

Housing and culture in Ghana: A model for research and evidence-based design.

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ABSTRACT: This research paper investigates the relationship between history, culture and housing and proposes design solutions which begin to address the notion of home for Akan residents of Accra. The research analyzes work done by historians who documented how Akan people in Ghana traditionally used space. The paper uses Amos Rapoport's model of the dismantling of 'culture' as a framework for this analysis. It juxtaposes this historical notion of space against current urban issues in housing such as resident satisfaction, multi-habitation and density and over-crowding within the city. The analysis of these texts is supplemented by primary investigations conducted in Ghana.

The paper concludes by showing how this cultural research can be used as a design strategy to develop new ways of looking at qualities of space, materials and sustainability principles for housing in Accra by describing case studies which have attempted to bridge this gap between research and evidence-based design. The examples presented in the paper show that it is possible to use this material to develop housing that is at once modern but also steeped in traditional and cultural notions of the home. The hope is that this approach can lead to innovative ways of thinking about affordable housing with increased resident satisfaction. The research presented in this paper also provides material for those architects aiming to utilize similar methods to translate cultural and historical research into a design strategy for housing.

KEYWORDS: Ghana, Housing, Culture, Evidence-Based Design

INTRODUCTION

Many rapidly urbanizing cities grapple with the challenges of housing provision. Ghana experienced rapid population growth resulting in a severe housing deficit. The majority of Ghana's new housing is unable to meet the needs of the masses. Due to this lack of affordable housing choices, many people live in crowded informal communities marked by compound homes and multi-habitation. The development of the housing typology in Ghana has shifted from the traditional dwellings of the various ethnic groups to single-family homes and townhouses in gated communities to multi-story apartment complexes with luxury finishes and amenities catering to the expanding middle class. This shift in housing typology is inspired by western forms and meaning with many local architects struggling with how to negotiate between tradition, culture and global influences in the definition of what it means to dwell.

While much has been written about the relationship between housing and culture (Low, Rapoport) and resident satisfaction in Ghana's capital city, Accra, little has been written about the correlation between culture, traditional spatial delineation and methods of construction and their impact on the development of the housing typology in Ghana. This historical and cultural research is essential as it can be used as an evidence-based design strategy for implementing housing solutions which respond to residents' perception of what the home means in contemporary non-western society.

1.0 CULTURE, HOUSING AND DESIGN

1.1 Culture and Housing

Numerous academics have held the belief that a study of culture is important to how we view, inhabit and mold our spaces. Edward Hall argues that different cultures will have different experiences upon viewing and inhabiting the same environment (Hall 1966). Sven Hesselgren argues that a building has the function of giving expression to attitudes towards living (Hesselgren 1975). This relationship between the built environment and culture is further explored by Neil Leach who advocated for a more in-depth analysis of architecture and culture to understand how identity and meaning are inscribed on architectural forms by the users (Leach, 2002). Housing plays a key role in this relationship between culture, identity and the built environment as Setha M Low states, "Dwellings can be conceptualized as meaningful social and cultural objects (Low and Chambers 1989, 209)."

Missing from these earlier writings is a clear method for systematic analysis of this crucial relationship between culture and housing. Culture as defined above is difficult to measure, analyze and make substantive

relationships to the built environment. Amos Rapoport shares the view that the close relation of housing and culture implies that housing can communicate identity. However, he believes that to thoroughly analyze the relationship between housing and culture one must first 'dismantle' the notion of culture and study individual components and their relationships that lead to a definition of culture (Rapoport 1998). His model makes tangible the intangible aspects of culture.

Important among these are potentially observable, social expressions of culture such as family and kinship structures, social networks, roles, statuses, social institutions, and the like. These can feasibly be related to the built environments, whereas 'culture' cannot (Rapoport 1998, 8).

Rapoport's model for analyzing culture is outlined in Figure. 1 and is used as a framework for analyzing texts on Ghanaian culture and housing. Specifically, the analysis focuses on the definition of housing as a *system of activities*, the fixed, semi-fixed and non-fixed elements related to housing and the influence of the following dismantled cultural aspects: family structure, social networks, identity, lifestyle and activity systems. The paper will investigate how these elements of culture are manifested in traditional notions of housing. The subsequent sections will also demonstrate how this model can be used to frame evidence-based research on the topic and propose strategies or how to translate this research into design criteria for the development of solutions to affordable housing in Ghana.

