based approach' [2]. Technology-based approaches are usually supported by a provider policy, with dependence on the import of dwellings from the developed donor countries. Community-based approach in the post-disaster reconstruction promotes and depends on public participation in reconstruction that helps build self-reliance into the affected communities and attempts to take advantage of the local resources in a long-term development. Implementations with this approach are sensitive to the needs of the community and do not ignore the social aspects of the process.

Although some disaster-stricken cities were chosen not built following total destruction caused by catastrophic disasters [3], the housing provision following natural disasters has been a part of the disaster recovery routine since earliest times in the history. Archaeological studies have shown that houses were rebuilt in a stronger form after the Taxila Earthquake which occurred near Islamabad in AD 25 [4]. The first written record of a post-disaster housing application is found in the diary of John Evelyn after the Great Fire of London in 1666: "Which many miles were strew'd with movables of all sorts, and tents erecting to shelter both people and what goods they could take away" [5]. In Turkey, housing reconstruction following disasters was first recorded in the Istanbul Earthquake of 1509. Although the rebuilding focused on the buildings belonged to the Sultan, private houses were also reconstructed. The historians stated that the transition from masonry to wood frame construction in Istanbul was a result of this earthquake [5, 6].

2. THE FOUNDATION PERIOD

The term 'architectural literature' used in this article is used for the works published by the architects and/or studies published in architectural magazines. Extensive numbers of studies had indeed covered the medical,

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social and organizational aspects of disaster relief, but prior to 1977 few of them were considered as being part of architectural literature in Turkey. Hikmet Koyuncuoğlu's (1940/1977) case study of post-disaster housing following the Erzincan Earthquake was indeed published in the journal of *Mimarlık* in 1940. This significant work, however, is actually an introduction of the new structural system the author himself used in the post-disaster dwellings [7]. Before 1977, a small number of articles and case reports about post-disaster housing were published after major destructive earthquakes in Turkey. Technology-based case studies of Nadire Göktuğ et al.'s (1971), and Güven Birkan and Erhan Karaesmen's (1973) offered brief statistical information about the major post-disaster housing implementations between the Erzincan Earthquake of 1939 and the Burdur Earthquake of 1971 [8, 9]. Furthermore, analytical works of Birkan (1971) and Tapan (1975) stated that prefabricated construction systems used after the temporary housing were not suitable for the survivors who live in rural regions [10, 11].

Other than the architectural studies briefly recording housing examples following the natural disasters, the concept of post-disaster housing has been a popular research subject in the world with the publication of the journal of *Disasters* in 1977. In the same year, the special issue of the journal of *Mimarlık* was published in Turkey after the destructive earthquakes in Kars, Van, Denizli, and Elazığ between 1975 and 1977. In this special issue, the case study of Cengiz Bektaş was published. The author offered statistical and technical information about the housing provision following the Denizli Earthquake, Turkey in 1976 [12]. The case study of Koyuncuoğlu (1940/1977) was republished in the same issue. Aside from this special issue, a conference specifically about post-disaster housing, titled International Conference on Disaster Area Housing, was held in Istanbul in the same year.

After 1977, the architectural studies published in Turkey may be classified in two fundamental categories: observations and analyses about the general policy in Turkey, and case specific studies. These studies may be also be classified according to their writing style [13]: descriptive works which merely gives information about the implementation with no significant approach and analytical studies with either technology or community-based approach.

3. LITERATURE ABOUT THE OBSERVATIONS AND ANALYSES OF THE GENERAL POLICIES IN TURKEY

Although the architectural literature about post-disaster housing in Turkey is for the most part comprises case studies; there are significant number of studies stating the problems and priorities in planning and production of post-disaster housing. These studies also classified the shelter types and then stated the lessons learned from the experiences.

All of the works about the general policies in Turkey are analytical with either technological or community-

based approaches. Technology-based studies in Turkey are mostly about the specifications of temporary shelters. Sungu Bazoğlu's (1981), M. Kemal Ervan's (1999), Yıldız Sey's (1999b), S. Selen Tuncer's (2000) and Cengiz Yesügey's (2003) works are examples of such studies. While Ervan, Sey and Yesügey identified the specifications of the portable temporary unit [14, 15, 16], Bazoğlu and Tuncer searched for a suitable construction system for temporary housing in Turkey [17, 18].

Other than the technology-based works about temporary shelters, Nejat Bayülke in his study in 1983 mentioned the planning problems of relocation following disaster [19]. Orhan Göçer (1986) and Cansu Canaran (2001) evaluated the specifications of post-disaster housing settlements according to the land planning principles [20, 21]. Likewise, Binali Tercan (2001) discussed the process of choosing the land plot in post-disaster housing reconstruction and Ferhat Özçep et al. (2003) stressed the importance of micro-zoning in post-disaster land planning [22, 23]. All of these works' approach was mainly technology-based because permanent dwellings were seen as groups of units.

