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Critical Regionalism in Architecture: A Case of Nairobi City, Kenya

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ABSTRACT

After independence, Kenya continued to rely on western architecture as model to be imitated in the new educational, religious and commercial buildings. The architects adopted international style irrespective of the style's appropriateness and context. As a result international style neglected the local environmental conditions, culture, history and traditions. The purpose of this study was to examine design principles of critical regionalism using works of Aldo Van Eyck, Alvar Aalto and Le Corbusier. The lessons learnt from critical regionalism were used to establish to what extent it was applied in Nairobi city. The buildings studied in Nairobi were; namely, Ufungamano House, St Mary Shrine, and Shelter Afrique Centre. The critical regionalism principles focused on evaluation of; sense of a place, response to topography and climate, tactile and visual sensation, and openness to the root and use of other sources of archetypes. The results of study indicated that the buildings studied in Nairobi had not adequately addressed the principles of critical regionalism. The sense of a place, response to climate, and inability of designers to integrate modern (Western) values within the local cultural context to produce an innovative and authentic new regional built form. This study revealed the measures that need to be put in place to achieve principles of critical regionalism are; having an open interpretation of global perspective in local designs; creating effective synthesis of the traditional and the modern styles; and acknowledging of the needs and aspirations of people in current dispensation and age, physical and cultural parameters.

Keywords: *local tradition, modern, critical regionalism, international style*

INTRODUCTION

The history of Kenyan architecture has evolved from pre-colonial, colonial and post-colonial periods. The architecture practiced during pre-colonial was predominantly traditional. This archetype was based on local climatic conditions, materials and building practices as well culture of specific people. The African architecture, Lwamayanga, (2008) observes was seen as an environmental and socio-cultural product

reflecting the nature, the living and the working of the communities. The architecture of the day provided sense of belonging and people lived in harmony and order in their environment.

In advent of colonization, in 1895, the British settlers introduced on Western culture in the Kenyan urban centers and countryside where they settled. The British suppressed the African culture as they promoted their lifestyle and values in all spheres of life, including building practices. This new way of building design was based on principles of functionalism, rational use of modern materials and rejection of historical precedent and ornaments. The resultant building designs were associated with homogenous, mass production, formal and rigidity. This archetype failed to recognize the cultural, environmental and historical context of Kenyan people. This implanted Eurocentric architecture in most African countries lacked any meaningful and intrinsic architectural value and aesthetic of the local communities (Mhlaba, 2007). This period denoted beginning of the struggle for Kenyan architectural identity through proper symbolism and aesthetic.

Aalto had also observed that modernism which was more associated with Western ideology of industrial era lacked harmony as it was being spread and imposed universally. He says:

"at the root of this disharmony is a break with the individual's genuine psychological needs… psychological pressure of living in stereotyped, unnatural communities, could be rectified if standardization were inspired by nature's biological diversity, and if the building took something of its character from the site, thereby becoming an instrument that collects all the positive influences in nature for man's benefit, while also sheltering him from all the unfavorable influences that appear in nature…" (quoted in Menin, 2003, p 233).

It was Aalto submission that architecture should rooted in nature and human experiences. Aalto illustrates how modernism forces rekindle with a place. Aalto's designs defied the simplicity of modernist designation. He wanted standardization, as principle of modern movement, be inspired by biological diversity of nature, but not arbitrarily mass production of building.

Post-colonialism was a period when Kenyans were expected to go through self – critique and self-realization in defining the new direction of architecture. The duality of archetypes, that existed by the time Kenya got its independence in 1963 ought to have injected a new critical and creative inputs on how modern and traditional architecture would fuse. The new dawn of architecture in Kenya was expected and designers were required to search for regional modernism principles that were appropriate to a region and incognizance with relevant cultural references.

Unfortunately, this proposition did not come to be in Kenya since designers continued to rely on Western values not local traditions in evolving local architectural models in their practice. New educational, religious and commercial buildings were basically copy right of works of architecture known in Western regions. Considering Kenya is within equatorial and topical regions, has varied geography, has varied climatic conditions and different cultures, one would have expected regional dictates to play a major role in defining and expressing its architectural identity. That was not to be.

It is the aim of this study to focus on these critical aspects of context of a place that are being neglected by designer. Hybrid architecture that is encompassed in critical regionalism is the new direction of architecture in Africa. This regional architecture shall have authentic identity in terms of its symbolism and aesthetic (Anyamba (2011); Kutermann (1969). It is therefore the intention of this study to examine principles of critical regionalism and its application in Kenya. With this in mind, the researcher explores the theoretical positions established by different proponents in this area of critical regionalism. The paper concludes by recommending the guidelines of critical regionalism design approach in Kenya, specifically in the Nairobi city.

What is Critical Regionalism in Architecture?

Critical regionalism seeks appropriate strategies for preserving the cultural nuance and the promotion of contextually innovative work (Hunter, 2009). It is in this light that Dunham (2009) points the need of traditionalist designers to free themselves from nostalgia or habits of past and capture the opportunities for self-realization and participate in larger and diverse communities. This implies critical regionalism is not about copying or resurrecting the traditional edifices but creating innovative work within contextual concepts and for the designers to have self-realization and be forward looking in search for new identity through continuity within change.

Orozco (2007) saw regional architecture as an expression of the people's realities as well as interlinked with nature. He writes;

*"…to create a truly sustainable environment, profound links shall exist between people, nature and the built environment. In addition, this architecture must remain relevant to the ever-changing realities of the modern world…" (*Orozco, 2007).

Orozco statement resonates well with conceptualization of critical regionalism where it is supposed to always give room to modernism ideas since it's based on social, economic and physical realities of the community designed for. The critical regionalism ought to be the unifying approach in bringing together the global trends in realms of; socio-cultural, geographical, environmental and socio-economic patterns thus offering architecture that resists dominance of universalism and traditionalism outfits. Critical regionalism ought to contextualize architecture of a place as it brings out its authentic symbolism and aesthetic.

Frampton (1998) while citing Ricoeur's (1965) observes that regional architecture should focus more on the roots of both traditions and modernism. He quotes;

"... how to become modern and to return to sources; how to revive an old as well as dormant civilization; and take part in universal civilization…" (Ricoeur, 1965)

This point to the fact that the historical precedents should inform the present and the integration of the modernism and traditionalism styles is important to realize critical regionalism. Ricoeur emphasizes that the designers should learn from their other sources of architecture on what is beneficial to the culture being designed for. Design ought not be closed but open to ideas from other sources. Anyamba (2011) sees this Orozco position in the same context when he states that future African architecture should be a hybrid drawn from African Western and Asian cultures. Mazrui (1986) advances triple heritage theory of direction of future African identity.

Tzonis and Lefaivre (2003) elaborate this concept of critical regionalism by stating that it need not directly draw from the context; rather elements can be stripped off the context but re-utilized in unfamiliar ways. The process of change creates disruption of place through reflection and self-evaluation. Lefaivre (2003) conludes that critical regionalism is an effort to enhance the purpose and ideals that characterize a particular age and the people.

Tzonis (2003) wraps up the definition of critical regionalism as an approach that recognizes the value of the singular circumstances, circumscribes projects within the physical, economic, cultural, and social realms. In addition, it aims at sustaining diversity while benefiting from universality.

Principles and Concepts of Critical Regionalism in Architecture

Framptom (1998) and other scholars have identified the design principles and concepts of critical regionalism in architecture. Each of these principles is reviewed and illustrated using Amsterdam Orphanage, Villa Mairea and La Sainte Baume buildings of Aldo Van Eyck, Alvar Aalto and Le Corbusier respectively.

Spatial Organization and Form

Amsterdam Orphanage: Architect Aldo Van Eyck designed Amsterdam orphanage in 1960. The building type was a dormitory for the orphanage children. The orphanage was designed for children of all ages and included sleeping quarters, a kitchen, laundry room, gymnasium, library, and administrative spaces (**Fig. 1**). The created building had collection of these unique spaces joined together by segmented hallways or indoor streets. The building design used courtyard concept with flawless connection between indoors and outdoors spaces. Furniture ranged in size and function doubled as play spaces (**Fig. 3**).

Orthogonal grid was used as design principle. The units projected off two diagonal paths so that each unit had multiple exterior facades. By projecting off of a diagonal within the grid, Van Eyck able to create an equal number of negative and positive spaces. Each individual unit had its outdoor space (Fracalossi, 2011; **Figs. 1, 2 & 3**).

A large courtyard was offset diagonally from the residential spaces, and the entrance and administrative spaces and was interconnected with the street, the small courtyards as well as the residential units. Van Eyck avoided creating a central point within the Orphanage by allowing for such fluid connections between all spaces. The Orphanage was Van Eyck's vision of a balanced community (**Fig. 1**). Van Eyck's design imposed an overall order by the structures, the elements of dome and cylinder, clerestory window, brick wall and door step which repeat throughout the project (Karogi, 2006 p33 and **Fig. 2**).

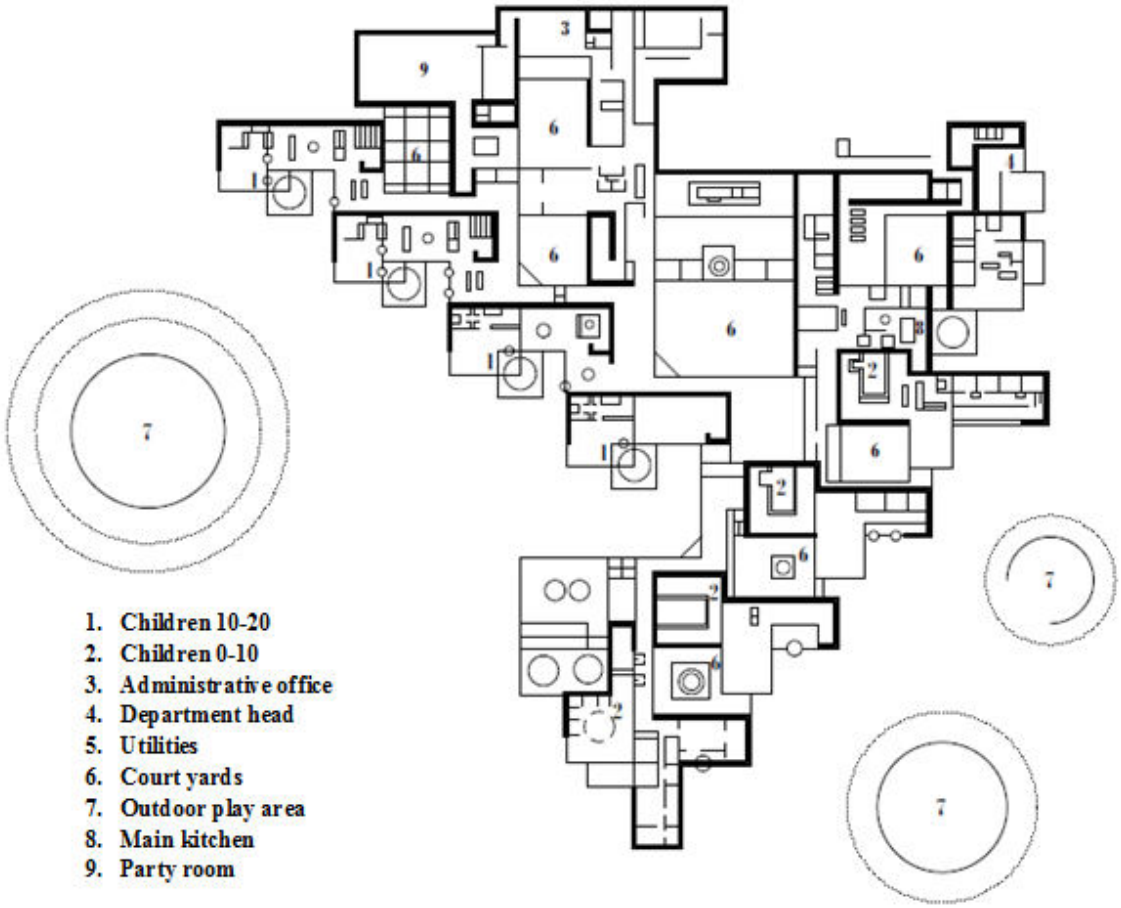


Fig. 1: Amsterdam Orphanage Ground Floor Plan

Source: Fracalossi 2011

Fig. 2: Amsterdam Orphanage well scaled forms with lawned exterior space interlinked
Source: Fracalossi 2011

Fig. 3: Amsterdam Orphanage showing well-lit interior space and children play
Source: Fracalossi 2011

Villa Mairea: Aalvar Aalto designed Villa Mairea in 1939 in Noormarkku, Finland. It was a guesthouse and rural retreat for Harry and Mairea Gullichsen. Juxtaposed against the rigid right angle forms, the house had its the edges and boundaries of spaces, and textures alike in wave-like forms that were considered by as symbols of human freedom. Aalto was skillfully combined in use of curvilinear and linear geometry in his designs. He describes this geometry as;

"…curving, unpredictable line that runs in dimensions unknown to mathematics. It is the incarnation of everything that forms a contrast to the modern world between brutal mechanicalness and religious beauty in life …" Sveiven (2010).

This free-form is found throughout the house, from the shape of the swimming pool and balcony spaces to other smaller finer details, like the fireplace (**Figs. 4, 5 & 6**).

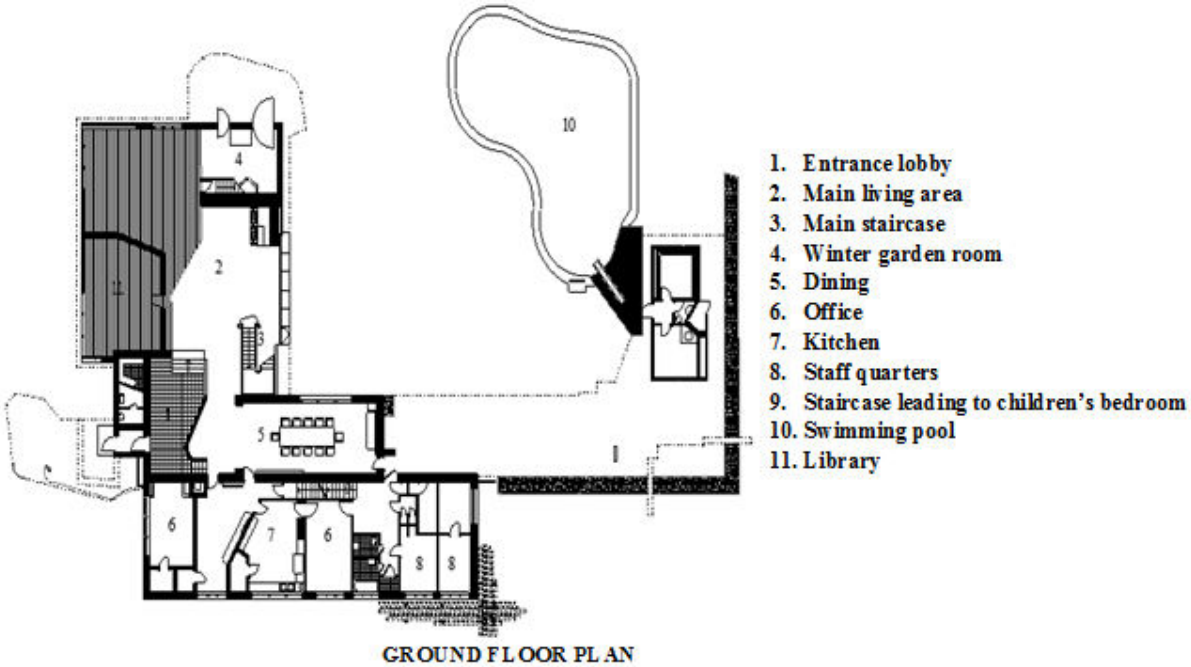


Fig. 4: Villa Mairea Ground floor plan
Source: Sveiven 2010

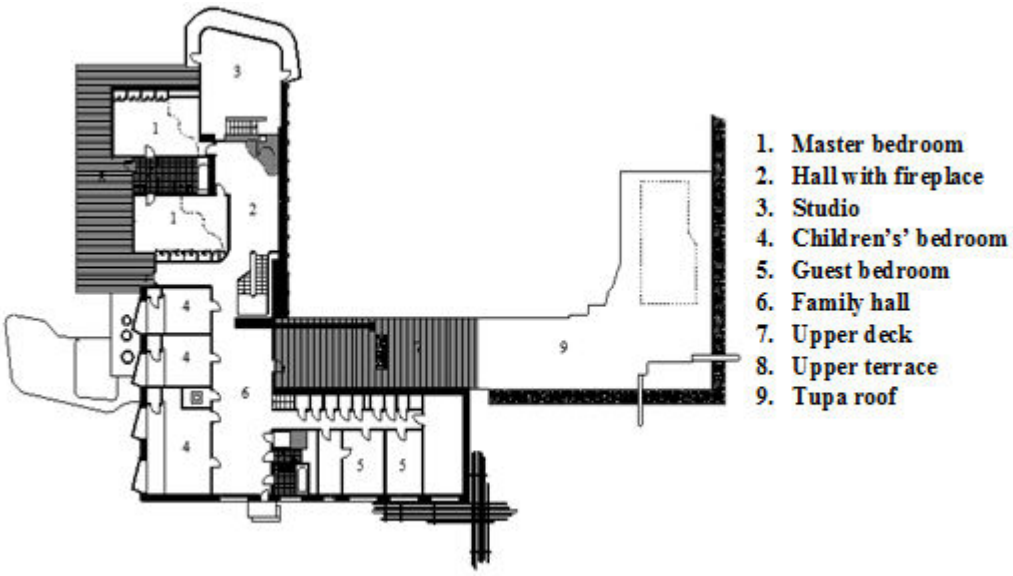


Fig. 5: Villa Mairea Upper floor plan

Source: Sveiven 2010

La Sainte Baume: The scheme for La Sainte-Baume was designed by architect Le Corbusier in 1948, and comprised of the Basilique, cut in the rock, the two ring-shaped hotels, and the permanent city on the other side of the plateau. The Client of the project was Mr. Edward Trouin who had devoted his life in architecture, construction, geometry and land management. La Sainte Baume in Provence, France was the 'final resting place' of Mary Magdalene though the project was not fully completed (**Fig. 7**).

Fig. 6: Villa Mairea Front view showing entrance canopy

Source: Sveiven 2010

Fig. 7: La Saint Baume entrance to Baslique hewned from mountain rock

Source: Samuel 2003

The Principles of Critical Regionalism in Architecture

Each of the principles is discussed and illustrated using the above introduced cases.

Sense of a Place and Genius Loci

Frampton (1998) opines that critical regionalism creates a sense of place rather than space. This principle calls for the understanding of what constitutes the boundaries of a space that is used to define a place. Landscape, vegetation, and the cultural practices, among other things, help to create a sense of place with clear boundaries.

Genius loci require the designer to identify himself with the spirit of a place in order to create a design with a message. The designer is supposed to discover what the place symbolizes in nature so as to draw the correct

meaning in the interpretation of the built form (Schultz, 1980). That is to say, the designer symbolizes his understanding of nature of a place by expressing it into the existential material terms. Sense of the place is created by spatial form and organization through positive response to the *genius loci* of the place. Schultz (1980) concretizes this idea of spirit of a place. He writes:

"...as architects and designers, we should concern ourselves with influencing the spirit of the place from the materials we choose, setting out spatial relationships and the building forms to express the cultural idioms in design details all in the desire to influence a place with meaning..." Schultz (1980)

The sense of a place was well affirmed by Van Eyck in his project of the Amsterdam Orphanage. He set the boundaries of place through creation of a series of gathering spaces for children that comprise of graded courts of different scales, different degrees of enclosure and openness, and creating a street where it is possible to meet (Fracalossi, 2011; **Fig.1**). The functions themselves underline the statement of the collective and individual small scales, the graded transitions and the in-between. This statement brings to the fore how regional architect like Van Eyck looked at man as center of the design and gave him the correct space at individual and group levels. Van Eyck understood first the social behavior of orphans before creating spaces that responded to their senses. The scale of individual and collective spaces conferred identity and sense of sharing in life.

Karogi (2006) agrees with Van Eyck's view on critical regionalism essence of man's space. He writes:

"*... architectural space is the image of man since man in all his aspects represents the reality that motivates design, thus architectural space should be the counter form to man or his image much as clothing fits onto man ... (Karogi, 2006, p 32)*

Thus, the social spaces designed by Van Eyck revealed themselves during occasions. This implies that space only comes to life when man interacts with it. