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A CONFIGURATIONAL APPROACH TO VERNACULAR DOMESTIC ARCHITECTURE

'Traditional' Houses in Turkey, Japan and Britain

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ABSTRACT

Most vernacular and traditional buildings are considered as 'timeless' meaning that their forms and styles are accepted as 'objects' that do not change over time. This leads to rigid definitions of domestic architecture by assigning definite cultural meanings to physical forms. While vernacular domestic spaces naturally represent the culture and society that they are constructed in, where these are interpreted in the light of fixed notions of 'culture' and 'tradition', the possibility that 'vernacular' does not necessarily mean 'timeless' or 'unchanging' is left unexplored.

This paper re-examines the boundaries of nation-specific 'vernaculars' through a comparative cross-cultural analysis of traditional housing. It interrogates the use of notions such as 'culture' and 'tradition' in vernacular housing typologies in Turkey, Japan and Britain in order to provide a better understanding of 'the vernacular' as a dynamic concept in domestic architecture. It proposes a comparative interpretative framework for studying the vernacular by considering how the relationship between the social and spatial patterns is shaped under diverse regional and historical conditions. This approach raises questions for conventional definitions of the 'vernacular' by analysing similarities as well as differences between the different traditions.

The research applies space syntax methodology to 30 different vernacular housing examples built between 17th and 19th centuries in different regions of Turkey, Japan and Britain, each held to represent the 'national' values and traditions of their particular culture. The results of the analysis show how the traditional typological approach to housing forms remains insufficient to fully understand vernacular architecture, since it tends to elide differences in social mores and the use of domestic space into a single 'vernacular' tradition. Overall, this study shows how the conventional classifications of vernacular architecture depending on cultural and national traditions do not go much beyond creating normative statements that are mainly taken for granted. By contrast, the research presented here proposes the 'vernacular' as a fluid, rather than a fixed description of national traditions of domestic architecture.

KEYWORDS

Tradition, Culture, Vernacular Architecture, Domestic Architecture, Space Syntax

1. INTRODUCTION

Conventional studies of vernacular domestic architecture tend to classify spatial forms based on predefined notions such as the 'tradition', 'culture' and 'nation' in which they were built. This results in domestic spaces being labelled reductively as physical end products of their societies and geographies. The relation between vernacular architecture as cultural representation and as spatial form itself remain vague and inadequately understood to do justice to an important area of research in understanding the relationship of society and space. The research framework deployed here investigates the extent to which qualitative categories of 'traditional' and 'vernacular' architecture correspond with the configurational properties of 'vernacular space'. The uncertainties involved in translating the vernacular as a generic normative idea into a particular physical form are analysed through quantifying the configurational description of key vernacular statements around culturally-defined notions such as 'privacy', 'flexibility' and 'introverted-ness' within a range of selected case studies.

The idea of 'tradition' can be broadly summarised as the continuity of habits and attitudes that are transmitted through successive generations within the same community. Similarly, the notion of 'culture' represents 'the ideas, customs, and social behaviour of a particular people or society' (Oxford Dictionary). Arnold (1869, p.11) describes 'culture' as a 'study of perfection' rather than deriving its origins from curiosity. The distinctions made between different groups on a cultural basis are said to be the results of human minds' idealisation. Gellner (1988, p.123) claims that, 'Clearly, the nature of the customs and beliefs acquired is variable and non-genetic, but the capacity to acquire them does seem to be part of human nature.' This approach follows Gellner in understanding 'culture' as non-genetically transmitted codes that result in definite social reproductions. The concept of 'nation' represents the sum of political communication and mobility that is created between people in a society where they share the same 'culture'. Benedict Anderson (1986, p.6) claims that 'nation' is 'an imagined political community – and imagined as both inherently limited and sovereign.' In that respect, he questions the authenticity of the 'nationality' concept where the individuals of a society become a part of a nation not because it emerged 'naturally', but through various historically specific necessities and reasons behind its invention. These ideas suggest why it worth considering the extent to which the idea of vernacular has been 'invented' concepts in national contexts seeking to assert a degree of social continuity.

The flexibility of the concepts of 'tradition', 'culture', 'nation', and the fixity in the ways in which these have been applied to the study of the built environment is notable. This study, by contrast, approaches the built environment through a more flexible conceptual framework that allows the formal spatial description of a building to be relatively independent of any normative statement regarding its origins. The spatial analysis presented here is particularly focused on 'vernacular' architecture where the term 'vernacular' signifies regional, small and ordinary buildings that are mainly designed anonymously. Domestic vernacular architecture therefore is selected to analyse the ordinary homes of ordinary people in a range of cultural contexts.

Architectural interest in 'vernacular architecture' emerged following the immediate consequences of the Industrial Revolution of the nineteenth century. Johnson (2010, p.4) argues that the emergence of new lifestyles and migration to urban centres during this period evoked the fear of losing 'tradition' within the community. Today, the conventional approach to vernacular architecture suggests focusing on cultural and social properties in order to define the 'traditional' built form of a society. Rapoport (1969, p.16) claims that; 'The question, in effect, is concerned with how changes in culture, expressed in behaviour, relate to changes in the environment, as shown by physical form.' This approach suggests a perspective on architecture as an 'object' or a 'product' that reflects society. In contrast to being merely objects, other studies suggest that the built environment can be regarded as systems of relations that accommodate social behaviours and cultures. Levi-Strauss in 'Structural Anthropology' (1963) focuses on human behaviours as systems of structures. Relating the notions 'culture' and 'language' he argues that regardless of their differences there is a common structural system behind every culture in all societies. A similar approach is reflected in Bourdieu's 'Kabyle House' (1977) through the spatial arrangements of a domestic house and its impacts on socio-cultural

lifestyles of the inhabitants. These ideas focus on spatial factors as well as the social and cultural properties of a built environment.