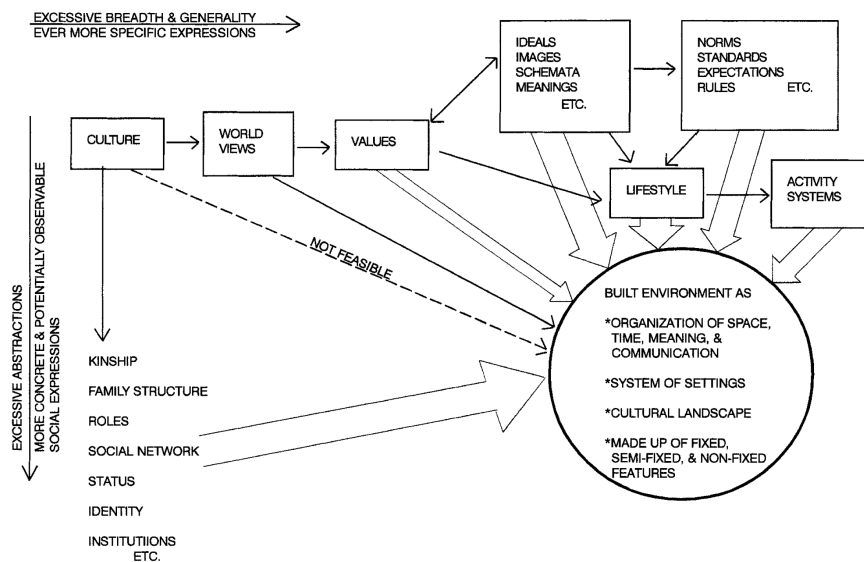


Figure 1: Dismantling of 'culture' and relating its expressions to the built environment. Source: (Rapoport 2001)

1.2. Culture and Housing in Ghana

As outlined in the previous section, the relationship between housing and culture is intrinsically linked. This is true in Ghana where culture and cultural practices are linked to the identity of Ghanaians even amidst global influences. This is outlined in the extensive study *Culture and Customs of Ghana* by Steven J Salm and Toyin Falola. Salm and Falola describe Ghanaian culture as:

a dynamic culture that reflects the "duality" inherent in the attempt to blend rich cultural institutions and customs with continuing adaptations to the political, economic, and social exigencies of the modern world (Salm and Falola 2002, 1).

This duality of past and present is seen in many facets of everyday Ghanaian life. While political, economic, social and urban systems have been heavily influenced by colonization and globalization, there remains a strong cultural Ghanaian essence permeating through these institutions. Privately, the everyday citizen maintains this cultural identity through the practice of traditional festivals and ceremonies, while publicly the government and the private sector are conscious about supporting artistic expression and lending support to local cultural institutions (Salm and Falola 2002).

However, unlike other aspects of culture, where there is a clear duality and co-existing of tradition and modern ideals, the architecture of Ghana is often deficient in terms of understanding and referencing tradition and culture in the creation of modern edifices. This is especially true in the case of housing where the flurry of modern luxury high-rise and middle-income apartment dwellings are constructed in the form of Western ideals of dwelling often without reference to traditional practices and ways of living.

These traditional ways of using dwelling spaces can be seen throughout Akan culture and reflect how family structure, social networks, lifestyle and activity systems have shaped the vernacular architecture.

The Akan are the largest ethnic group in Ghana making up about 48% of the population (Salm and Falola 2002). The Akan share many cultural traits including traditional ideals of the home. The traditional Akan dwelling is marked by the courtyard as a central focus of the dwelling. Similar to Frank Lloyd Wright's notion of the hearth as the center of the home, the courtyard is the center of the Akan home. Rooms are typically arranged in a rectilinear fashion around the open courtyard (Figure 2). These rooms consist primarily of spaces for sleeping but otherwise have restrooms, bathrooms and living areas. However, the courtyard is the center of domestic activities where, cooking, socializing and family events take place.

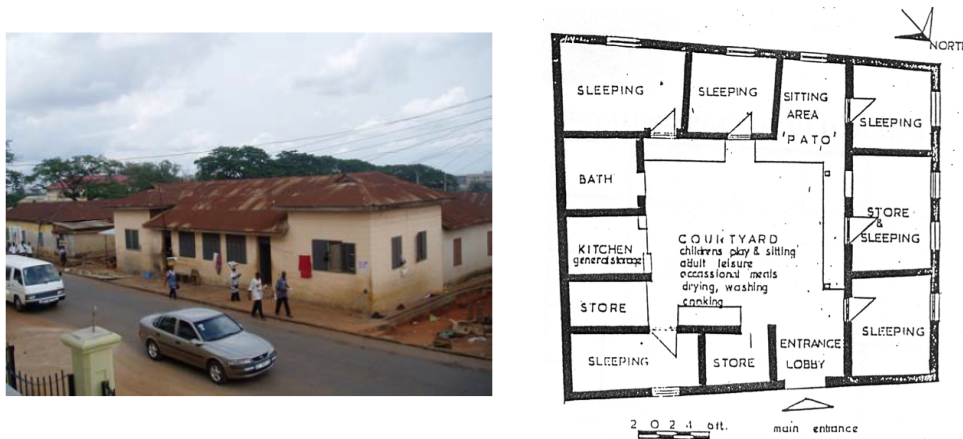


Figure 2: Typical Compound Home. Source: (Afram 2007).

This arrangement reflects the activity systems and family and social structure which impacted the dwelling's form and arrangement. In addition to the formal arrangement, the Akan often added ornamentation to their homes in the form of Adinkra symbols. These symbols were painted or constructed as a relief on the wall surface. These symbols portrayed status in the neighborhood as well as conveyed a message about the family (Salm and Falola 2002). The incorporation of these symbols is an example of Rapoport's ideals and images and how they relate to values and the built environment. The use of symbols is often seen on more contemporary architecture, but its deployment is often superficial, losing some of the original meanings behind their use.

In terms of materiality, the nature of the traditional dwelling shifted based on its geographic location within the country. Those situated in the Southern coastal area of the country were typically constructed using more lightweight materials such as timber posts with walls of bamboo infill or woven palm fixed to the frame. These houses were topped with thatched roofs made of palm (*Traditional Forms of Architecture in Ghana* 1978). These lightweight materials were suited to the climate and allowed for ventilation through the building envelope. In addition, the building envelope was very open allowing for capturing of sea breezes. The Fante (an Akan sub-group) veered from this construction technique, utilizing rammed-earth construction instead of timber frame construction.

The Fante are an interesting Akan sub-group to study in terms of the development of their housing. They were one of the first to encounter Europeans when the Portuguese made contact in 1471. It has been documented that even within the face of European influences, cultural traditions and ways of living have maintained. For example, archaeologists studied the remnants of Fante buildings and found that in the face of European influence Elminians "exhibited strong continuity with an African, largely Akan, cultural tradition" (Decorse 1992, 175). These dwellings typically evolved in form and material use taking advantage of the new technology imported from the Europeans (e.g. use of stone). However, the Fante people occupying these homes largely carried on cultural traditions such as burial rites, festivals and ritualistic offerings and most importantly the traditional relationships to dwelling spaces. A structure excavated in Elmina showed:

the linear arrangement of rooms around a central courtyard is comparable to traditional house construction throughout the Akan and Guan area. Many modern houses in Elmina retain a similar functional arrangement. The courtyard is of particular importance, serving as a semi-private area for cooking, eating and a variety of other activities. It may even be used as a sleeping area on hot nights. In function it seems to have changed little between the early seventeenth century and the present (Decorse 1992, 185-186).

Another sub-group, the Ashanti constructed a variation on the courtyard home also using mud or wattle and daub walls. They opted for a rectilinear layout around one or more courtyards with floors elevated on a plinth (*Traditional Forms of Architecture in Ghana* 1978). The traditional Ashanti architecture also utilized symbols in their dwellings to denote prestigious houses and to portray a message related to the family. This use of symbols is also an example of denoting status and identity in Rapoport's model.

