
Understanding Adaptive Mainstream Users' Values in Housing Transformation towards Sustainable Housing Development

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Additional information is available at the end of the chapter

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Abstract

The emergent trend on the influence of western housing built forms and patterns in traditional cities with culturally inclined historical values have been on the rise. However, there is a corresponding resistivity in morphological outcomes as users transform their houses to reflect lifelong values. Vividly, a growing concept of indigenous urban architectural character evolves in these settlements due to fulfilment of values as reflected in the configuration over time. In this chapter, the research argues on the need to harness the benefits and design indices that lies in users' instigated changes to original house forms and configurations towards attaining users' satisfaction and desired needs. Beyond this, it further emphasised the need for a socio-cultural paradigm in thinking housing as a significant trend in ensuring housing sustainability. Thereafter, mainstream values that relate design solutions through spatial patterns and indices are expressed using the case study strategy to illustrate instances of sustainable housing themes.

Keywords: adaptive values, cultured settlements, housing satisfaction, house transformation, sustainable housing

1. Introduction

Widespread expansion of cities due to rapid population increase has overstretched urban facilities particularly housing. As a result, cityscapes now assume cosmopolitan dimension with old and new settlements side by side, urban and sub-urban habitations as well as city centres and fringes accommodating people of varied background. Despite huge investments by private developers and governments in the cities of developing nations towards production

and provision of sustainable housing particularly for the middle- and low-income group, it remains unachievable. Correspondingly, culture inclusive designs manifest from housing transformations as tangible benefits even though it is overlooked. This is often associated with sub-standard developments due to unguided transformation activities by individual residents. Meanwhile, stakeholders particularly development control agencies usually focus on the distortions made to cities' master plan and disregard for planning laws rather than paying attention to considerations given to the reasons behind their actions and the value of the final product, thus concentrating on the phenomenon of interest rather than considering the subject matter adequately from the overall model. This led to researchers' interest in spatial behaviour of inhabitants' space transaction in order to attain growing need for sustainable housing provision.

Meanwhile, architecture indeed has accommodated and as well constrains behaviour, thus the growing interest in architectural design and behavioural sciences. Yet gaps exist between the architects and behavioural scientists in comprehending inhabitants' interactions with space. This is aggravated with the complexity of behaviour as it includes observed activity pattern, cognition, and perception.

But, spatial patterns and cultural determinants significantly describe the indigenous urban architectural character in cultured communities. These features characterise sustainable housing growth where inhabitants transact with their habitation and achieve satisfaction because they are able to realise desired values.

These desired values as expressed and seen in housing characteristics are key determinants for housing efficiency and satisfaction towards the realisation of social inclusion goals as promoted by United Nations (UN) in its sustainable development goals (SDGs). Therefore, this chapter focuses on inquiry of typical ordinary group, showcasing their in-depth expression and attachment to neglected values with information-rich sample cases. Case study research such as this one commonly focuses on people or structure, perspective or world view, geography, activity, and usually time bound. Thus, purposeful sampling with illustrative strategy was adopted for this qualitative research.

2. Inhabitants' mainstream values within the function of the built environment

Cognitive scientists have argued that 'relation attention', which implies how people collectively think together, is a social reasoning phenomenon developed from observations and concepts derived from interdisciplinary studies [1]. As such, human cognition is found in the duo of cultural and societal environments. I found this assertion reliable and useful in describing the significant origin and attachment of inhabitants to their mainstream societal values. Environment tends to generate events that are time series bound and shapes the cognitive insight of its inhabitants. Therefore, the evidence forms the assertion that inhabitants' societal values shape their perception of the environment and as well determine their transaction with the environment.

Further still, cross-cultural research usually discloses a range of attributes that are mostly beyond those found in one research. Meanwhile, some of these attributes are common to specific environment and defines their values and behaviour. Therefore, it is also important to understand contextual environmental behaviours in order to distinguish culture-specific and culture-common concepts (emic [specific to given cultures] and etic [found in all cultures]). Often, culture-specific values are misconstrued as it communicates less to a researcher who does not belong to the culture. His attributions are assumed on the relative meaning of confounding variables. It then becomes difficult to connect with inhabitants' behaviour as they relate to their habitation, hence do not appreciate the value that lies therein.

