

Analyzing the Turkish House with respect to Flexibility Strategies

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ABSTRACT

The semantic and spatial continuity of the traditional Turkish house is a significant issue for cultural continuity. At modern sustainability studies on traditional Turkish house, it can be seen that these approaches essentially focus on facade level merely whereas the reality dictates that traditional Turkish houses possess a myriad of semantic values and design principles that need to be adapted to the modern housing design. Only if the principles that suit to modern conditions continue then can it be viable to ensure sustainability. Flexibility stands out as one of the most crucial principles in sustainability. Schneider and Till (2007) argues that "by acknowledging change as an underlying parameter but accepting the level and extent of change as unknown, flexible housing is inherently sustainable". Also, Broome (2005) regards flexibility as part of sustainable system.

Within the context of this study flexibility concept that refers to a major design approach in the spatial organization of a Turkish house has been analyzed. Spatial and functional organization of a Turkish house has been analyzed with respect to the strategies created within flexibility context. On the basis of obtained findings, suggestions that could provide data for modern housing designs have been offered.

Keywords: Flexibility, Flexibility Strategies, Traditional Turkish house, Spatial and functional analysis

1. INTRODUCTION

Any place that one can reside in essentially bears in itself the features of a house (Bachelard, 2013). House also provides the source for the most intimate and private relation that a person has with his/her environment. Seagert (1985) defines house as the physical structure reflecting one's personal traits, and is in continuous interaction with

the environment as the reference point of its resident and the social environment that involves daily interactions of the dwellers with other people (Kabo, 2004).

Tuan (1991) claims that house relates to a core of meaning and affection in which people are attached and can develop a sense of rootedness (Gürkaş and Barkul, 2012).

Social, cultural, technological and economical changes and developments experienced throughout the process trigger direct changes in humans' lifestyles and a corresponding alteration in the spatial structure of houses recognized to be the basic reference point for humans. The changes that emerge as an outcome of lifestyle changes necessitate adapting spatial organization of the houses accordingly. Only by creating flexible space organizations will it then be viable to adapt the spatial organization of houses for different uses and to keep up with the spatial, functional and semantic changes.

Being a vital criterion in a residence design flexibility concept refers to the harmony with time. Social conditions that change in the course time fuel a diversification in lifestyles and force the spaces humans reside to adapt to the novel situations. This relationship then presents flexible residence concept that is equated with the change experienced in the course of time. Schneider and Till (2005) claim that flexible residence concept points to the emergence of a residence type able to meet the needs of its users.

Flexibility concept in design allows modifying the concerned spaces in line with users' needs and demands. Hence it will be feasible to conserve functional modernity of the structures in which user satisfaction is guaranteed in terms of flexibility and structures will remain to be functionally sustainable as well.

As the spatial organization in a traditional Turkish house is analyzed within that conjecture it is identified that spaces encompassed functional differentiations and potential for different purposes of usage. The capacity of spaces to serve different purposes of usage entails in itself the kind of data that can provide both semantic and functional inputs to modern residence designs.

2. FLEXIBILITY CONCEPT AND FLEXIBILITY STRATEGIES

"Flexibility" is the most salient concept that takes the stage to accurately determine the correlation between user needs and space and to adapt the spatial organization to the conditions, functions and techniques that have transformed during the process. Flexibility, thus, relates to maximum adaptation of space as a consequence of time-dependent changes and developments; effectively meeting the transformed demands,

thereby elevating life quality at the peak level throughout life (İslamoğlu and Usta, 2016).

Flexibility concept that is a must in designs to meet the needs of user, environment, technology and function has been examined from a wider viewpoint in a myriad of studies. As a universal design principle equally valued in modern design, one of the design criteria, flexibility, is in essence a concept that dates back to antiquity when, consciously or unconsciously, sheltering action was practiced in traditional methods. As the studies that investigate flexibility concept within a historical scope are examined (Gök, 1993; Schneider ve Till, 2007), it is detected that this concept relates to the earliest settlements in which it was already attempted to put into action. Schneider and Till reported that the primary emergence of flexibility was fueled by the altered conditions in vernacular residences and secondary emergence was driven by the residence gap due to Post World War I political, economical, socio-cultural and technological developments after which designers and alternative solution creators were exposed to external pressures (Schneider and Till, 2007).

Being introduced to architecture terminology at the onset of 1950s, flexibility concept allowed communication in design, user's role, accessibility and similar concepts to be frequently discussed as a consequence of prioritized role of social thinking and social benefit in the domains of architecture, urban design and planning of those years (İncedayı, 2008). In those ages, with the accentuated role of flexibility concept in the Western world particularly, it became globe wide popular with the development of novel designs, productions and methods. The theoretical and practical explanations that many architects provided for this concept nourished its development till present age by analyzing through various methods. Flexibility approaches provided in a multitude of methods are chronologically listed in Table 1 (İslamoğlu, 2014).