Despite the various ethnic groups making up the country of Ghana, the numerous forms of traditional dwellings in Ghana are primarily compound/courtyard homes. These traditional ways of building and inhabiting spaces have evolved over the years, significantly influenced by Europeans during colonization. Over the years, global influences have also played a role in the development of the architectural language of the country. The infiltration of modernist ideals in a post-independence climate and more recently images disseminated through mass media have all played a role in the evolution of architecture, specifically the housing typology in Ghana. These influences and imagery have informed the design of luxury and middle-class housing in Ghana. Examples include multi-story apartment buildings with high-end finishes, grand gated communities with luxurious townhouses and single-family dwellings on huge plots of land.

Nevertheless, modern iterations of the compound house are still dominant in urban Ghana. As outlined in the following section, the social networks, family structures and activity systems that were traditionally experienced in the vernacular dwellings still proliferate in modern Ghana. As a result, it is important to understand these relationships and resulting architectural form and understand how it can translate into new ways of thinking about housing architecture.

1.3. Culture and Housing in 21st Century Urban Ghana

Like many developing countries, Ghana and its capital Accra have had to face the challenges of rapid urbanization including congestion in the city center, inadequate infrastructure, sprawl and of course lack of housing. Over 50 % of the population (24.2 million) live in urban areas (UN Habitat 2011). The capital, Accra is the largest urban area in terms of population, with an estimated population of approximately 2 million people and a projected population of 4 million people by 2020 (Grant and Yankson 2003). The population has steadily increased over the years as people from the rural areas flock to the urban areas in search of jobs and better opportunities. In addition to the influx of people, land tenure issues, cost of living and access to financing have resulted in a severe housing deficit which government policy has been struggling to address. UN Habitat estimates that 5.7 million new *rooms* are required by 2020 at a rate of 3.8 rooms to be completed in every minute of the working day for ten years to meet this target. The situation for self-contained dwellings is not any less drastic with two million houses (one per household) needing to be supplied by 2020 to meet the demand (UN Habitat 2011).

Housing in Ghana is primarily made up of self-contained dwellings (detached or semi-detached), and multi-occupied housing (compounds or villas). Multi-habitation is by far the most common means of dwelling with 55 % of people occupying compounds and 24 % occupying other forms of multi-occupied residential buildings (UN Habitat 2011). These compounds consist typically of rooms around a courtyard with shared facilities and are reminiscent of the traditional dwellings occupying this structure and social system. Today traditional compound homes have negative connotations and association with poverty, but their importance in the informal sector should not be denied. About 90% of the housing in urban Ghana is built within the informal sector, using local knowledge and systems. While they have historical and cultural roots, compound homes and multi-habitation dwelling also provide a solution to alleviate some of the housing deficit. UN HABITAT's housing report outlines this in their analysis stating:

If the new rooms were to be provided in compounds (or their modern equivalent) on the same sized plots, with a mean of ten rooms, they would require 574,000 houses covering 67,000 HA (96,000 football pitches), less than one third of the land required for the self-contained bungalow option and a considerable saving. (UN HABITAT 2011, 25)

Attention needs to be paid to this form of dwelling, not only from a historical, social and cultural perspective but also from a practical way to meet the housing needs of the nation. This requires not only a change of policy within the government but at times a change of perception. In addition to these practical benefits, the compound home also exhibits the social and cultural way of living of most Ghanaians. Social benefits include security and access to childcare within the compound as well as providing a structure to prevent homelessness. It is not uncommon to see families housing relatives who can't afford or are unable to fend for themselves (UN Habitat 2011).

Studies have investigated the relationship between these compounds and residents' perceptions of these dwelling spaces. Two notable studies conducted by UN Habitat and Irene Appeaning Addo show residents' view of the compound home and the perceived advantages and disadvantages of this spatial organization.

Both studies outline that while residents see the benefit from a social and security perspective (as traditionally envisioned), they also find that the lack of privacy and shared facilities are detrimental to their satisfaction of their dwelling spaces (UN Habitat 2011, Addo 2013).