In addition, it is noteworthy that even though culture-specific concepts are not found in all societies but in specific ones, they sometimes determine to a great extent the existence of settlements. They can exist as additional variants to culture-common concepts or a culture's unique adaptations to the cultural landscape (geography and architecture). Apparently, perception and familiarity with culture-specific values ignite sustainability, as they are ingrained in human mind and tend to reflect as a process in behavioural interactions with space.

Meanwhile, most times it is assumed that a combination of the emic and etic ideals is thought to provide solutions to human behavioural issues in cross-cultural examinations. But appreciably, mainstream values sometimes override the common attributes and become a concern towards developing lasting solutions to environmental issues even in the intangible form. In this situation, it becomes important to adopt indigenous approach in examining exclusive emic concerns. Thus, attempt should be made towards understanding observed behaviours, why people behave as they do and the significance of these behaviours in the built environment. It is only then that these values are well interpreted from the inhabitants' viewpoint. Scholars agree that insiders' view of houses affords more genuine and valid information than the outsiders' view [2]. As a result, it is desirable to understand individuals and the environments they cohabit, and also recognise the components of these environments and their relationships [3]. In the meantime, cultural core has been predicted as central underlying attributes to changes in domestic space.

3. Housing transformation design activities: specific dimensions, unwritten architectural ideas and building as a cultural product

Several studies on house, form, and culture are specific to socio-cultural contexts. This results from the distinctive quality of human cultural traits. Morphologically, housing should distinguish between spaces that are adaptive to accommodating several functions, more so that sometimes activities performed particularly in the modern domestic space settings are irconcilable. The morphology usually defines the distribution of family activities in a house setting. In this case, analysing the spatial configuration is less significant when compared to analysing the spatial pattern of activities. The later demonstrates the morphology of the domestic experience that also includes activities done not only outside the house but also around the surroundings of the dwellings. Thus, in cultured settings, activity patterns define the domestic experience rather than the spatial arrangement.

Similarly, flexible and multipurpose space uses are usually time bound. For instance, courtyards provide activity space for different functions across the day. Also, this is important in relating and integrating values in space utilisation. Thus, conflicting activities are assigned to a space but separated by time of performance in order to clarify the inconsistency [4]. Thus, social, private, and service spaces with some overlaps are found in flexible dwelling space ordering. The routine interaction with the spaces shows that despite the complexity in space use, conflicts of activity performance do not exist; rather mainstream values are exhibited in the use of space with optimum satisfaction exhibited by the inhabitants across the day.

Truly, in more western-influenced and traditionally conceived housing set-up, inhabitants' lifestyle distinguishes the arrangement of objects and activities in the home [2]. While flexibility of planning is seen in the later, inflexibility is associated with space design of the former as functions are rigidly assigned to spaces. Thus, housing transformational activities are carried out to adjust the form and functional spaces in order to accommodate flexible functional activities.

Even till today, globally vernacular design decisions have remained significant as though it relates basic human relationships, social habits, and cultural traits [5]. Both in tangible and intangible forms, it echoes typical building culture in the traditional and informal communal settings. And even though they may differ in their mainstream values, commonalities in their principles that are ingrained in the patterned building culture form a generic understanding of the roots of overall building culture. Indeed, even as they exist in varieties, the functional configurations depict similar situation hence rooted to the communal values. Therefore, the assertion confirms buildings as cultural products with traced link to the root. Thus, grasping the essential feature of the inhabitants' lifestyle becomes necessary in providing sustainable designs. Indeed, even though some architects are still linked to their cultural roots, it is understandable to note that the paradigm underlying design now seems to exhibit invariance usually associated with traditional and vernacular homes [6].

