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EBUSUA FIE

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Architect | Ghana

HONORABLE MENTION

Inspired by the Fanti of Ghana



TRADITIONAL INSPIRATION

Ebusua Fie – Family House in Fanti

The Ebusua Fie design was developed from an investigation of the local customs, cultures and ways of building of the Fanti people, specific to the town of Elmina in the central region of Ghana. Elmina is located on the southern coast of Ghana and has seen significant contact from Europeans since 1471 when the Portuguese first landed on its shores. Since then, the town and its architecture have been influenced by Dutch and British sensibilities.

The traditional architecture of the Fanti people of Elmina is similar to other coastal towns on the South of Ghana. These structures were built using the timber and clay (wattle and daub) method, which are still characteristics of coastal Ghana.

Traditionally these structures were rectilinear in form with numerous openings to take advantage of the cool breezes and the smaller variances between day and nighttime temperatures. They also often had a sheltered veranda and open courtyards similar to the Akan courtyards which were used for various purposes including the preparation of fish, repairing of items such as fishing nets, and greeting and receiving guests.

The Europeans brought with them new building techniques, tools and cultural traditions. However, archaeological and documentary research has shown that even though the Europeans had significant, “Elminans [that] remained ‘African’ in terms of their core beliefs or worldviews,” many buildings exhibited European ideals in their exterior manifestation. However, the use of space within structures that have been excavated exhibited more continuity with African traditions.

During the Portuguese and Dutch occupation “buildings were generally made of roughly cut blocks of unmortized Elminian sandstone” as opposed to the traditional wattle and daub structures of the pre-European era. The use of stone saw the development of two story buildings which are still seen in Elmina today.

While these innovations allowed for new ways of building and thinking about the dwelling, the Fanti people largely carried on cultural traditions such as burial rites, festivals and ritualistic offerings and most importantly their traditional relationships to dwelling spaces. While the exterior of these buildings were changing in form and material (multi-storied and stone construction), the use of spaces were continuing along traditional values and interactions.

For example, 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.

A study of the Fanti people of Elmina and their architectural development is therefore fitting for this project, which seeks to negotiate between modernity and traditional values because investigating traditional architecture can’t be undertaken in a vacuum without understanding all of the historical influences which have been assimilated into the traditional language. These influences are now as much a characteristic of the region and people than the purely indigenous forms and materials.

This proposal re-examines the relationship between traditional and modern in the presentation of Ebusua Fie, a modern take on the traditional Elmina family house.

DESIGN NARRATIVE

The Ebusua Fie prototype is a 2 bedroom dwelling with a compact footprint. A visual study of the current city of Elmina and speaking with residents revealed that it is a congested town. Municipal data shows that Elmina's core town has approximately 600 houses per square kilometer with between 6.1 and 13.3 persons per house. Traditionally, many people live in family houses or compounds. Some who may want to live outside of the family home still do so due to rising costs of land and building construction costs in Ghana. Due to the fishing industry, many people choose to live in these family homes closer to the sea than to venture further away. This phenomenon can be seen, not only in Elmina, but also in Accra and other Ghanaian cities.

Interviews with Fanti Elminians showed that they value proximity to the extended family but would appreciate more privacy within their spaces in the home. Most people converted certain areas with makeshift partitions, as they weren't allowed to make major alterations to the structure. This concept of privacy while maintaining close connection within a small footprint formed the major conceptual strategy for the project. How can space be layered to provide privacy while maintaining flexibility and ability to engage publicly? How can the courtyard provide the means to accommodate this?

The smaller footprint enables this prototype to be built in congested areas. The programmed spaces are spread across two stories similar to the two story buildings dotting Elmina town. Spatially, as in traditional Fanti use of space, the courtyard is the most important aspect of the prototype. This courtyard breaks its traditional rectilinear form and extends to the perimeter of the building forming slots, which provide natural ventilation within the building and light to interior spaces. These slots also reflect the traditional relationship between the compound house and the community. They reach out to the exterior/community while remaining screened and private. The courtyard also has a wind tower effect pulling air through the building and up through the opening at the roof.

The courtyard extensions become programmable spaces for the daily routines in the house such as exterior kitchen, patios, play areas, family gathering areas or potentially sleeping areas. These can be concealed or revealed with sliding partitions creating a level of privacy within these courtyard nooks. The nooks can be opened up and become part of the main central courtyard and covered walkway thereby transitioning from more private intimate gatherings into larger family gatherings.

This exterior covered walkway surrounding the main courtyard provides a means of separation/privacy from programmed areas. The interior spaces can open up and connect to the courtyard as needed by sliding doors. These nooks and their adjoining spaces with movable partitions allow for a multitude of ways of using the spaces with varying degrees of privacy (for example, additional sleeping areas for family members).

The courtyard and courtyard extensions are screened by vertical wooden screens of varying degrees of transparency. More private areas have more dense screening. These screens also allow for ventilation through the space as in the case of the courtyard extensions. All windows open to the exterior and courtyard to allow for cross ventilation. This reflects the traditional form of the coastal compound house, which permitted a free flow of air.

These wood screens alternate with solid walls, which form the main structure of the building. The solid walls are constructed of interlocking, stabilized and compressed earth blocks (stabilized by approximately 8 percent cement), which are self-supporting. New innovations in building with stabilized compressed earth blocks makes this a viable solution for a modern building project.

These compressed earth block walls include the tradition of mark making by being cast with a relief of an abstraction of the Adinkra symbol, Mframadan. Mframadan means wind-resistant house and is an ideal imprint to grace the walls of this home. The abstracted imprint lends an additional textural quality and three dimensionality to the compressed earth block.

The use of wood and earth and its implementation as solid vs. void and interior vs. exterior, creates a

layering of space similar to the layers of the wattle and daub. The prototype takes this concept and extends it spatially as if one were able to occupy the space between the wattle and daub.

The combination of these elements result in a building that is environmentally sustainable and reflects elements learned from traditional ways of building. In addition to the cross ventilation provided by the screens, courtyards and window openings, the stabilized compressed earth block has excellent thermal performance, keeping interior spaces cool and minimizing heat gains.

Traditional coastal houses also attempted to limit the transmission of heat through the roof structure through the use of thatch. The building uses a modern interpretation of this, utilizing a typical wood frame with Onduline (or similar), bituminous roof tile strips made from recycled materials. Insulation is sandwiched in the roof as needed.

SUMMARY OF MATERIALS USED IN THE BUILDING

Structure

Foundation: concrete (pigmented or pigmented render with color to match compressed earth blocks)

Walls (exterior): interlocking stabilized compressed earth blocks (8% cement to be confirmed when soil is chosen); Stabilized earth blocks are self-supporting; these earth blocks are cast with imprint of abstracted Adkinra symbol enhancing the textural quality of the blocks. All exterior earth blocks finished with clear sealer for additional protection against the elements
Ring beam: the top of the self-supporting stabilized compressed earth block wall is framed by a concrete ring beam (pigmented or pigmented render with color to match compressed earth blocks); The floor frame of the first floor and roof sit on these ring beams

Floor framing: typical wood floor framing

Roof: sloped wood frame with Onduline bituminous roof tile strips made from recycled materials

Finishing

Screen elements and flooring: locally sourced wood which is treated to protect against the elements

Ground floor: terrazzo

Windows: wood frame windows by local manufacturers

Walls (interior): interlocking stabilized compressed earth blocks (8% cement to be confirmed when soil is chosen); left exposed as exterior blocks or finished with plaster or tile at wet areas

COSTS

Studies show that you can save up to 30% compared to traditional masonry construction when using compressed earth blocks. This is achieved by using readily available materials (soil) and reduced labor costs for wall construction. The building utilizes local materials and simple construction which also results in a cost effective building.

FEATURES THAT WOULD APPEAL TO A PROSPECTIVE HOMEOWNER

A prospective homeowner would choose to buy this home design as opposed to a building that does not reflect the special African design elements due to the following factors:

- It is more cost effective
- It is environmentally sustainable, reducing homeowner's reliance on air-conditioning thereby reducing life cycle costs

- References traditional values in terms of community and family relationships while maintaining privacy
- Small footprint, allowing building in more dense areas or on smaller plots of lands that may be more affordable
- Can be built by both skilled and un-skilled laborers reducing costs to homeowner
- Allows for shared space with extended family when necessary or required

FEATURES THAT WOULD BE WORTHY OF BUILDING CODE REQUIREMENT IN AFRICA

The elements worthy of becoming building code requirement for construction in Africa are:

Sustainability features: there are several agencies worldwide (such as LEED) that monitor and oversee designation of sustainable buildings. However, while these are a 'good to have,' many of the requirements for a green building are not required in Ghana and on the continent by building code, which is more focused on health and safety.

Elements such as natural ventilation, a certain percentage use of local material and sustainable construction methods, outlined in this prototype, should become part of the building code.