The degree of resident satisfaction is also affected by some residents' shifting values in the face of globalization and new housing forms. The imagery of multi-story luxury apartments or gated communities have permeated the ideals of many. Considering this shift in values some have viewed the traditional compound home and its multi-habitation arrangement as outdated and not modern. However, most housing options currently being constructed are not available to the lower income masses. The spatial arrangement of the compound home has value in terms of responding to the climate (providing ventilation), lighting, passive security, easily adaptable and easily constructed. These advantages should not be ignored and could provide a solution for affordable housing (Afram, 2007).

It is clear that cultural research as it relates to social networks, family structure and activity systems is important to the development of housing in Ghana. However, due to shifting images and policy by the government, this cultural research has not often been applied to housing policy. Local architects also neglect to do this research and apply it to the development of housing. When research is conducted, it is often used superficially, with new architectural developments relying on adding decorative elements such as traditional forms and symbols as opposed to thoroughly investigating the way space is traditionally versus currently used. A response to housing that is culturally based requires a deeper analysis using Rapoport's model as a guideline. The resulting research can then be translated into a set of design criteria for development into architectural form. The subsequent sections outline case studies where this cultural research has been translated into clear strategies for housing design.

2.0. CASE STUDIES

As outlined in previous sections, Rapoport's framework allowed for an analysis between housing and culture in Ghana, focusing on the family structure, social networks, activity systems and the resulting architectural form of the compound home. This analysis can be translated to useful criteria for evidence-based design to tackle the issue of affordable housing in Ghana.

Evidence-based design has been gaining popularity throughout the design field. However, it has seldom been used in the affordable housing field due to a disconnect between designers and researchers (Ahrentzen 2008). There is a need to bridge this gap and provide guidance on how to translate research findings into design criteria that can be implemented by architects and designers. As previously expressed, research in design (especially this type of cultural research), is crucial for the development of structures that speak to one's notion of the home.

Caren Martin and Denise Guerin created Informe Design to bridge this divide between designers and researchers offering synopses of research papers and translating these into evidence-based design criteria that can be accessed by architects easily through their online database (Martin and Guerin 2006). However, this website lacks concrete examples or case studies of how this information was used in a design project. Furthermore, a search of the database revealed no research summaries on Ghana, traditional housing, culture or current housing issues facing the nation. The below case-studies begin to fill that gap and allow for an understanding of how to translate the above evidence-based research into tangible design criteria.

2.1. Multi-story Compound Housing in Kumasi

This evidence-based research is exemplified in the work of S.O Afram and S.E. Owusu, two faculty members in the Department of Architecture at the Kwame Nkrumah University of Science and Technology in Kumasi in Ghana. They studied traditional and modern interpretations of housing in Kumasi in the Ashanti Region, noting that in this urban condition a large number of low-income households in the Ashanti Region live in compound houses. They studied the formal relationships between the single-story compound homes versus the multi-story compound homes, analyzing the advantages and disadvantages of this typology.

The multi-story compound house developed in Kumasi in response to the rising land values and congestion in the city. It consists of typically 2 – 4 stories similar in layout to a single-story compound house, i.e. emphasis around a central courtyard (Figure 3). Upper story access is usually via a staircase which ascends from the courtyard to the upper levels and circulation is provided via an exterior balcony which wraps around the courtyard. While, the multi-story compound home is similar in concept (central courtyard as primary element), to a single-story compound home, a study of activity systems and lifestyle reveals that this verticality shifts the way social interactions occur and how numerous activities that would normally inhabit the ground floor

courtyard could be exercised. Examples include entertaining in the courtyard, play, cooking and preparation of food and washing and drying of clothes (Afram and Owusu 2006).