Table 1. Flexibility approaches of designers and researchers (İslamoğlu, 2014)

Designers and researchers	Flexibility approach
Corbusier (1914)	Free plan and free facade system
Taut (1920)	Flexible plan forms allowing multi-aspect usages
Rietveld (1924)	Organizing around a nucleus and mobile dividers
Rohe (1927)	Open plan system, addition units, prefabrication systems and modulation system
Weeks (1960)	Unfinished solutions

Rippen (1960)	Wallless, doorless, open-space circulation systems in which objects and humans can move
Schulz (1963)	Changeability of components and connections
Kızıltan (1967)	Multi-aspect usages of volumes and modular system
Lappart (1969)	Potential to be developed as permitted by land use and non prevention of changeability by the bearing system
Habraken (1972)	Open plan system and erecting support and infill units in the structure
OBOM Group (1980)	Hierarchic structure of building system
Yürekli (1983)	Building technique and resolutions agreed on the building system
Gök (1993)	Different plan types and modular plan system
Altaş and Özsoy (1993)	Adaptability without any physical changes conducted
Duffy (1998), Brand (1994), Leupen (2006)	Separating the structure into divisions
Friedman (2002)	Reordering the subcomponents through enlargement and division
Monahan (2002)	Multi-aspect, transformable, scaleable, changeable
Stoa (2003)	Multi-purposely functioning shared areas, different plan types and secondary usage areas
Deniz (2003)	Hierarchical order of building elements as support structure and complementary structure
Schneider and Till (2007)	Dividing the building components as soft and hard
Hertzberger (2009)	Structure system that supports space design likely to be formed by the user and multi-purpose usage of spaces
Schenk, Remoy, Jong (2011)	Technical and functional measures
Kronenburg (2011)	Adaptation, mobility, transformation and interaction

Based on these analyses it surfaces that as an effect of changing technologies and needs in due course, flexibility approaches correspondingly received a variety of treatments. It is possible to view some of these works as structural, some as spatial and the rest as both structural and spatial. At the end of literature review on flexibility concept, certain sub-concepts were identified and these concepts were defined as 'flexibility strategies'. Strategies of flexibility concept recognized as one salient criterion of quality were listed as combining/divisibility, mobility, multi-purpose usage, addition /subtraction, modularity, neutral areas and different plan types (İslamoğlu, 2014).

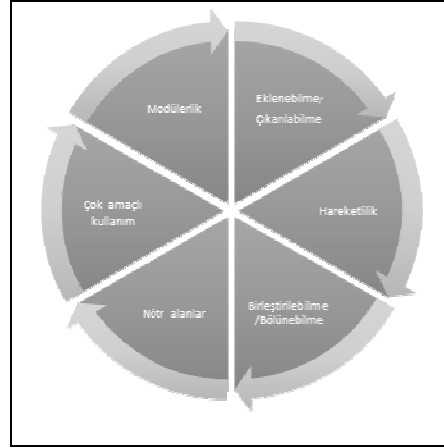


Figure 1. Flexibility strategies (İslamoğlu, 2014).

*Mobility Strategy: Mobility strategy refers to the possibility of different organizations of the spaces and fittings to meet the diversified needs by means of moveability feature. It entails inner space changes that the user can perform as an outcome of its easy-mobility feature at most.

*Multi-purpose Usage Strategy: It can be defined as the use of structure, space or fitting by different users for different purposes in different time periods or in simultaneous periods or the capacity of a component with a certain function to meet a different function as well.

*Modularity Strategy: The result of selecting a particular module and developing a corresponding planning that enables the changeability and improvement of a spatial organization. Modularity is connecting standard sizes to forge different functions. In a Turkish house module this concept offers vital contributions in the building, usage and perception of a structure [14].

*Addition/Subtraction Strategy: It is the flexibility approach that is actualized by the horizontal or vertical addition or subtraction feature of a structure, space or fitting plan to meet the potential conditions in future.

*Neutral Areas Strategy: These areas refer to unspecified areas that are formed to enable different usages of several units to be erected within the structure and to allow their functional changes. Within that scope neutral areas strategy can reasonably be defined as reorganization of an unspecified unit of which function is ambiguous to serve for a different purpose in the upcoming dates.

*Combining /Divisibility Strategy: This strategy refers to transforming two or more units with insufficient size to one single unit or the divisibility of one or more larger units to smaller units to allow the structural change.

*Different Plan Types Strategy: This approach allows creating the flexibility aimed in a spatial organization by employing different plan types. In a structure typology flexibility would be provided by creating different types as area and solution. This approach seeks to offer a variety of solutions in different levels within a structure.

Flexibility strategies assist the implementation of diversified spatial, functional and semantic uses. Presence of flexibility strategies during design and usage levels are requisites of forming the kind of spaces that can adapt to the changes and development in the process. As an outcome of utilizing flexibility strategies in physical dimension, it is feasible to erect designs allowing a diversity of functional and semantic usages. It can thus be possible to create sustainable and customizable spaces promoting users' participation.

3. ANALYZING THE TURKISH HOUSE WITH RESPECT TO FLEXIBILITY STRATEGIES

The Turkish house reflects a house type in full harmony with its natural environment and in which functionality is featured at top. Planning was heavily affected by the earlier nomadic life culture. To continue nomadic existence, hence to allow constant migration, it is a must to perform layering and tightened layers (Yürekli and Yürekli, 2007). Thus in these houses rational, flexible and practical solutions were put into effect. In these houses there exists structure and usage flexibility (Bektaş, 2016).

Since in a traditional nomadic culture the house is required to be mobile as dictated by lifestyle it is as small, simple and undetailed as possible; house furniture is as few, light and simple as can be; in that sense house emerges as the place in which merely physiological needs are met (Köse, 2005). As depicted in a traditional Turkish house the internal organization of the room and tents surrounded around a circle likewise constituted the source of a Turkish house sofa (Küçükerman, 2007).

Within the scope of present study the flexibility concept, being spatially and functionally featured so as to ease the lifestyles of humans throughout the process in different cultures and aspects, has been analyzed with respect to the traditional Turkish house. In houses that reflect our work culture and lifestyles, attaching importance to flexibility concept in the planning process of a modern residence also holds value to ensure the

semantic and spatial sustainability of these houses mirroring Turkish traditions. Accordingly spatial organization of the Turkish house has extensively been analyzed within the scope of identified flexibility strategies.

Turkish houses are generically minimalist, sustainable, timeless and rational. Regardingly, it is claimed that with several of its characteristics Turkish houses bear the basic principles of modernism (Bektaş, 2016; Yürekli and Yürekli, 2007). Modern architecture has foregrounded the kind of structures that are novel or existing and also capable of meeting the needs that can be redefined under certain circumstances. It is feasible to associate the feature of such types with the simplicity of an edifice. Rietveld's Schroder House represents the earliest Western specimen of the flexibility into which several hinged sliding partitions are applied into the rigid structure organization to allow the adaption of shifting functions. Its traditional specimen, on the other hand, points to Japanese Houses. Another approach is the flexibility type that can alleviate the need for mobile dividers via designing the spaces with adaptive sizes and features to accommodate a multitude of functions. In time, life has become flexible to be associated with functions that varied outside the residence as well; in a different saying, life has diverged from the norms by unchaining the limits of standards. Since family members possessed dissimilar jobs and hobbies, the best ways to make the structure flexible or adaptive were sought after. The Turkish house is an exemplary sample of this attempt (Yürekli and Yürekli, 2007).

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3.1. The Turkish house with respect to Mobility Strategy

As an outcome of nomadic philosophy, lightness and mobility are accentuated in a Turkish house. When it was time to move to the highlands the beds, blankets, cushions, pillows, pots, plates and houseplants were collected and what was then left behind was the structure only. It is then feasible to mention the presence of fixed and mobile space elements (Yürekli and Yürekli, 2007).

In these houses furniture is collectable, storable, and weightless fittings allowing to function differently during daytime and night time (Sözen and Eruzun, 1992; Bektaş, 2016). Inside the room these fittings are located in fixed spaces such as couch and wall cupboard (Figure 2a). Cupboards are fixed but the base of the bottom part of covered cupboards near the wall cupboard is mobile (Bektaş, 2016).



Figure 2. Movable fittings in a Turkish house (URL-1)

Another flexible solution is “rotating cupboard” unique to the Turkish house cupboards. This cupboard vertically mounted on the wall of harem and salaam (women-men sections) rotates around an axle to ensure that woman in harem section offers treats to the men in salaam section (Bozkurt, 2013), (Figure 3). Added to that, some stoves have mobile covers that can be closed in summer.

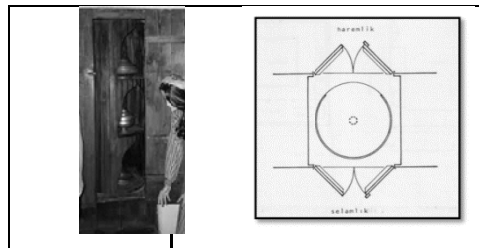


Figure 3. Movable fittings in a Turkish house (URL-1; Günay, 1998)

As dictated by moveability strategy modern geometry of rooms furnished with special fittings are utilized with optimum flexibility.

3.2. The Turkish house with respect to Multi-purpose Usage Strategy

A multi-purpose usage can be detected ranging from windows on the front to the fittings in the rooms. Exclusively in open living houses, there is an obvious distinction of interior and exterior front. In this place walls are both interior and exterior fronts. For instance, room wall of an open living house facing the life is simultaneously interior wall and exterior wall (Yürekli and Yürekli, 2007). Stairs are never finished in any point facing the entrance of main rooms. According to Le Corbusier stairs are, with respect to its location in house plan design, reflective of a form of “promenade architecturale”. Viewing the

patio or yard in each landing thereby sensing the flexible border betwixt interior and exterior space is also the outcome of design (Kuban, 1993).

One of the other salient components of Turkish house fronts, the windows are also multi-purposefully utilized elements. Clearstories are, with their structuring and colored windows, constituents of this approach (Yürekli and Yürekli, 2007). These windows have been multi-purposefully designed on the basis of room color and light as well (Figure 4a,b). Windows on thick walls have been mounted adjacent to the external surface of wall in order to widen interior space and create a usage area in the inner side of window bay. However, on thin walls, windows have been mounted near interior wall to prevent leaning on the wall when stiles are opened thus saving wider space inside the room. Portholes on the bows not only lighten the room but also allow viewing the room from outside and expand the perspective of female users of the house (Sözen and Eruzun,1992) (**Figure 4c**).

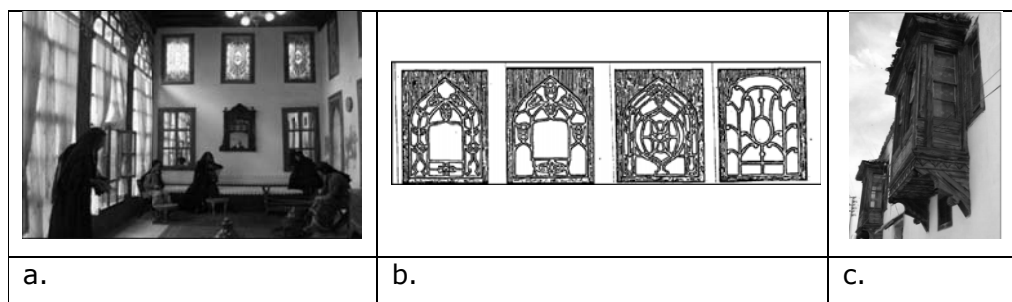


Figure 4. A clear storya, b. (Küçükerman, 2007) and port hole model in a Turkish housec (Çetin,2016)

In addition to functioning as elements of passage doors also serve to different purposes. It is feasible to enter the rooms through living area alone and doors inside these areas have been erected to block direct viewing of the inside of room. Once the door is opened, a veil wall appears in the front or one simply enters into a cupboard, and via a secondary clearance, it is viable to enter the room. Hence in the time length between hearing the door knock and emergence of the inside of room, residents in the room can tidy themselves (Bektaş, 2016). In that sense a door not only enables the passage between spaces but multi-purposefully functions to secure privacy as well.

The most fore grounded aspect of the rooms in a Turkish house is its multi-purpose service and continuous usage. Multi-purpose usage is verified by the independent unit functions of the rooms. Particularly in single or double- room nuclear houses, multi-purpose usage is a must. With this multi- functionality the house reflects its behavioral

relationship with nomadic lifestyle (Kuban, 1993). Room is a house on its own. Further to that rooms bear a symbolic meaning by reflecting financial power.

Flexible usage of the room is provided by the multi-purposely usable fixed fittings. Couch is among the leaders of such fittings. Couch is an excessively low divan designed to fit Turkish style sitting. Couch is a multi-purpose fitting featured in any room design and can be utilized for different functions in different times. This fitting could also be functioned for sleeping, sitting, dining, studying and several other purposes (Figure 5). By covering the sit-in place, its under case can also be used as a cupboard. For instance winter foods can be organized under the couch's under case (Bektaş,2016).

Louis Enault defined room and couch usage such; "couch is the furniture of bedrooms, living rooms, study rooms and lastly dining rooms... When the night falls it is transformed into a bed by laying a mattress and other stuff on the top. Next morning mattress is removed into the cupboard and the room is once again transformed into a living room" (Kuban,1993).

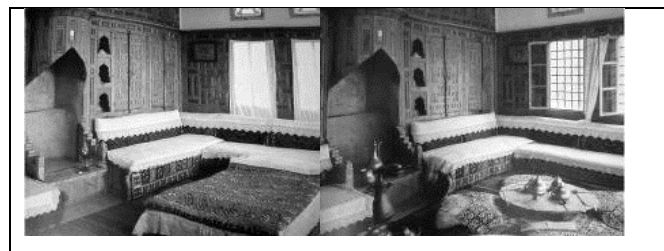


Figure5. Daytime and nighttime usage of the room (Günay,1998).

Accompanying elements impinging upon the room formation are wall cupboard and other cupboards (Figure 6). In a Turkish house a cupboard functions both as a divider wall and store. In every single room there is a wall cupboard serving to that purpose (Sözenve Eruzun,1992). In certain rooms there is also a small washing basin inside the wall cupboards. These small washing basins termed as bathing cubicle have been organized to allow ablution or bathing of the father figure. Another function of wall cupboard and cupboards is providing sound insulation betwixt eyvan (exedra) and other rooms (Kuban,1993). Wall cupboards are cupboards into which beds are put in daytime. Primary function of cupboards is preserving the essential daily life tools in the room in an organized manner. With the new practices developed in due course, cupboards gained a further character except being simple storages and were transformed into a showcase for exhibiting valued objects (Küçükerman, 2007)and also became a decorative object for the space (Yürekli and Yürekli, 2007). Bedcovers, cushions and pillows on the couch and

carpets or rugs on the floor enrich the outlook of house and collectively serve to a function or in other words they all are multi-functional.