Incessantly, individuals' action on buildings and the built environment remains constantly a steady transformation of the built world. Invariably, actions taken on building systems are outcomes of a multifarious structure of human experience and knowledge attained through long historical evolution and consisting of specific configurations of knowledge, institutions, rules, and built results—a building culture (Howard Davis) [7]. Thus, origins of settlements are traced back to the revealed distinctive identity of their building cultures as they handle issues in similar pattern but differ in the mode of operation. Moreover, the knowledge of building is widely communicated as skills among community inhabitants across generations. Consequently, revealing the existing linkage between inhabitants on the one hand, their mainstream values and the built environment on the other hand. As these express deep meaning, aspirations and socio-cultural order of the inhabitants' culture.

However, contemporary building culture trends that grew through industrialisation and technological advancement are characterised with bureaucratic laws and management principles. Authorities are strict with regard to quality and standards, safety rules, performance, and operation. Explicit scientific knowledge evolved to replace traditionally shared communal methods and knowledge ideals. Most cities in their quest for such development in the built environment enforce these knowledge ideals irrespective of the users' socio-cultural values.

Meanwhile, a great deal of buildings across the world are continuously remodelled or renovated by the owners without the involvement of architects or even engineers. In such circumstances, people derive their ideas from previous experiences and unprofessional comprehension of the built environment but mostly from relevant understanding of building culture as reflected in space and activities' transaction.

4. Sustainable housing: architectural themes related to socio-cultural design framework

Often architectural problems are vague as the scopes of these problems are seldom clear as it sometimes emerges from cultural issues. Also sometimes, it is difficult to ascertain the aspects that professionally concern the architect. Thus, architects often face challenges that are not architectural in origin and by nature, but must be resolved in order to ensure effectiveness of design. Most often, these are accompanied by contradictions in physiological, activity pattern, psychological, and technological requirements [8].

Meanwhile, the design process targets provision of a building product that supports psychological mindset, maintains needed physiological state of inhabitants, and also permits people to receive chances to exhibit specific pattern of behaviour. Therefore, in order to ensure that people attain their goals, then designing for human behaviour becomes essential.

In this regard, inclusive rather than exclusive design approach becomes essential. Architectural concepts of housing should dynamically express the socio-cultural tenets of its inhabitants [9]. In most Nigerian cities, for instance, houses are acquired mainly through self-developed initiatives from income savings. Other sources include purchasing of government housing estates [10], which are usually based on owner occupier schemes with gradual payment from income, loan schemes from mortgage banks, and institutional-based co-operative development schemes. Some categories of citizen access housing by renting from private developers or available government quarters. In all, only the first category exerts power of ownership and thus subjects their dwelling to transformation from time to time, thus expressing sustainable values in the dwelling. Usually, socio-cultural tenets are missing in the initial configurations. Some of these tenets are thus illustrated with examples in the succeeding sections of this chapter.

4.1. Mixed-use buildings and home enterprises

The concept of mixed-use building planning has steadily faded and replaced by neighbourhood zoning in most emerging and advanced cities of the world. This results from the growing complexities in these cities and changing lifestyle of the inhabitants. This operation has redefined the building culture in the contemporary world. Undoubtedly, single buildings now accommodate residences alongside commercial outfits, offices and civic functions, healthcare, and educational functions in both vertical and horizontal configured buildings.

Similarly, small family businesses have always determined the shop house of the early twentieth century in America and Europe [11]. Thereafter, home enterprise has become a common

function in the dwelling configuration. Accordingly, the need to improve family income, women's (sometimes housewives) participation in commercial ventures, and high costs of property rent are often reasons that lead house owners into introducing spaces for home-based business ventures. In the developing world, home-based enterprise has since become part of their lifestyles and cherished values. This connotes a shared desire for self-determination in spatial transactions. In most cities of cultured communities, such places are desired for sustainable liveability particularly for the low- and medium-income earners.

In Nigeria, for instance, the trend is common and not limited to the low-income earners. It is usually practiced even among the middle- and sometimes high-income earners as these configurations are also found in the medium- and high-income housing layouts. The fact that these actions started as dwelling transformations and later incorporated into initial designs by prospective client makes it a tangible value derived from the users' dwelling transformation process and desired for sustainable housing design (Figures 1–3).

The introduction of shops along the streets in these residences appears to present an architectural pattern in houses' front views across the streets in the urban neighbourhoods of Nigeria. Therefore, initiating a hybrid architectural character that tends to be unnoticed and redefining the urban architecture in cultured communities. Although unrecognised, it is fast reshaping cities' inner-city, fringes, and sub-urban environments in cultured communities.