CONCLUSION

Summary of Southern Sahara Elements of Design

- Cultural/Lifestyle Elements Used
- Deformed and extended courtyard as central aspect of the building
- Traditional values and relationships surrounding the courtyard
- Negotiation between community/privacy and family dynamics
- Modern kitchen with exterior kitchen extension in courtyard slot, allowing for more traditional ways of cooking in a modern atmosphere
- Tradition is evolving over time, as shown in the nod to two stories and modern building technologies

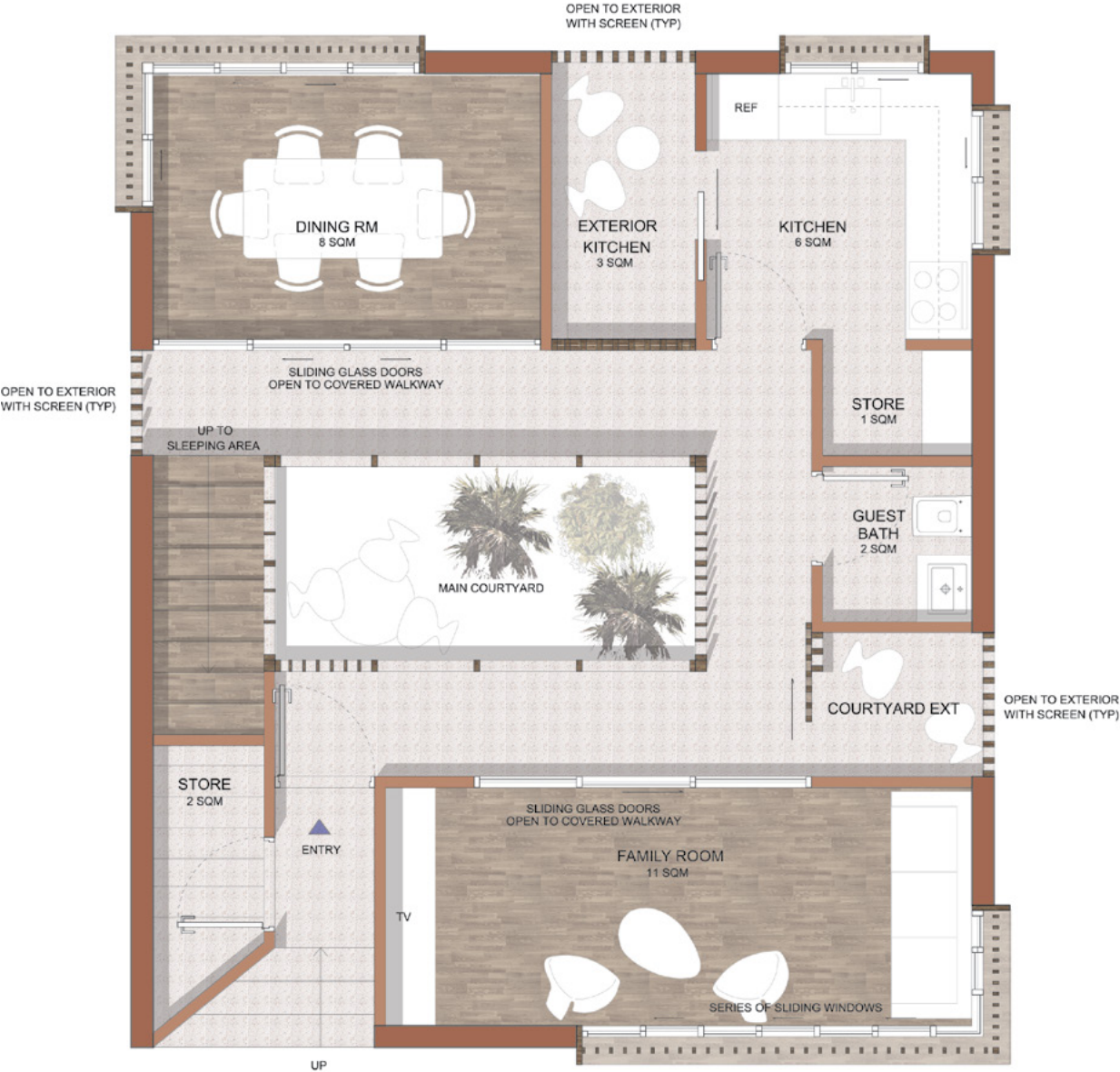
Aesthetic Qualities

- Abstracted Adkinra symbol imprint on compressed earth block adding textural quality
- Natural color of earth block and general color palette of space
- Layering of earth and wood in space similar to layering of wattle and daub in traditional construction

Sustainability

- Courtyard and its extensions; wind tower effect keeps spaces cool
- Natural cross ventilation throughout the space
- Use of local material such as compressed earth blocks and wood
- Simple construction capable of being carried out by artisans or skilled builders
- Small footprint allowing to be built in areas of density reducing need for additional infrastructure
- Natural lighting through openings in courtyard and on perimeter minimizes reliance on artificial lighting when not needed
- Landscaping at courtyard and exterior of building keep building cool

GROUND FLOOR



FIRST FLOOR