Figure 6. A cupboard and wall cupboard in a Turkish house (Bozkurt, 2013;URL-2)

Doors, cupboards and windows are collectively decorative and functional (YürekliYürekli, 2007). One of the walls in the room is stove wall. Stove functions as a heater, cooler and also cooker. On both sides of the stove there are wood-covered cupboards or stone cupboards, matchwoods, lamp stands. Some stoves can also be closed by a sliding cap in winter months. Stove also bears a symbolic meaning as 'home'. If the stove is burning it means everything is fine (Bektaş, 2016).

All fittings such as stove, cupboard, wall cupboard and couch are in neat organization and used multi-purposely. Just as tent functioned in the past as a living unit to meet all human needs, room also possessed identical features.

3.3. The Turkish house with respect to Modularity Strategy

By virtue of its spatial and functional structuring, room concept is the nuclear component of a Turkish house. Key components of rooms have preserved its authentic form thanks to its style and dimensions reiterated for ages. Rooms are also termed as “compartment” or “dwelling” (Karpuz,1999). In a Turkish house, with surrounding living areas such as cupboards, estrades and exedra, the room is an autonomously independent from the entire house plan (Kuban, 1993).As the most authentic component of a traditional house, the room is a module in the house plan system and via combining in different methods, it forms a flexible house typology and part-to-whole modulation system.

Planning can be assorted and improved according to the number and shapes of rooms (Eldem,1984). Modular organization of rooms can also be aggregately witnessed from outside (Figure 7). Hence the fact that a standardized structure typology can exhibit such diversity stands out as another salient feature of this house type (YürekliYürekli, 2007).

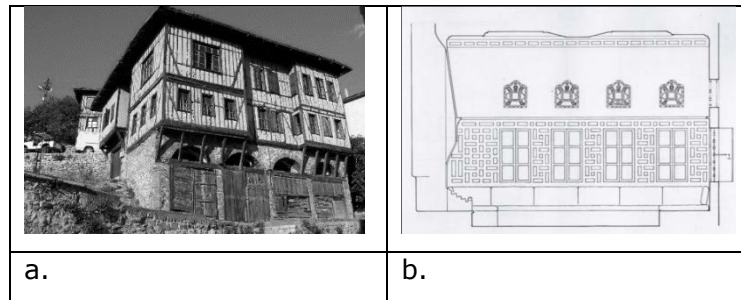


Figure 7. Modularity in a Turkish house plan and front system (URL-3; Günay,1998)

It can be witnessed that one of the essential components of a Turkish house, windows, have also been planned in a modular approach. Windows have never been a component that could be designed in the way an individualistic architect or architectural style desired or deviate from the strict design orders in practice. Windows are decidedly in specified dimensions and figures. Width of sub-window is 0,80 m, and its height varies between 1,20 and 1,5 meters. Although these dimensions varied in due course, 1 meter width and 2 meter height limits were never exceeded (Eldem, 1987). While inside a house windows can be in similar dimensions, it is also feasible to witness replicate windows in different houses (Yürekli and Yürekli, 2007). Windows hence can be regarded as an almost-open prefabrication system organized in accordance with a modulation system.

In addition, there are wooden shutters functioning to conserve room temperature in cold days. These shutters also exemplify that windows are furnished with features to adapt to climatic changes. They have a climate-dependant adaptation.

3.4. The Turkish house with respect to Neutral Areas Strategy

In a Turkish house there is no furniture in a room. All fitting requirements are provided by furniture embedded or mounted on the wall. Certain fittings such as mattresses and low tables are laid or set on the stage and when not needed, they are removed to the cupboard or wall cupboard. In normal routine the center of the room is unoccupied (Eldem, 1987) and allows performing different usages as well (Yürekli and Yürekli, 2007). Unoccupied space in the center of the room surrounded with the couch is left nonfunctional or neutral in a different saying, thereby allowing a flexible usage (Figure 8)

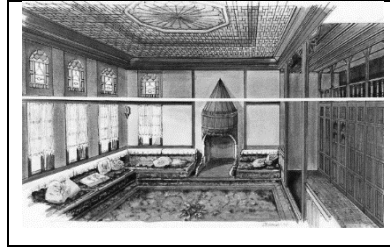


Figure 8. Neutral areas in the center of a Turkish house (Ateş, 2008)

With its formation style “hayat” is an area bordered by the room in the center of a surrounding. This area is located in the middle of the street or yard and the room, and it functions as an interim location in which a vast portion of life is spent; hence it is neither inside nor outside of the house (Yürekli and Yürekli, 2007). “Eyvan” is an element with no specified function (in certain models, vertical circulation area could also be located here), but also functions to clarify plan scheme of the house and empower the volumetric effect of the room. Eyvans, thrones and pavilions are sit-in areas. If weather is favorable, throne and pavilion are lounges opening to the patio or yard. These are flexible neutral areas where guests were entertained, women chatted and watched over their kids, slept in hot days and functioning as a kitchen with its stove when needed (Figure 9).

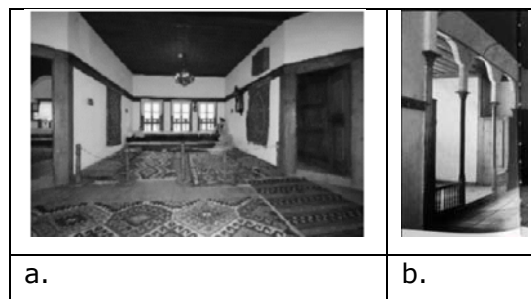


Figure 9. Sofa and eyvan in a Turkish house (Bozkurt, 2013; Burkut, 2014)

3.5. The Turkish house with respect to Addition /Subtraction Strategy

Another feature of Turkish house is its enlargement flexibility. In the analyzed specimens there was no enlargement through jointing models after the erection of structure, but in design process there is flexibility in determining the size. This flexibility is warranted via the number of rooms in the main floor of the house (Yürekli and Yürekli, 2007).

Turkish room is generically rectangular planned. This area is divided into two functional units as cupboard and sit-in compartments. Depending on its shape and dimensions, the room can comfortably be widened without disrupting its relationship with the other parts of the house. Simply-jointed flexible geometry of the house and special position of the room allow easy enlargement in the transverse or longitudinal enlargement through

repeating the elements in the house (Kuban,1993). By virtue of its geometry, the Turkish house also manifests addition feature (Figure 10).

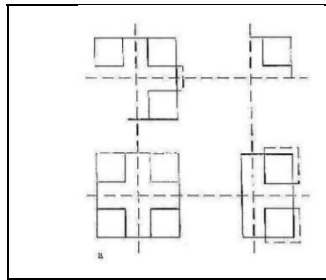


Figure 10. Addition/Subtraction Organization between the Rooms and the Shared Area
(Kuban,1993)

Although in the analyzed specimens there was no enlargement through jointing models the houses still enable horizontally-performed additions to the extent permitted by land use. Turkish house can be structured over the living space as a single room. If the family expands, one extra room can be added and can be transformed from side sofa to L sofa and U sofa organization since the entire “service” is on the ground floor. Main exedras form the floor schemes. In sum, a Turkish house can be expanded or shrunk in parallel with the rising population of a household (Bektaş, 2016).

3.6. The Turkish house with respect to Combining /Divisibility Strategy

In the traditional Turkish house basic bearing structure is wooden and infill material is adobe (Yürekli and Yürekli, 2007). Compared to stone or concrete materials wooden materials used in favorable climatic conditions are more flexible and applicable to treatment. It is easier to apply in a shorter length of time more cost effectively. Hence each generation can conduct personalized modifications or renovations in such houses. In that way earlier generation refrains from imprisoning the future ones within ex walls, under pressure or enforce any custody to their future (Bektaş, 2016).

In a sofa some places are reserved for sitting. By gaining a special character in time these sit-in areas are elevated and separated from the sofa by hoisting to a certain level of height. These special sit-in areas are exedra, pavilion, estade and throne (Figure 11). In the late-period Turkish houses some of the exedras functioning as sofa extensions were blocked and transformed into a room. A house with U sofa was later separated into two areas and transformed into an L sofa shape so that it could serve to two families like two siblings since the entire “service” was on the ground floor (Bektaş, 2016).



Figure 11. Transformation of a separated exedra into a room (Bozkurt, 2013)

3.7. The Turkish House with respect to Different Plan Types Strategy

A Turkish house exhibits diversity according to the geological and climatic conditions of its region. Materials and building techniques are selected and formatted in line with regional characteristics and conditions. Further to that conditions, political factors, historical events, culture, distance of the region from central administration are also likely to affect the formation of these residences.

The settlement of sofa and rooms identifying a Turkish house's plan type and providing a scientific classification for analysis was Sedad Hakkı Eldem (Figure 12) who classified Turkish house plan types as below;

- Sofa-free plan type
- Plan type with an outer sofa
- Plan type with an inner sofa
- Plan type with a central sofa

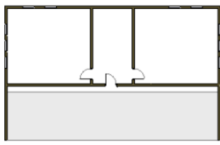
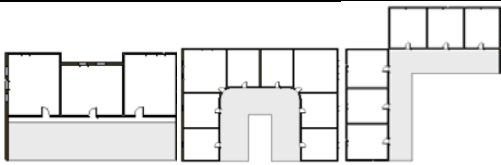
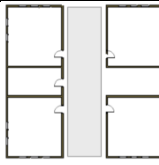
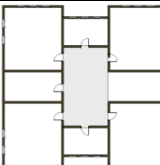
Sofa-free plan type	Plan type with an outer sofa	Plan type with an inner sofa	Plan type with a central sofa
			

Figure 12. In a Turkish house, Plan Types varied with respect to Sofa Organization (Eldem,1984)

Based on this viewpoint it is feasible to attest that depending on different plan types a Turkish house can provide dissimilar spatial schemes. In addition to witnessing region-based different plan types there is also a flexible usage within the own rooms of a house depending on the different sizes of rooms.

4. FINDINGS AND CONCLUSION

Having emerged as an attempt to adapt the structure to time-dependent changes in due course, flexibility concept was practiced and adopted an extensive length of time ago in the traditional Turkish house. Based on this premise it can be argued that with its flexible design principles the Turkish house provides a vital source of data to emulate in modern residences.