Architecture is said by Hillier to do more than assigning specific spatial patterns to cultural types but instead it is the 'taking into conscious, reflective thought of these non-discursive and configurational aspects of space and form, ...' (1996, p.3). This argument is developed in the context of vernacular architecture, summarised by the diagram that shows the relation between 'a building' and 'architecture' (Fig.1). According to that, vernacular buildings are considered as architectural practices that embed certain information and innovation inside. However, the reproduction of vernacular forms is not considered as part of architecture, as it is mainly focused on the ways in which these forms emerge instead of the types of forms themselves (1996, p.36). Space Syntax theory proposes a novel way to interpret vernacular architecture by analysing it configurationally rather than typologically. The approach taken in this study is to analyse 'vernacular' domestic spaces using Space Syntax methods in order to determine the extent to which the cultural differentiation of vernacular types is matched by configurational differentiation in spatial layouts that embed the architectural rules particular to those cultures.

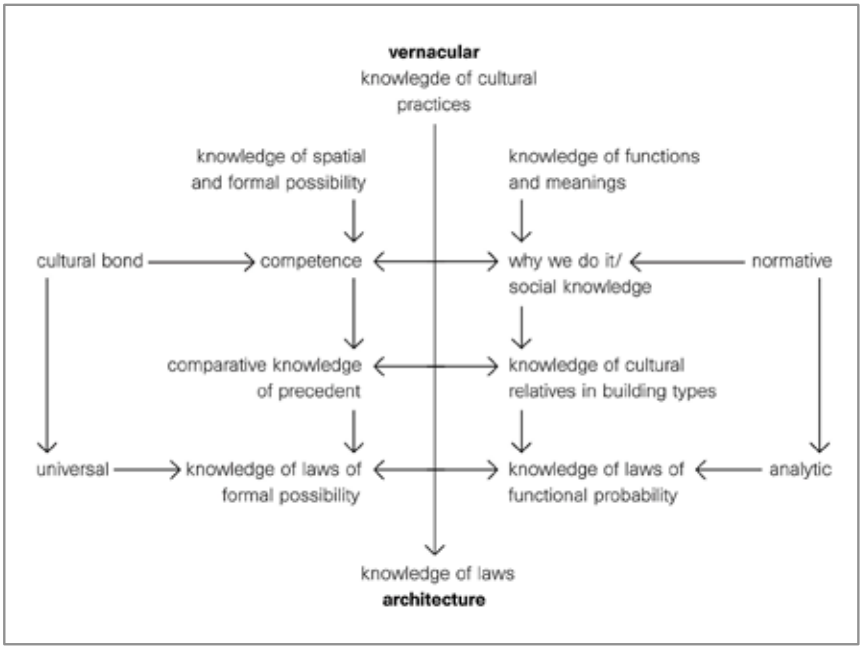


Figure 1 - The relationship between building and architecture (Hillier, 1996, p.36)

2. METHODOLOGY

There have been previous domestic spatial studies within the field of Space Syntax theory, the obvious example being Decoding Homes and Houses by Julienne Hanson (1998). Also, the theory has been applied to the study of domestic architecture in particular countries. Traditional Turkish houses were analysed by Orhun et al. in 'Spatial Types in Traditional Turkish Houses' (1995) and 'Socialising Spatial Types in Traditional Turkish Houses' (1996). These studies overall have focused on the analysis of changing vernacular houses over time. These exemplify the approach taken by the majority of studies that focus on a single culture and with an inevitable emphasis on defining aspects of national tradition. As a consequence there have been fewer studies conducted in a comparative, cross-cultural framework.

This paper comprises of spatial analyses of 30 'traditional' single-family houses built between 17th and 19th centuries that are equally sampled from different regions of Turkey, Japan and Britain (Fig. 2). The case studies were sampled from houses that are considered as 'traditional' or 'vernacular', at least six different regions are included in each national context. The specific

countries were chosen on the assumption that they would be strongly culturally differentiated from each other, being part of distant geographies, societies and beliefs. The individual case studies were selected from various resources in which the main focus was to identify a specific definition of a particular 'traditional' house in each regional context that is most prototypical of vernacular housing in that particular region. Therefore, the primary criteria for selecting the case studies consisted of their level of significance in representing 'tradition' and 'culture'. Also, the anonymity of the builder, single-family occupancy, diversity in size and region played an important role in the selection process. The case studies from Turkey range from small village houses and vineyards to mansions in order to receive a wider image of the 'typical' configuration in this specific culture. Similarly, Japanese houses include farmhouses and merchants' town houses also differing in sizes and regions. Lastly, British houses are selected from a variety of 'traditional' farmhouses, cottages and terraced houses.

The study is divided into two parts where former represents qualitative definitions of 'traditional' houses described in multiple historical sources and the latter involves quantitative spatial analyses of the case study plans using Space Syntax tools. The first section consists of definitions of 'traditional' Turkish, Japanese and British houses from which certain traditional and cultural aspects are derived and related to a spatial setting in each context. This analysis then enables further investigation of culturally predefined concepts such as 'privacy', 'flexibility' and 'introverted–ness' through an evidence-based analytical approach using Depth, Connectivity and Integration measures of the Space Syntax tools.

Firstly, Justified Graphs were created in which each space of the house is represented with a node and the access routes between each node as links. This analysis was then used to measure the depth between each space to all other spaces within a building. The entrance of each house is taken as a reference point in order to define the 'deepness' or 'shallowness' of each space in relation to the rest of the configuration. Also, Space Type Analysis was used to define the number of connections of each space within the configuration. Space Syntax theory classifies spaces as types A, B, C or D based on the number of links that each node possess.

Secondly, Convex and Axial Maps were used to measure accessibility and movement values of each space. Convex maps represent areas that are visible to and from all points within a single space; and Axial maps represent the longest and fewest straight lines within a spatial layout which shows the accessible routes that one could see and move from one space to another in a configuration. Space Syntax theory suggests that movement within a space can be predicted through the degree of their 'integration' to the whole system. (Hillier, 1996, p.98)

Thirdly, visibility measures are analysed using Visibility Graph Analysis where a pattern of visual field is created on the existing spatial layout where each grid cell represents the level of visual connectivity and integration to the rest of the configuration. Also, Isovist Areas are measured to capture the visibility area of a person in a defined sight angle and a defined point within a space. For this study, two isovist points of 360 degrees are captured within entrances and living rooms of each vernacular house.