4.2. Lounge (living room)

Living rooms are multipurpose activity spaces in dwellings across cultured communities. It hosts activities such as guest reception, family relaxation and leisure time out, dining, worship, and meetings. Aside from ensuring that the flexibility potential is achieved in its design, in order to accommodate these activities, the configuration pattern and location are necessary for consideration. For instance, the Tiv community of central Nigeria considers the *Ate*-(living room) as a significant space in the dwelling configuration. As such in order to ensure maximum performance, it is often made of circular shape and centrally located within a typical traditional compound setting with several openings around the form that enables access from all parts of the compound. Elites that originated from that ethnic background have replicated this design concept in their self-built dwellings, thus acknowledging its significance as a design



Figure 1. Streets with shops attached to self-built houses in medium-income districts of Katsina and Minna, Nigeria.



Figure 2. Shops attached to self-built residences in a low-income neighbourhood of Minna, Nigeria.



Figure 3. Shops attached to self-built residences in a high-income neighbourhood of Makurdi, Nigeria.

indices and an element for sustainable housing production in that community. As a result of value attachment and link to the root, several Tiv citizens have opted for this concept in building designs and also replicated the form in their contemporary houses (Figures 4 and 5).

4.3. Kitchen location and design

Cooking space is another significant place in the design of a house. This place is usually arranged alongside other spaces under the same roof in a network of functional arrangement in contemporary designs. Meanwhile, in traditional settings of some cultured communities



Figure 4. Typical Ate in traditional compound settings found at the fringes of Makurdi, Nigeria.



Figure 5. Typical *Ate* innovatively replicated in self-built houses in Makurdi, Nigeria.

like those found in Northern Nigeria, this function is usually detached from the main building. The type of fuel (usually charcoal or firewood) used for cooking might be thought to have accounted for the detachment. However, the climatic factors also play a significant role as most parts of Nigeria are within the tropical region and the heat generated usually increases the total heat gain within the building, hence making the building interior uncomfortable particularly during the summer season. Surprisingly, this action of detaching the kitchen has overtime become a norm and applied even when other sources of fuel (kerosene and gas) are used for cooking. Thus, a sustainable design would tangibly consider detaching the kitchen from the main building in cultured communities like Northern Nigeria (Figures 6–9).

4.4. Open spaces

Open spaces within and around the dwellings are intangible activity spaces that are significant in ensuring sustainable housing provision in cultured communities such as those found in Nigeria. In Nigeria, courtyards are main features in dwellings and are most times centralised within the built form. They could also be located at the back of the building or



Figure 6. Typical outdoor cooking in a traditional dwelling in Katsina, Nigeria.



Figure 7. A detached kitchen located at the rear courtyard of a modern house in Minna, Nigeria.



Figure 8. A detached kitchen opening to the central courtyard of a transformed public housing dwelling in Minna, Nigeria.

as a fore courtyard in front of the compound. In achieving the rear and fore courtyards, the compound is usually bordered by a wall fence screening it from outside view. The functions of the courtyards include aerating the building, drying of food crops, and micro-home farming such as rearing of poultry and they also serve as indoor relaxation area. Usually, most dwellings have outdoor areas behind the dwelling (rear courtyard) where domestic chores are carried out. Most times, the detached kitchen is located here. This space is usually defined by the building serving as boundary on one side and wall fencing on the other sides. Similarly, in front of the building, a fore courtyard exists bounded by the building and wall fencing. The fore courtyard and rear courtyard are usually linked with an exit and a route thus providing additional access, which is sometimes gender preferred (**Figures 10–13**).

The results indicate the features identifiable through adaptive dimensions derived from dwelling transformation. It also shows that inhabitants give priority to activity performance than



Figure 9. Typical detached kitchen located at the rear courtyard of a contemporary housing estate in Minna, Nigeria.



Figure 10. Typical fore courtyard with side exit leading to the rear courtyard created in a housing estate in Sokoto, Nigeria.



Figure 11. Typical fore courtyard created in a housing estate in Minna, Nigeria.