Figure 3: A Multi-Story Compound House. Source: (Afram and Owusu 2006)

Afram and Owusu’s work outlines how their evidence-based research can be used to set a series of design criteria to be used in the development of these future multi-story developments by studying specifically the implication of lifestyle and activity systems. They summarized these as creating a design response to need for fufu preparation (especially pounding), washing and drying of clothes, refuse disposal and a utility space (for cooking, storage and relaxing). They summarized these criteria stating:

Since the compound house principle is more towards communal living and the sharing of facilities, these would be harnessed to achieve these four activities mentioned above, thereby strengthening the cultural and family ties which, as it were, are trademarks of the typical Ghanaian and more especially the residents of the Ashanti Region (Afram and Owusu 2006, 76)

Furthermore, Afram and Owusu’s work found advantages in the veranda in front of rooms overlooking the courtyard that were often co-opted for a wide variety of uses such as cooking and sleeping on hot and humid nights. They also highlighted the security advantage of multi-habitation and the cheap and simple construction known locally. Rooms in the compound home could also easily be translated to commercial use to serve the numerous people who have home-based enterprises in these urban areas. Lastly, they note the sustainable advantages of the compound home with the layout and courtyard allowing for cross ventilation. Their research also understood the disadvantages including shared facilities such as toilets, shared utilities such as electricity and water, and public/private boundaries being blurred and aimed to find solutions to these deficiencies (Afram and Owusu 2006).

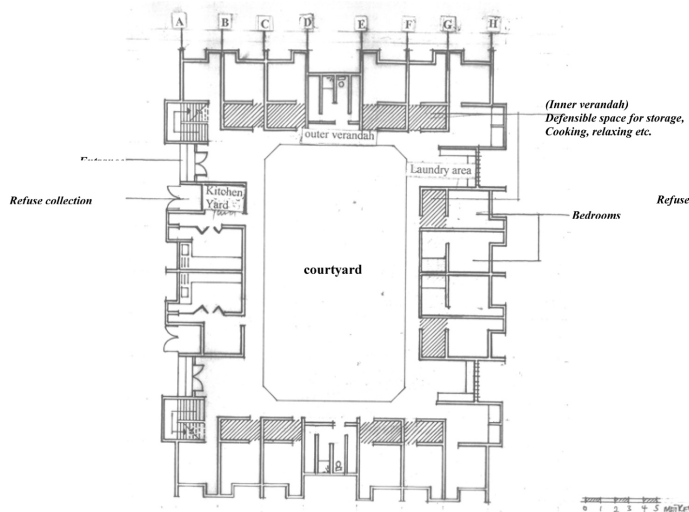


Figure 4a: Proposed Ground Floor
Source (Afram and Owusu 2006)

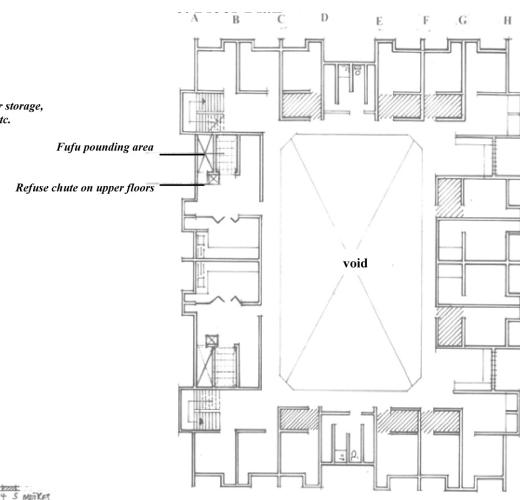


Figure 4b: Proposed First Floor
Source (Afram and Owusu 2006)

Their design innovations translated from this evidence-based research included developing a system whereby the compound home could be realized as a module and allowed to grow by accretion similar to the single-story traditional compound homes. They also developed systems for enhancing the multi-story compound house allowing for activities that would typically take place on the ground floor to be allowed to take place on

upper levels while maintaining the importance and central nucleus of the courtyard. These include allowing for refuse disposal and utility space that can be used for various activities by the residents (Figure 4).

2.2. Multi-story Compound Housing in Accra

This theme of researching culture through family structure, social networks, identity, lifestyle and activity systems can also be seen in one of my ongoing research projects which aimed to use an evidence-based approach in the development of the architectural product.