Finally, each analysis is mainly discussed through two main quantifiable measurements that are the Integration and Connectivity values. The Integration value represents the degree to which a space is integrated globally within a configurational system. On the other hand, the Connectivity Value signifies the number of spaces that are locally connected to all other neighbouring spaces. The graphs of these analyses are presented through a colour scheme that changes from 'red' to 'blue' where the warmer colour represents the most connected and integrated values and the vice versa.

CASE STUDIES					
	Case No	Case	Cent.	City	Maps
TURKEY	1	Akşehir House	19	Konya	
	2	Cahit Atlı House	19	Kuşadası	
	3	Karaçizmeciler House	19	Urfa	
	4	Hacı Salih Paşa Vineyard	19	Safranbolu	
	5	Kaymakamlar Mansion	18	Safranbolu	
	6	Fazıl Paşa Mansion	18	İzmit	
	7	Sadullah Paşa Mansion	18	Istanbul	
	8	Halil Ağa House	17	Mudanya	
	9	Hafız Necati House	17	Gebze	
	10	Genç Ağa House	17	Tekirdağ	
JAPAN	11	Imanishi House	17	Nara	
	12	Kuriyama House	17	Nara	
	13	Sakuta House	17	Chiba	
	14	Kudo House	18	Iwate	
	15	Emukai House	18	Toyama	
	16	Shibuya House	19	Yamagata	
	17	Kanda House	19	Gifu	
	18	Kusakabe House	19	Gifu	
	19	Matsumoto House	19	Gifu	
	20	Yoshijima House	19	Gifu	
BRITAIN	21	Style Cottage	17	Oxfordshire	
	22	Birmingham House	19	Birmingham	
	23	Chinners Farm	17	Northampto nshire	
	24	Estate Cottage	19	Norfolk	
	25	Hart's Cottage	17	Dorset	
	26	Fontmell Magna House	17	Dorset	
	27	Spring Cottage	19	Banbury	
	28	Old Farmhouse	17	Lanchashire	
	29	Dial House	18	Lanchashire	
	30	Green Close Farm	19	Cheshire	

Figure 2 - The list of case studies

3. 'TRADITIONAL' HOUSES IN DIFFERENT CONTEXTS

The selection of the case studies in Turkey, Japan and Britain enabled the analytical focus to be around traditional housing examples from distant geographies with diverse beliefs, cultures and societies. The country-specific vernacular studies showed a great difference in terms of traditional and cultural descriptions in architecture. In that respect, Turkish and Japanese houses are represented through more specific statements, whereas the concept of a 'traditional' British house remains relatively less defined. However, certain cultural notions have been used and linked repeatedly to 'traditional' houses in these different countries by a vast amount of resources. In that context 'privacy', 'flexibility' and 'introverted-ness' have been addressed as the main thematic focus of this study.

A 'traditional' Turkish house is defined by Eldem S.H. (1954, p.16) as referring to housing types that emerged during the reign of Ottoman Empire and that spread over the empire during the 17th and 18th centuries. During these periods the majority of the houses in Turkey are believed to reflect similarities in layouts regardless of their regional, climatic or socio-economic conditions. In that respect, the living room, 'sofa' is described as the most important space where all the major family activities take place and it links all other rooms providing a circulation space within a Turkish house.

The second most emphasised element of a 'traditional' Turkish house is the room, 'oda' where Küçükerman Ö. (1978) relates its origins back to the nomadic lifestyle of Turks prior to settling in Anatolia. He claims that a '...family-based society is inherent in nomadic society' (1978, p.29) reflecting on the similarities between the layout of Central Asian dwelling tents and the room layouts of Turkish houses. The multifunctional character of the rooms in Turkish houses are seen through the diverse use of each unit during the day and night times where the rooms are transformed daily from inward facing sitting areas to sleeping areas. As the rooms are formed around at least one common use room, 'sofa', where the seating area consists of inward facing fixed furniture, they are argued to be 'introverted'. Also, the 'privacy' notion in a traditional Turkish house is discussed through the spatial configuration of the bedrooms and their intentional distant allocation from the main entrances where they are mainly placed on the upper floors and visually and spatially hidden. This principle of 'privacy' for the bedrooms can also be tested in other case studies in Japan and Britain.

A 'traditional Japanese house' is described as a house that reflects the conventional use of structure, materials and spatial layout principles of the 16th century architecture that is applied from diverse buildings including large royal palaces to small tearooms (Alex, 1963, p.32). Besides the spatial configuration of a Japanese house, its material and physical characteristics also give characteristic definition to this 'traditional' entity. In that respect, the use of modular elements as sliding walls in a Japanese house named 'tatami' creates flexibility to adjust the spatial configuration to accommodate multi-functional uses. According to Engel (1964, p.90) the design of a traditional Japanese house is never finished. It possesses the flexibility to grow organically since it is based on rectangular grid system. The notion of 'flexibility' is further explored through the cultural structure of Japanese family lifestyles.

Similar to Turkish houses, the multifunctional uses of rooms, family oriented activities and collective living rituals are also common in 'traditional' Japanese houses. Given the fact that many rooms in Japanese houses can be expanded and connected to each other through sliding tatami units, the whole house can be interpreted as one single space that is closed to outer world but open to the interior (Engel, 1964, p.230). However, the relation between the indoor and outdoor is also emphasised by the Japanese Zen belief suggesting that nature is an inseparable element of domestic lifestyle and therefore its use is essential to traditional domestic space. Harada (1954, p.55) claims that, 'No house is considered complete without a garden of some sort, and the garden is almost an integral part of the house.' In that regard, open spaces in traditional Japanese houses is suggested to have a key role in integrating interior spaces with nature.

In comparison with the previous case studies, a 'traditional British house' remains harder to define through a specific period or location, as there are various housing types described by

different sources based on regional differences. Peter Guillery (2011, p.1) argues that 'In British architectural history the word vernacular has tended to evoke a narrow range of stereotypical forms and features – cruck frames, cross passages, scarf joints and the like.' Therefore, it is mainly described in a structural context rather than cultural, where vernacular houses are classified based on different regions and periods mainly for conservation purposes. 'The Royal Commission of Historical Monuments England' prepared by Eric Mercer (1975) treats the term 'vernacular' as a notion that differs from a region to region as well as from a time to time by focusing on structural and materialistic property of various domestic buildings. However, Brunskill (1981, p.24), argues that vernacular buildings are more than just structural classifications and inhabits another layer by describing 'vernacular' as sort of a building that is '...traditional rather than academic in its inspiration, which provides for the simple activities of ordinary people, their farms and their simple industrial enterprises, ...' In that perspective, he focuses his interest on the farmhouses and cottages of low-class groups that is also the basis of the 'traditional' British case studies in this study.

Focusing on the term of 'privacy', and in contrast with the other two case studies, public and private spaces in a 'traditional' British house are separated from each other through different floors emphasising more individualistic lifestyles. Bedrooms are located on the upper floors facing private corridors or staircase landings and not any public area such as halls or living rooms. Moreover, having a split in living rooms into two different spaces one of which is called the 'parlour' originally derived from the French word 'parler', meaning ' to talk', shows a different kind of 'privacy' to host guests in a separate space than the ordinary living room or kitchen that is served for households more formal and private gatherings (Logan T., 2001, p.13).

The following analytical part of the study focuses on the themes of 'privacy', 'flexibility' and 'introverted-ness', and tries to reframe the understanding of these concepts through configurational analyses. The quantification of these notions allows for an analytically based comparison to take place. The comparative framework of verbal definitions in combination with configurational analysis should help us to gain a better understanding of the typical traditional house types in three contrasting cultural environments, as described below (Figure 3).

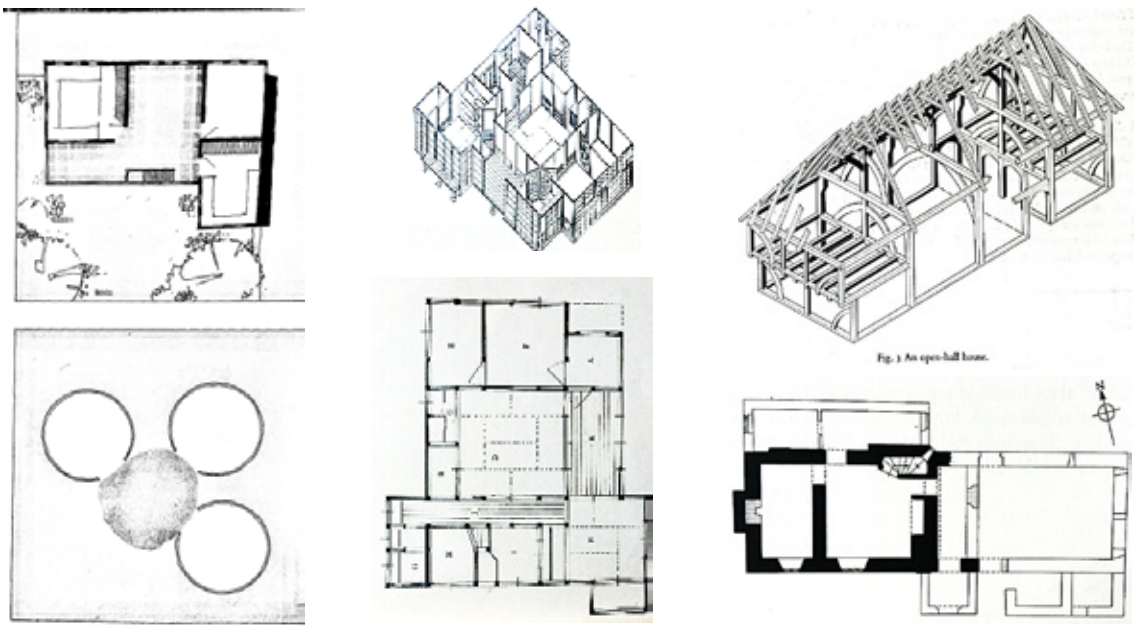
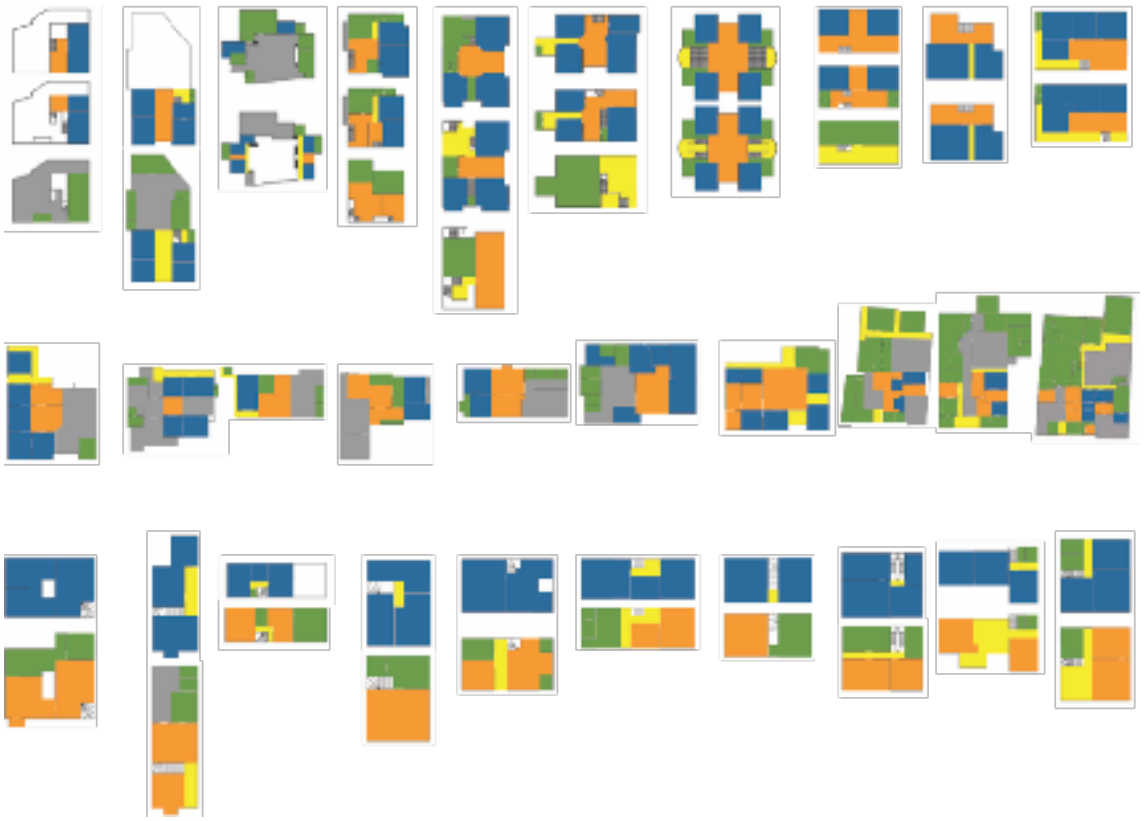


Figure 3 - A: Traditional Turkish House (Küçükerman Ö., 1978), B: Traditional Japanese House (Harada J., 1954, p.19), C: Traditional British House (Mercer E., 1975)

4. CONFIGURATIONAL ANALYSES

Each domestic space type from different country and case study has been classified according to the same scheme of space use to create a common comparable framework (Figure 4).



Colour	Space	Inclusive Areas		
		Turkey	Japan	Britain
	Common Use Rooms	Sofa (so)	Living Room (lr) Tearoom Buddhist Altar Rooms	Parlour (pa) Living Room Hall-Kitchen
	Circulation Spaces	Corridors Halls (ha)	Corridors Verandas	Corridors Halls
	Open Spaces	Gardens (gr) Courtyards Terraces	Gardens Mud Floor Areas	Gardens
	Service Spaces	Kitchens (se) Bathrooms Storages	Kitchens Bathrooms Storages	Kitchens Bathrooms Storages
	Bedrooms	Bedrooms (br)	Bedrooms	Bedrooms

Figure 4 - Spatial use per country, top, middle, bottom: Traditional Turkish, Japanese and British houses

The first analysis involves Justified Graphs of the 30 vernacular houses where the depth of each space is measured from the roots of the graphs defined as the entrances to the houses (Fig.5). As a result, British houses are the shallowest to entrances followed by Turkish and Japanese houses with average levels of 4.5, 5.9 and 6.2. Overall, considering different spatial uses, the living rooms in Turkey are relatively deeper to entrances than the living rooms in Japanese and British houses. In addition to the statement that a typical 'traditional' Turkish house plan grows around the living room, it can also be argued that this core space, namely the 'sofa' is also 'private', protected and not easily accessible from the exterior. This additional layer of information gathered from spatial analysis creates a value to understand the notion of 'privacy' in vernacular houses more precisely. The analysis also shows that the bedrooms in Japanese houses are both shallower to entrances and to all other spaces than the other examples. This data can also be interpreted as Japanese bedrooms being less private and easier to access than the bedrooms in Turkish and British houses. Entrances and their relations to internal spaces do, of course, configurationally transform over time. However, the layouts examined in this study do not seek to identify the change between interior and exterior but instead prioritize comparative range for elucidating the transformation of interior relations.

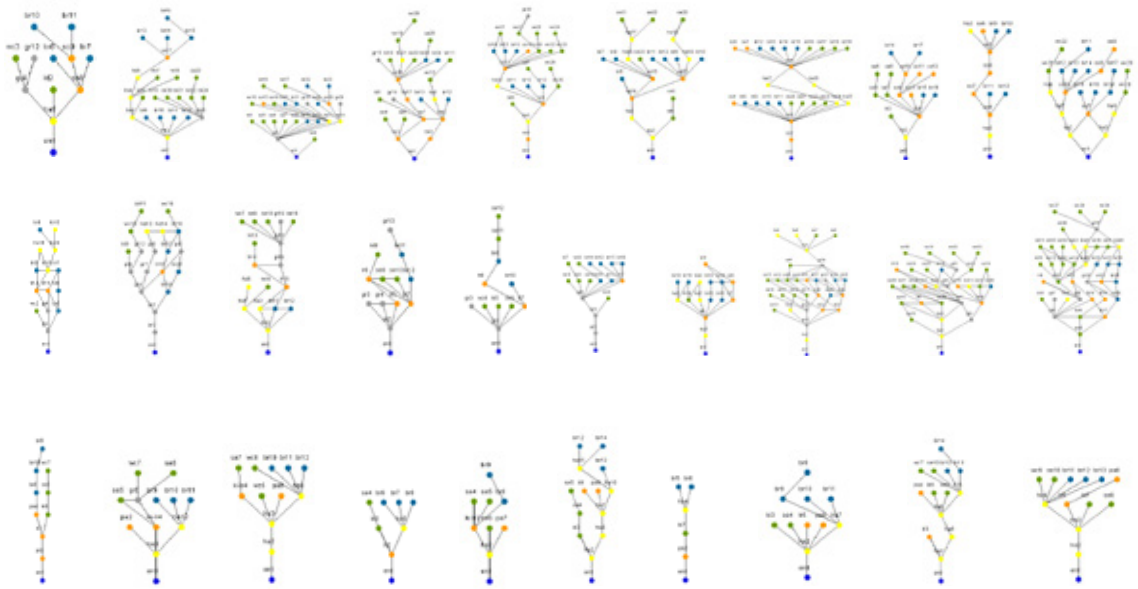


Figure 5 - J-Graphs and Space Type Analyses for Turkish, Japanese and British Houses

Secondly, the Space Type Graphs show that the Turkish and British houses are formed of similar types of 'tree' shape graphs, whereas the Japanese houses present comparatively more ringed graphs. In that respect, within the total 202 spaces Turkish houses contain only four rings, whereas within the same amount of total spaces, Japanese houses contain 71 rings. On the other hand British houses contain only 1 ring within the total of 99 spaces. This shows that, compared to Turkish and British houses, spaces within Japanese houses are the most interconnected with the highest number of D type spaces that is also aligned with the previously described idea of 'flexibility' notion in Japanese houses. Breaking down the spatial uses in Japanese houses; living rooms, open spaces, circulation spaces and bedrooms are indicated as spaces with the most connections to neighbouring spaces.