Figure 12. A modern house facing a wall-bounded fore courtyard in Minna, Nigeria.



Figure 13. A central courtyard in a modern transformed dwelling in Minna, Nigeria.

the space that host the activity. In the long run, transaction with spaces over time by users creates design indices; thus, cultural order determines adaptive character of sustainable housing.

5. Emerging design paradigm: socialist, culturalists and regionalist socio-cultural order

Understandably the architects' probable problem is the fact that buildings are expected to have long life with anticipated relevance and usefulness through time [12]. Thus, design and configuration of spaces is expected to take that dimension. Hence, there is need for designers to envisage future maintenance, alterations, expansions, additions, and if need be reconfiguration of dwelling spaces.

Cities must, therefore, provide balanced skilled minds that can shape the spatial developmental tract of the built environment. These experts must be closely familiar with regional and local problems in order to express both etic and emic goals of architectural design in housing

production. They should be able to harness from transformation experience of home owners in building creative and innovative spaces that accommodates users' mainstream values.

Human realities shaped the built world, thus architect and designers have to respect these ideals. Only then can we appreciate the values that lie in users' transactions and transformations to the built environment, which initially would seem odd. The complexities of urban-built environment has consistently respected ordinary daily living ideals, and whenever this is missing or ignored, inhabitants recreate the situation.

6. Implicit finding: adaptive sustainable housing

Adaptive housing features in cultured communities are evident in the reflective appearances of transformed dwellings layouts. The underlying determinants imply that users' prioritise the ability to perform activity more than the host space. As such, dwelling spaces are valued based on their ability to accommodate inhabitants' activities. Usually, these stems from users' acquired experiences with space through transactions over a period of time. It usually reshapes urban housing architecture through the influence of cultural order. Invariably, it shows a synthesised model that combines root values and modern design ideals making the product-culture responsive housing design.

Consistently, features of the overall emerging pattern reflect housing procedure that is grounded on evidences from users' experiences and initiatives achieved during transformation of dwellings. Together, they form the critical features required for sustainable housing. Spaces in dwellings are gauged by their ability to accommodate multiple functions. These functions are most times repetitive and are time based. Socially dwelling spaces are inclined to gender, age range, and privacy level. Irrespective of the technological influence, spaces are ordered and arranged with family structure in consideration. Usually, household's lifecycle shows changes in family structure, which provides the need for transformation.

Meanwhile, the arrangement includes a core and a flexible main that usually evolve overtime in phases from the core. The core is the initial configuration at occupation, while the flexible main are additions and adjustments made to accommodate changing family structure. This conforms that houses that grow with users' behavioural character shown in their transactions as the growth determinant is usually preferred in cultured communities. The climax of major transformation activities marks the apex of adaptive sustainability in the configuration of houses. These houses become a model for derivation of design indices and a research platform for regional and local sustainable houses.

Furthermore, features of adaptive sustainable housing blends with the mixed-use space concept of the space utilisation common with households in cultured communities. For example, it is not uncommon to have spaces such as study rooms, library, consulting rooms for doctors and lawyers, and studios for architects incorporated in their dwelling arrangements in modern houses. Similarly, shops are common spaces attached to residential buildings in most urban communities of developing countries [13] aimed at boosting the family income. In this regard, home-based businesses are on the increase in cities.

Beneficially, these features are usually derived from the evaluation of transformed houses and the basic space needs differ across regions and communities. Flexibility in space-use pattern remains consistent and enhances livelihood and inhabitants' liveability. In addition, tangible and intangible indoor and outdoor spaces are crucial in adaptive sustainable housing provision. Such houses are seen to be occupied for longer period with inhabitants developing a sense of place attachment and a choice to remain rather than change dwelling overtime.

The architectural paradigm presented in this chapter is targeted at creating the need for stakeholders to harness benefit of housing transformations, and then use it towards improving housing design and ensuring sustainability of emerging configurations. While implementation is expected to project adaptive sustainability principles in housing design, it will require further advancement of specific attributes and patterns peculiar to environments. In the long run, values are respected and integrated, while resources and expertise are introduced to standardise transformation benefits towards ensuring sustainable housing.