By interpreting in varied ways the wholeness or elements of a Turkish house in which flexibility is a design criterion, it is feasible to attain a wealth of points by contemporary technologies. It is evident that with the assistance of contemporary technologies, flexible design approaches can be more easily implemented thereby ensuring cultural continuity simultaneously.

Analyses conducted on the basis of flexibility strategies manifested that spatial organization of a traditional Turkish house entailed flexibility in many aspects. There is a flexibility approach that can meet almost all strategies.

In line with transformed needs the Turkish house can be flexibly used in different time zones such as daytime and night or summer and winter without performing any structural changes. This flexibility is ensured by implementing different strategies.

As a reflection of nomadic Turkish culture mobility is common in a traditional Turkish house. In a Turkish house mobility strategy is provided by the collective usage of fixed fittings (couch, cupboard) and movable fittings (mattress, low table etc.). When the use of light and movable fittings is ended they can be removed to fixed fittings thus saving space for other flexible usages.

Multi-purpose usage strategy is the most featured strategy. This strategy can be monitored in many spaces of the house ranging from the front to the fittings. It is estimated that multi-purpose usages are directly associated with tent living of nomads. Multi-purpose usage is among the most accentuated characteristics of a Turkish house. Walls, windows (lighting, coloring, widening the perspective, decorative purpose), doors (allowing the passage and privacy, decorative purpose), wall cupboard and cupboards (divider, storing, bathing, sound insulation and decorative purpose), stove (warming, ventilation, cooking and symbolic feature) and couch (lower and upper case of the couch) collectively serve to multi-purpose usages.

In a Turkish house modularity relies heavily on the modular combination of structure. In the modularity plan and front system modules designed with respect to decisive scales are jointed. Based on the modularity observed in plan structuring (module formation of rooms) and front (modularity of windows), typologies have been formed in response to transformed or diversified needs of users in a Turkish house plan. By virtue of the possibilities provided by modular system the house can expand in all directions. Thus in the course of time flexibility can be warranted through required additions or subtractions.

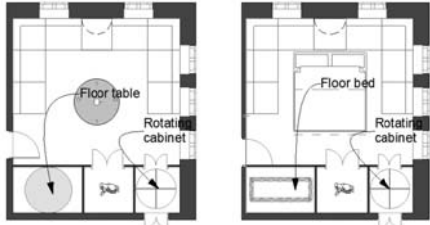
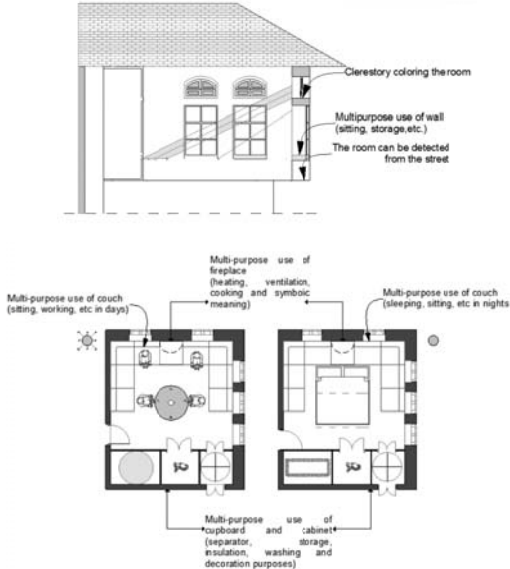
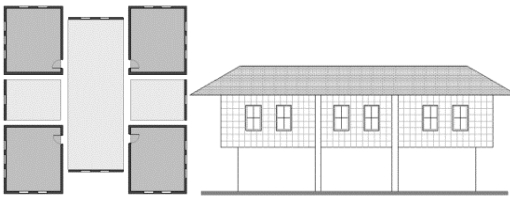
In a Turkish house neutral areas strategy emerges once the area in the center of room surrounded with the couch is left unoccupied. This area free from fittings or functions can be shaped to meet the diversified needs of users all day long and allow implementing flexible spatial designs. It is also witnessed that nonfunctioning sofa and living units are unoccupied and allowing a flexible usage.

By virtue of its geometry the Turkish house also manifests horizontal addition feature to the extend permitted by land use. In line with the needs, an extra room can be added next to another room. This flexibility structure and construction modularity observed on aggregate level can generically be considered as the lightness of structure material consisted of wooden material. Also, under necessary circumstances, spaces can exhibit combining or divisibility feature depending on its bearing system.

Turkish house possesses region-based differing plan typologies. Even in the same house there are rooms in different sizes. From this viewpoint, it is feasible to claim the prevalence of a flexible usage allowing different spatial organizations as per different plan types strategy.

In sum it is possible to point to a deep level of structural and functional flexibility in a Turkish house. Common flexibility approaches in the Turkish house are schematically depicted in Table 2.