Looking at spatial uses independently, the space types of Turkish houses reflect mainly A and B type spaces, where the bedrooms, open spaces and service rooms are formed of A spaces and 70 percent of 'sofa's and 90 percent of circulation spaces are B-type spaces. This result shows that bedrooms, service spaces and open spaces are not used as connection spaces but rather

as dead-end spaces. By contrast, living rooms in Turkish houses function as connection spaces as much as corridors. Also, British houses show similarities to Turkish houses by mainly being formed through A and B type spaces. The main difference between the Turkish and British house space types are only seen in the living rooms whereas the rest of the functional results are the same. In contrast to the living rooms with B-types space in Turkish houses, the living rooms in British houses are seen as A-type spaces which indicates that the living rooms or parlours in British houses do not function as connecting spaces but rather as spaces with single entrances.

The importance of the living rooms in the spatial configuration is also highlighted through high spatial accessibility levels shown both in Convex and Axial Map analyses (Fig. 6, 7). According to the Convex Map results, living rooms are the most integrated spaces in Turkish and Japanese houses whereas it is the circulation spaces that are the most accessible in British houses. Also, Axial Map analysis shows that, the most connected spaces are the living rooms for Turkish houses, open spaces for Japanese houses and circulation spaces for British houses. Another interesting finding is that the internal circulation in each house is spatially provided through different spaces other than corridors or halls. The spaces that are defined as 'circulation areas' in Turkish and Japanese houses remain less connected than the other spaces. In Japanese houses circulation spaces are even more segregated than the bedrooms. As a result in both analyses, Japanese houses overall are the most connected and integrated houses.

Even though, the spatial findings may seem fixed and definite, analysed over the periods of time graphs show that the Integration values of living rooms, circulation spaces and bedrooms have evolved differently in each case over time (Fig. 8). The living rooms' values rose between 17th and 18th centuries and fell towards the 19th century in Turkish houses while it showed the opposite change in Japanese houses and greater stability in British houses. This analysis also shows that there is a changing pattern to way in which these spatial values are defined over time. Therefore, the fixity of any configurational notion of essential vernacular architecture is arguable, to say the least.

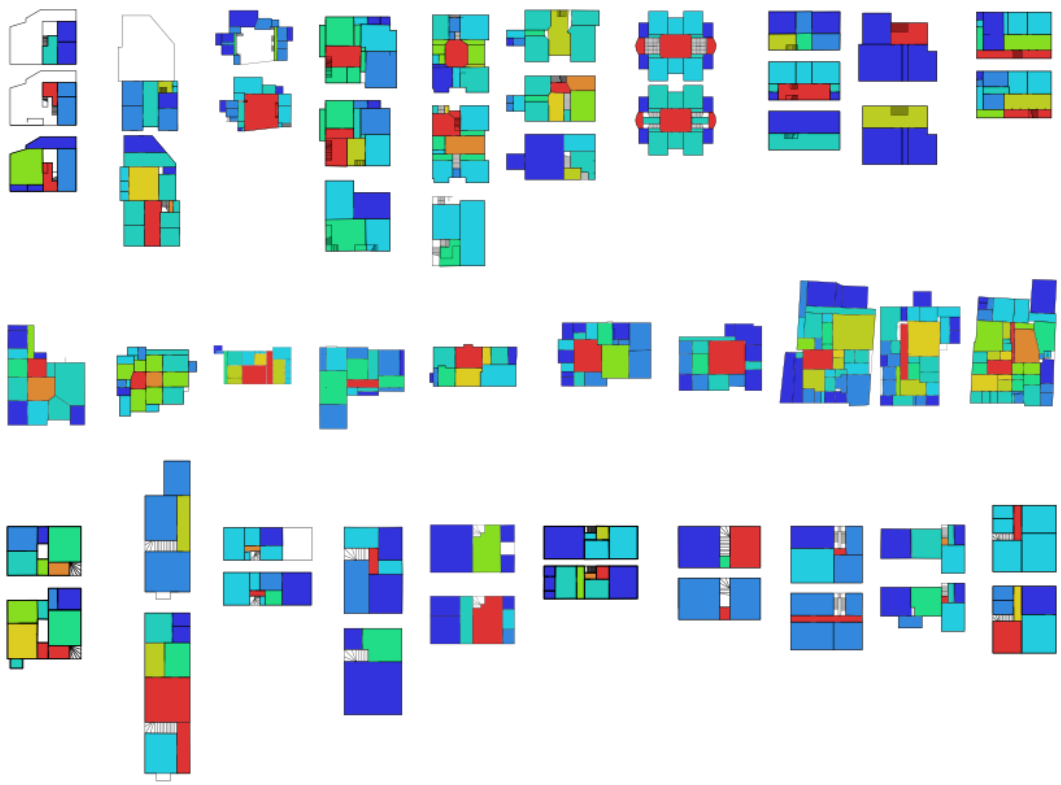


Figure 6 - Convex Map Analysis - Integration (HH) for Turkish, Japanese and British Houses

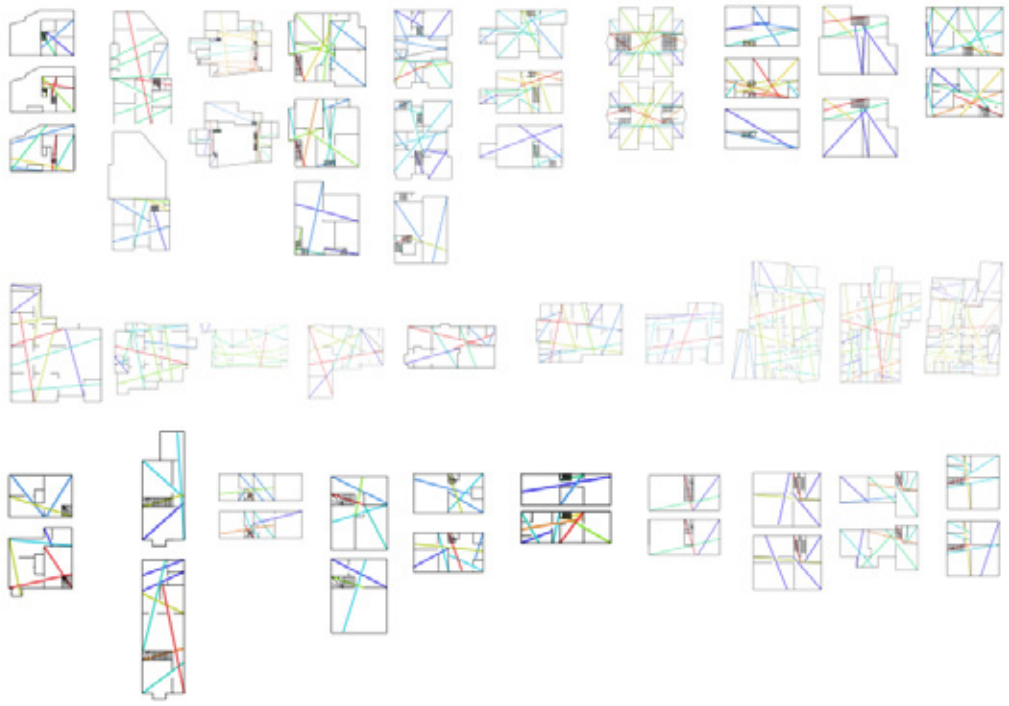


Figure 7 - Axial Map - Integration (HH) for Turkish, Japanese and British Houses

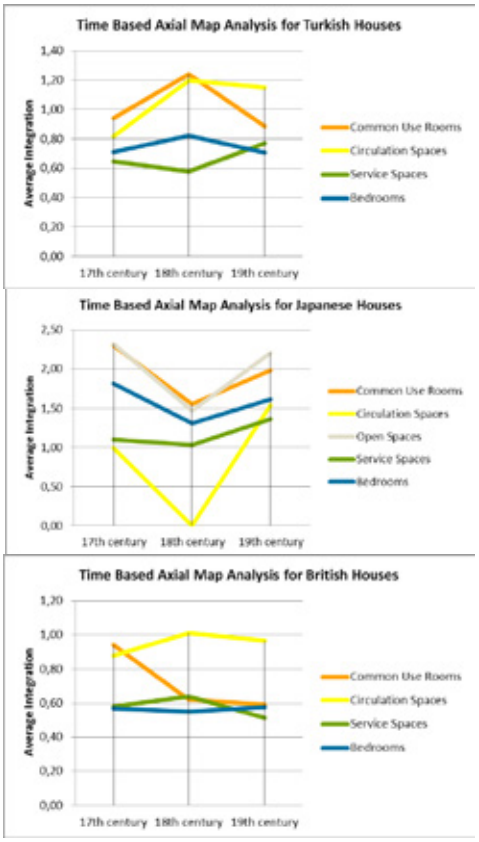


Figure 8 - Time based Axial Map Analysis - Integration (HH) per century and per country

Lastly, visibility levels are measured through Visibility Graph Analysis and Isovist Maps. Living rooms are visually the most integrated spaces in both Turkish and Japanese houses. Japanese houses contain visually the most integrated living rooms whereas British houses have the visually most integrated circulation spaces and bedrooms. Despite the fact that the bedrooms of 'vernacular British houses' were described as 'private', they are visually more integrated than the 'flexible' Japanese houses.

The Isovist areas are captured from both entrances and the centre of the living rooms in all houses with a degree of 360 (Fig. 9). The isovist areas allow comment on: first, the level of visibility upon entering the house, and secondly, the extent to which the living rooms in each house provide visual accessibility to other spaces within the configuration. The results of the analysis show that, Japanese houses contain the largest areas of isovists overall. The overall average Isovist area value for Japanese houses is given as 119,61 sqm, followed by values 78,65 sqm and 34,77 sqm for Turkish and British houses. Considering the spatial functions, the results show that the Isovist areas in living rooms in both Japanese and British houses are larger than the Isovist areas in entrances. By contrast, in Turkish houses, the Isovist areas in entrances are larger than the ones in living rooms. In other words, a person entering the Turkish house has the possibility to capture more areas than that could be seen from the centre of the living room.

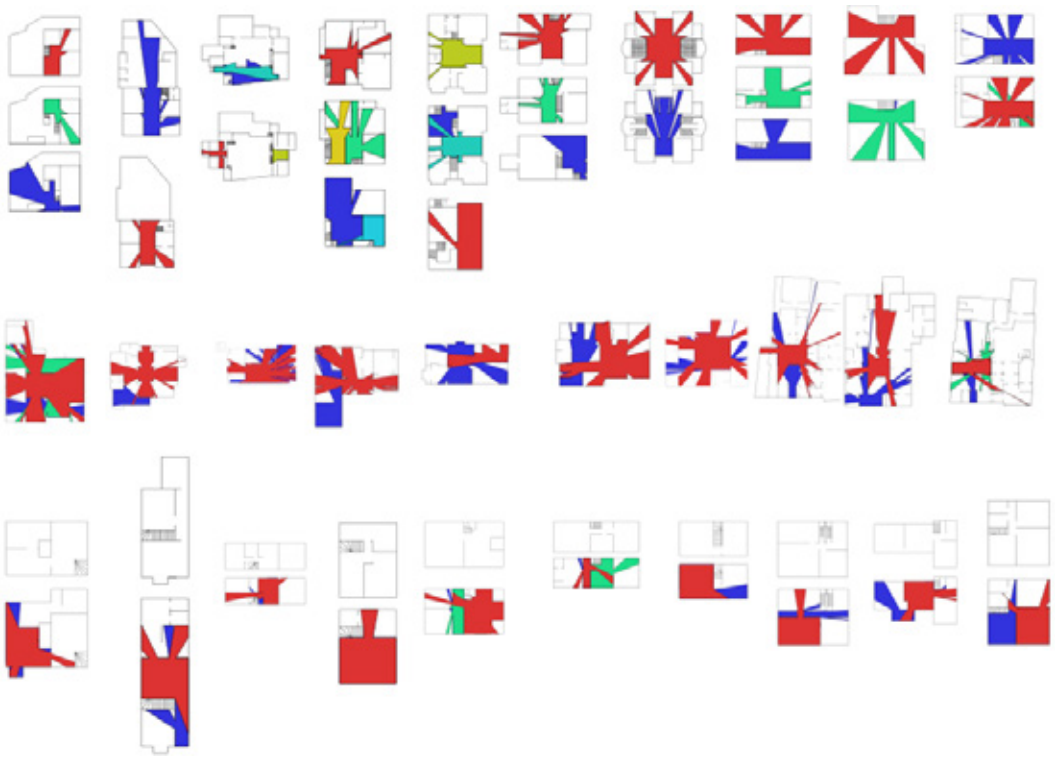


Figure 9 - Isovist Maps for Turkish, Japanese and British Houses

5. DISCUSSION AND CONCLUSION

The main purpose of this study was to investigate the extent to which conventional studies of the 'traditional' and 'vernacular' corresponded to the actual properties of 'space'. This approach has been enabled through a comparative study between the narrative definitions of 'traditional' houses as discussed in Section 3 and the evidence-based spatial analyses in Section 4 where the same concepts were explored quantitatively. In particular, the notions of 'flexibility' and 'privacy' have been discussed using a more analytical approach and the results of the spatial analyses

have been compared with the initial qualitative studies done in the field of vernacular in order to see if an alternative and complementary approach can be suggested to study vernacular buildings.

Firstly, the 'sofa' in traditional Turkish houses is often said to be the most important room in the whole spatial configuration in terms of the multi-functional collective activities that take place in, and for its role in connecting the majority of the rooms to each other. However, the Justified Graph analysis has also shown that 'sofas' are in fact deeper to both main entrances and to the rest of the configuration than many other spaces within a Turkish house. Although, acting as a connecting circulation space between the other rooms, corridors are found to be shallower to other spaces than 'sofa's. Moreover, the study shows that living rooms in Japanese and British houses are easier to access with fewer steps than in Turkey. This analysis suggests how it might be possible to arrive at a more nuanced understanding of 'privacy' and further proposes that the 'sofa' could also be considered as a private space in parallel to bedrooms. On the other hand, the findings on the 'privacy' concept of bedrooms showed similarities to the initial narrative study, as they are the least connected and integrated spaces alongside with service areas in all analyses.

Secondly, Japanese houses were described through the concept of 'flexibility' where it refers to organically growing, expandable interior spaces that houses multi-functional and collective activities and where nature is a very important part of the vernacular code. Although Japanese houses can be considered 'flexible' in terms of the interconnectivity and the number of possible linkage between interior spaces, the analyses show that spaces overall are much deeper to the main entrances compared to other two cultural case studies. Despite the number of rings in Justified Graphs and D-type spaces, most spaces in Japanese houses require more steps to be reached from the exterior. Open spaces in this sense, remain as transition areas between the interiors and exteriors, which might further suggest 'traditional' Japanese houses to be 'introverted' and hard to access from the exterior.

Not only open spaces but also the circulation spaces in Japanese houses require a further understanding in terms of their functions within the spatial configuration. Although there are specific places designed for the circulation purposes such as corridors or verandas, the circulation is mainly provided through all other internal spaces where these spaces do not reflect such definite functions. Even the bedrooms are more visually and spatially integrated than the circulation spaces. The shallowness of the bedrooms to entrances also proposes a distinctive spatial definition of the 'privacy' notion in different cultural perspectives, as well as reconsidering 'flexibility' not only in physical sense but also in spatial and functional senses.

Thirdly, the 'traditional' British houses were described as individualistic and private in terms of spatial split between the household and guest reserved spaces; including the two separate living rooms for formal and informal gatherings as well as the location of bedrooms on the upper floors in order to create a sense of 'privacy'. The bedrooms in British houses facing private corridors can be argued to be 'more public' than both Turkish and Japanese houses where they are located around the living room in a single floor as the analyses show that British bedrooms are visually the most integrated spaces in the whole configurations. The two split living rooms on the other hand do not differ from each other that much in terms of 'privacy' as they are both have low spatial integration values as opposed to circulation spaces which are the most integrated spaces in British houses. Also, the notion of 'flexibility' can be reconsidered among all case studies, as the overall visually integrated spaces are much higher in British houses than in Japanese houses which are most known for being 'flexible'.

Overall, the notions of 'privacy', 'flexibility' and 'introverted-ness' remain inadequate to be explained through only qualitative studies. The results suggest that each vernacular domestic space might consider these terms in different ways. Therefore, these concepts might not be verbally highlighted but could still be embedded in the spatial configuration, where a further analytical approach would be needed to tease out particular variations. Despite the number of inconsistencies analysed between qualitative and quantitative approaches, certain similarities are also identified. Therefore, this study does not set itself up in opposition to existing

approaches to domestic vernaculars but rather proposes a configurational perspective as a starting point to rethink current understanding of the vernacular architecture. Rather than taking conventional qualitative studies for granted, the analyses here propose to approach to 'vernacular' studies with a more critical perspective through the analytical reconsideration of normative standardisations concerning the spatial qualities of national housing layouts.

In conclusion, the study argues that, the definition of 'tradition' in vernacular architecture needs re-examination. In contrast to considering vernacular houses as 'timeless' objects, the time-based analyses show that there are also variations within the 'traditional' houses and that they reflect certain spatial changes over time that speak to assumed national characteristics such as 'privacy' . Despite the common assumption of considering traditional houses as fixed products of societies, these results suggest a greater focus on the patterns of continuity and changes within each national sample in order to fully understand the characteristics. Instead of treating 'vernacular' architecture as a unitary notion with specific characteristics for each nation, considering it as a fluid proposition gives greater scope for more precise results combining both qualitative and quantitative analyses.

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