Housing transformation benefits have posed clear values of long history. The use of digitalised building culture to override the values of inhabitants in building production across cultured settlements is usually confronted with resistance. But rather efforts should be focused on innovatively reshaping the existing cultures towards opening greater possibilities. These would eliminate the perception of undermining local content, attachment to place despite environmental pervasiveness, factoring the inhabitants' lifestyle. Thus, several city dwellers that like to live a local lifestyle in a global world with dwellings that fit into their values are tolerated.

7. Conclusion

The research has established that socio-cultural tenets are significant considerations in adaptive sustainable urban housing for the low- and middle-income groups in cultured communities. In such habitation, housing configuration is delineated based on communal activity patterns determined by cumulative domestic experience, which triggers housing transformation of spatial arrangement in contemporary dwellings. As a product, users' experiences are upheld in transformed housing buildings.

Culture-specific values determine sustainable housing as it connects inhabitants' activities with spaces in the built environment. The persistent action of dwelling transformation indicates that these values lead to housing satisfaction and are ingrained in the human mind, which should be recognised in sustainable housing provision. Since human behavioural issues in space transactions are linked to their values, adaptive elements that emerge from their housing transformation activities are best regarded as critical adaptive design elements in cultured communities.

The adaptive concept relays spatial distribution of activities—it consists of evidence-based design solutions with space flexibility features that accommodate multifunctional domestic activities moderated by time, gender, and season. The emergent building culture is a dynamic indigenous and adaptive dimension of sustainable housing in cultured communities. It is theoretically influenced by the inhabitants' cultural order tangibly and intangibly. For instance, this is illustrated in the home enterprise inclusion in dwelling configuration, living room, kitchen, and open spaces' design in Nigerian cultured communities. Finally,

the integrated developmental plans that guide housing and urban developments at building level must respect these ideals supported by the cultural order. Through these challenges of housing sustainability in unplanned cities with uncontrolled spatial growth, increased sprawl settlements would be minimised.

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References

- [1] Emmeche C. Thinking with friends embodied cognition and relational attention in friendship. In: Adams F, Pessoa O Jr, Kolger JE Jr, editors. *Cognitive Science Recent Advances and Recurring Problems*. Malaga Spain: Vernon Press; 2017. pp. 47-58
- [2] Hanson J. *Decoding Homes and Houses*. Cambridge: Cambridge University Press; 2003
- [3] Glaeser EL, Sacerdote B. The social consequences of housing. *Journal of Housing Economics*. 2000;9(1-2):1-23
- [4] Hillier B, Hanson J. *The Social Logic of Space*. Cambridge: Cambridge University Press; 1989
- [5] Paul O. *Built to Meet Needs: Cultural Issues in Vernacular Architecture*. Burlington: Architectural Press; 2012
- [6] Isah AD. *Urban Public Housing in Northern Nigeria: The Search for Idigeneity and Cultural Practices in Design*. Switzerland: Springer International Publishers; 2016
- [7] Davis H. *The Culture of Building*. New York: Oxford University Press, Inc; 2006
- [8] Lang J, Burnette C, Moleski W, Vachon D. *Designing for Human behaviour: Architecture and the Behavioural Sciences*. Stroudburg, Pennsylvania: Dowden, Huchinson and Ross Inc; 1974
- [9] Gijsberts M, Dagevos J. The socio-cultural integration of ethnic minorities in the Netherlands: Identifying neighbourhood effects on multiple integration outcomes. *Housing Studies*. 2007;22(5):805-831
- [10] Alao DA. *A Review of Mass Housing in Abuja, Nigeria: Problems and Possible Solutions towards Sustainable Housing*. Eastern Mediterranean University (EMU); 2009

- [11] Davis H. *Living over the Store, Architecture and Urban Life*. Abingdon, Oxon: Routledge; 2012
- [12] Oakley D. *The Phenomenon of Architecture in Cultures in Change*. New York: Pergamon Press; 1970
- [13] Johnson EAJ. *The Organisation of Space in Developing Countries*. Cambridge, Massachusetts and London, England: Harvard University Press; 1970