Table 2. Common Flexibility Approaches in a Turkish house and Schematic Description
[source author]

Flexibility approach	Schematic description
<p>Mobility</p> <ul style="list-style-type: none"> • Coordination between fixed fittings (couch, stove, cupboard) and mobile fittings (low table, mattress etc.) • Mobility of wall cupboard and certain compartments of cupboard and resultant ability to offer passage between different rooms 	
<p>Multi-purpose Usage</p> <ul style="list-style-type: none"> • Multi-purpose usage of windows <ul style="list-style-type: none"> Coloring the clearstory room Inner front usage area of the windows on thick walls Function of the porthole in the balcony to see the room from street • Multi-purpose usage of the door <ul style="list-style-type: none"> In addition to a passage route element ensuring privacy between rooms and performing as decorative objects Room's multiple functions in daytime and night as dining, sleeping, hosting and even bathing area On the top of couch sleeping, sitting, hosting, studying and several other multi-purpose uses and functioning of the lower case for storing purposes Divider, storing, bathing, sound insulation and decorative purpose functions of wall cupboard and cupboards • Multi-purpose usage of the stove to serve warming, ventilation, cooking functions and symbolic image 	
<p>Modularity</p> <ul style="list-style-type: none"> • In the plan level <ul style="list-style-type: none"> With the modular connection of rooms house typology is planned • In the façade level <ul style="list-style-type: none"> Presence of a specified module in windows and doors and preserving the same module in all houses 	

Neutral Areas	<ul style="list-style-type: none"> Furniture-free feature of room center and presence of neutral areas serving to different functions in daytime and night Leaving the sofa, living area and exedra nonfunctional and resultant flexible usage 	
/Subtraction	<ul style="list-style-type: none"> By virtue of the geometric structure of houses addition and subtraction feature of units Presence of pavilion element as a model for jointing 	
Divisibility	<ul style="list-style-type: none"> By closing a part of exedras transforming them into rooms Ability of a U sofa type house to be transformable to an L sofa type through separation When needed, flexible usability of shared areas 	
Different plan types	<ul style="list-style-type: none"> Resulting from organizing the rooms as per different regions, formation of different plan typologies Different sizes of rooms in the very same house 	

Based on the analyses conducted on the established flexibility strategies it is detected that in the Turkish house flexible design approach has been featured heavily in multiple structural and functional aspects. Spaces are not extremely wide in a Turkish house and it is assumed that flexibility thus emerged as a necessity in such houses. Implementation of a flexibly-usable geometry in optimum conditions through supporting special fittings exemplifies the generic expression of flexibility approach in a Turkish house.

Based on these arguments it can reasonably be claimed that with its flexible design principles the Turkish house provides a vital source of data to emulate in modern residences to ensure flexibility.

5. EPILOGUE

From the very moment of birth humans seek themselves a place to live in. The earliest memory of place relates to one's "home". Bachelard(1994) argues that home memories

of childhood period represent the earliest world and universe that allows one to connect with outside world. Private space termed as home in which we experiment an abundance of memories also guides us understanding outer spaces.

To emphasize the spatial and semantic value of a house, Le Corbusier (1993) provides the definition "house is a machine to live inside". On that account, to ensure semantic and spatial sustainability of houses that indisputably occupy a vital place in human lives, it is of critical importance to analyze by grasping spatial and semantic relations of a traditional house which can be used as reference point in modern residence designs.

Thus Le Corbusier (1993) restates that, "being modern is not a fashion trend but rather a formation. One should decisively have an insight on history. And those with an insight on history can then understand the ways to discover the past, continuous and future happenings".

Within that context semantic and functional analysis of the traditional Turkish house would shed light to creating novel designs allowing multifunctional-flexible usability of multifunctional spatial areas and spaces mandated by modern age's living conditions.

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FIGURE CAPTION

Figure 1. Flexibility strategies (İslamoğlu, 2014).

Figure 2. Movable fittings in a Turkish house (URL-1)

Figure 3. Movable fittings in a Turkish house (URL-1; Günay, 1998)

Figure 4a,b. A clearstory model in a Turkish house (Küçükerman, 2007)

Figure 4 c. A porthole model in a Turkish house (Çetin, 2016).

Figure 5. Daytime and nighttime usage of the room (Günay, 1998).

Figure 6a. A cupboard and wall cupboard in a Turkish house (Bozkurt, 2013)

Figure 6b. A wall cupboard in a Turkish house (URL-2)

Figure 7a. Modularity in a Turkish house plan and front system (URL-3)

Figure 7b. Modularity in a Turkish house plan and front system (Günay, 1998)

Figure 8. Neutral areas in the center of a Turkish house (Ateş, 2008)

Figure 9a. Sofa and exedra in a Turkish house (Bozkurt, 2013)

Figure 9b. Sofa and exedra in a Turkish house (Burkut, 2014)

Figure 10. Addition/Subtraction Organization between the Rooms and the Shared Area (Kuban, 1993)

Figure 11. Transformation of a separated exedra into a room (Bozkurt, 2013)

Figure 12. In a Turkish house, Plan Types varied with respect to Sofa Organization (Eldem, 1984)

*The images in Table 2 were created by the author in the scope of the study.