This project uses Rapoport's framework to analyze family structure, social networks, lifestyle and activity systems to develop a set of criteria to translate traditional modes of dwelling to a multi-story housing complex. This research uncovered key statistics already mentioned above including, the relationship between traditional modes of dwelling and modern housing developments in the capital city of Accra. The proposed project is sited on the border of two areas of the capital of Accra, Asylum Down and Adabraka. As in other parts of Accra, access to home ownership is difficult, resulting in 60.5 % of residents in Asylum Down living in rented accommodation with 57.4% of residents living in a compound (Baiden, Arku, Luginaah, Asiedu 2011). Cramped facilities and lack of infrastructure led to numerous residents expressing dissatisfaction with their current housing situation in Asylum Down. An interview with a resident of a compound home in Asylum Down revealed some of the advantages previously outlined in the literature. She enjoyed the social aspects of people sitting in the courtyard and conversing and the occasional party and other social events in the outdoor courtyard space. On weekends children play in the courtyard while the women wash and dry laundry and cook. She also reflected on having easy access to childcare via her neighbors and the social network established through communal living. She appreciates the sense of security gained from living with others stating "We are never worried. There is always someone around." However, privacy is an issue which needs to be addressed in the compound home.

This traditional and modern cultural research was used to inform the following design criteria for the building:

1. Provide sustainable concepts based on traditional forms of dwelling (ventilation, shading, thermal performance and use of local materials).
2. Highlight the advantages of the compound home and understand how its activities and formal translations could apply vertically
 - a. Maintain the communal aspect of the courtyard vertically
 - b. Allow for privacy while maintaining a sense of a security
 - c. Provision of 'flex' spaces for various activities

These design criteria were translated into a concept for weaving different aspects of the program together, allowing for pockets of shared spaces within the building that reference the courtyard and providing outdoor spaces which are more private. The proposed concept allowed for density while subverting the typical apartment floor plan consisting of numerous apartments around a hallway, primarily serving as circulation and a way to enter and exit people's apartments (Figure 5).

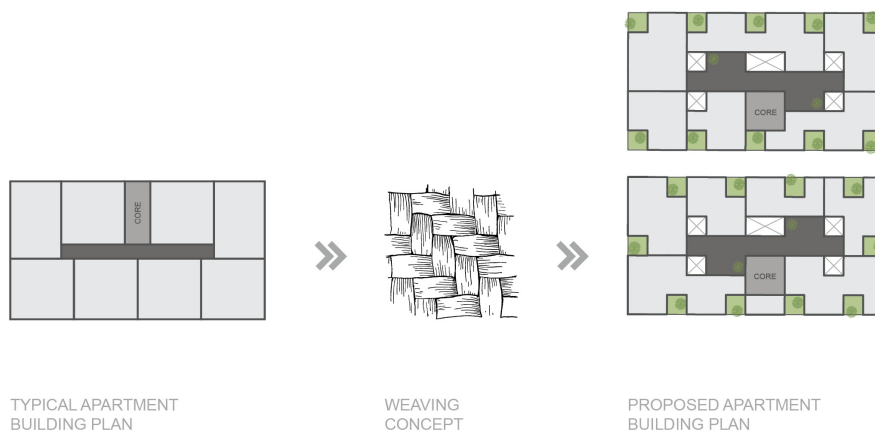


Figure 5: Conceptual Diagram. Source: (Dahlia Nduom 2017)

These pockets of space weave in plan and section and provide common spaces where various activities could take place. They become the heart of the building (similar to the courtyard) with additional voids allowing light

and air to reach these interior common spaces. This conceptual plan for an affordable housing solution is heavily based on research and cultural analysis and provides a solution for understanding and negotiating between traditional and modern ideals of what it means to dwell.

CONCLUSION

This paper has outlined the importance of cultural research in understanding housing in Ghana in the 21st century and a framework for analyzing this research. Two case studies have been presented outlining how this evidence-based research can produce architecture that is culturally specific.

This paper presents the beginning of a series of ongoing primary research. This research is investigating residents' reactions to these housing proposals and elaborating on how ideals, images and meanings relate to the built environment through the fixed, semi-fixed and non-fixed features outlined by Rapoport. Further analysis of what this means for the rented room in a compound home (how do people make these rooms theirs through implementation of these features and spatial transformation) could shed further light on the design and manifestation of these spaces.

This ongoing cultural research and the resultant architectural form will continue to serve as an example of the importance of bridging the gap between cultural research, evidence-based design criteria and architectural design as it relates to housing in Ghana.

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