Fewer works about the general reconstruction policies in architectural literature focused on the problems of the disaster stricken community in Turkey. In one of the earliest works of community-based studies, Mehmet Adam and Teoman Aktüre (1983) described a research framework for the studies about post-disaster housing [24]. Likewise, Yücel Gürsel (1999), Korhan Gümüş (2000a; 2000b), Murat Balamir (2001), and Nilay Çoşgun & Hakan Arslan (2003) also approached the issue in a community-based view and suggested programs that are responsive to the housing needs of the survivors and involves them in the process [25, 26, 27, 28, 29]. On the other hand, Yıldız Sey (1999a; 2004), Erkin Erten (2003) and Turan Erkoç (2005) focused on all the advantages, disadvantages and legal constraints of different types of housing reconstruction methods in their studies [30, 31, 32, 33]. The authors all considered different aspects of the process including the surviving community.

4. CASE STUDIES

After the review of the general studies of post-disaster housing issues, case studies should be reviewed because such studies are functional for understanding the faults or successes of different housing programs. Numerous works used in this study are case studies about post-disaster housing after major disasters. Among these case studies, a number of studies are descriptive which only offer information without evaluation, while others evaluate the post-disaster housing policies and applications in analytical style of writing.

Adnan Denil's (1981), Yasemin Aysan's (1984), Fikret Çuhadaroğlu et al.'s (1992), TR Ministry of Public Works and Settlement's (1993), Governorship of Erzincan's (1996), Erhan Karaesmen's (1996; 2002), Gürdal Bozkurt's (2001), and H. Hüseyin Yıldırım and Haydar Ali Baş's (2001) works were case studies which only offer information about reconstruction projects

following various disasters. Karaesmen's studies are concerned with more than one disaster, while others specialise in only one [34, 35]. In one chapter of both his books, Karaesmen offered mostly statistical information about the post-disaster housing provision following the major earthquakes in Turkey between the Erzincan Earthquake in 1939 and the Afyon Earthquake in 2002. The other descriptive case studies specialize in post-disaster housing applications following a single disaster. Aysan provided detailed information about the post-disaster housing program following the 1983 Erzurum Earthquake in her article [36]. Çuhadaroğlu et al., TR Ministry of Public Works and Settlement, and Governorship of Erzincan described the recovery and reconstruction process after the Erzincan Earthquake of 1992 in Turkey [37, 38, 39]. Bozkurt provided information about the planning and reconstruction works following the Marmara Earthquake [40]. Yıldırım and Baş, and Denil only offered technical information about the prefabricated post-disaster housing implementations in Turkey [41, 42]. None of these descriptive studies evaluated the dwellings or housing programs so they cannot be considered as developing any approach to the problem of post-disaster housing.

Other than descriptive studies, the technical critiques of applications of post-disaster housing are also observed in the architectural literature about post-disaster housing in Turkey. Sey et al.'s (1978) evaluated both permanent and temporary houses supplied following the Van Earthquake in 1976 [43]. Likewise, Suha Özkan, in both of his works in 1983, and Füsün Ceylan (1983) evaluated the polyurethane igloos and the permanent housing provided following the Gediz Earthquake in 1970 [44, 45, 46]. Etkin Erten and Kamuran Öztekin (1991) described the tunnel mould systems used in permanent post-disaster houses following the flood in Trabzon [47]. In both of his works in 1999 and 2001, Ömer Kırıl evaluated the reconstruction projects following the Erzincan Earthquakes of 1939 and 1992 according to the principles of city planning [48, 49]. Similarly, Hüseyin Aksu (1992) evaluated the reconstruction program following the Erzincan Earthquake of 1992 [50]. Differing from case studies specialized in only one disaster, Mete Tapan (1986) and Neşe Dikmen and S. Tahira Elias-Özkan (2004) evaluated the rural permanent houses following the earthquakes in 1970's and 1980's [51, 52]. All works, how valuable they are, approach the issue technologically and evaluate the housing focusing on technical suitability of the units, land and the program overall.

Other analytical works written with a technology-based approach are evaluations of post-disaster housing applications following Marmara and Düzce Earthquakes in 1999. Han Tümertekin (1999) and UMCOR (2000) evaluated the container dwellings in Düzce and determined its advantages compared to the other construction systems used for post-disaster housing [53, 54]. Both authors used technology-based approach and did not mention the process of post-disaster provision. Likewise, Kutluğ Savaşır (2001),

and T. Akarcalı and Uygur Boztepe (2004) evaluated the dwellings following the Marmara Earthquake with a technology-based approach, but offered some information about the housing policies and survivors' point of view as well [55, 56]. Necati Uyar (2001) evaluated the planning of the post-disaster settlements according to the principles of urban design [57]. Hülya Yürekli and S. Selin Saylağ's study of 2003 was a criticism of permanent post-disaster houses [58]. The work is mostly technology-based but also offered some social evaluations.

In architectural research, much fewer studies were written from the perspective of community until the earthquakes Marmara and Düzce Earthquakes in 1999 in Turkey. Yasemin Aysan (1985) and Frances D'Souza's (1986) studies were the only examples of community-based studies before the earthquakes in 1999 [59, 60]. D'Souza evaluated the long-term social, technical and economical effects of the 1970 Gediz Earthquake on the community. Likewise, Aysan in her second visit to the area evaluated the reconstruction implementations following the 1983 Erzurum Earthquake. Although not published before 1999, Emine M. Komut (2002) evaluated the decision of land planning of the post-disaster housing reconstruction following the 1992 Erzincan Earthquake with the participation of the affected community [61].

After the Marmara Earthquake, Oktay Ekinçi (2000) and K. Öztekin et al. (2003b) evaluated the temporary shelters following the Marmara Earthquake according to the user needs [62, 63]. Güven Erten (2003), on the other hand, evaluated the permanent post-disaster housing projects following the various earthquakes in Turkey [64]. He stated that it was not enough for the houses to be built on seismically safe lands. The housing sites should also have healthy and qualified environments. Polat Gülkan (2005) pointed out that although the tasks of reconstruction of lost homes and businesses have been realized, the mitigation measures for future disasters have been neglected following the reconstruction following the Turkish Earthquakes of 1999 [65]. Likewise, K. Öztekin (2003) and Belkıs Kumbetoğlu et al. (2005) stressed the importance of user needs in the construction process of the dwellings and evaluated the permanent dwellings following several earthquakes accordingly [66, 67]. E. Burak Enginöz (2004) focused on the same issue; however, his study only evaluated the permanent housing following the 1995 Dinar Earthquake [68]. Similarly, S. Taner Yıldırım and Hakan Arslan (2003) contemplated on the user needs following the 1999 Düzce Earthquake [69]. K. Öztekin et al. (2003a), on the other hand, pointed out the loss of identity in temporary and permanent sheltering in the Kocaeli region after the 1999 Earthquake [70]. Ferah Akıncı (2004) had a similar view; social, political environmental dimensions were forgotten focusing on the economy of the houses [71]. Betül Yazar (2005) evaluated the social housing rights of the survivors of the Düzce Earthquake [72]. Sevgül Limoncuoğlu and Cengiz Bayülgen (2005) evaluated the social problems in post-disaster housing reconstruction faced in the various phases of the

disasters in implementations in Turkey [73]. Almost all of these papers shared the same view; functionality and participation of the local community was neglected regarding the applications following the Marmara Earthquake.

5. DISCUSSION

This article reviewed a total number of 64 studies in the discipline of architecture that about the concept of post-disaster housing. The number of the different types of works according the selected time periods is given in Table 1.

Table 1. The analysis of the reviewed works

Time Period	Descriptive	Analytical		Total no. of Studies
		Technological-Based	Community-Based	
Before 1977	4	2	0	6
1977-1999	6	12	4	22
1999-2005	4	13	19	36
TOTAL	16	27	23	64

The paucity of the reviewed literature published before 1977 clearly shows that 1977 has been a significant year in the architectural studies related to the post-disaster housing reconstruction. When we analyze the total numbers of the reviewed studies, we can see number of works regarding post-disaster reconstruction has increased following between the years 1999 and 2005. On the other hand, the ratio of descriptive works and technological based works has decreased a great deal after 1999. The majority of the works after 1999, however, were observed to be community-based studies. Consequently, we can say that Marmara Earthquake in 1999 has changed the point of view about the concept of post-disaster housing; as well as increasing awareness about the issue in the architectural research.

6. CONCLUSION

As indicated by the work that has been reviewed, before 1999 Marmara Earthquake majority of the works in the discipline of architecture in Turkey were written from the perspective of technology-based approach. These works evaluated the technical specifications of the dwellings as a unit. There is indeed a need for technology-based approach in Turkey since temporary housing units following the same earthquake turned out to be not reusable for the future disasters at all [55]. Post-disaster housing, however, is a process that comprises policies and the surviving society. Therefore their needs and priorities should be taken into account frequently in the works of architectural research [74] as well as technical evaluations. From the analysis of the reviewed literature in 1997-2005, we can conclude that the architectural society in Turkey have been affected from the dramatic consequences of the 1999 Marmara Earthquake by changing its point of view to more humanistic solutions in post-disaster housing research.

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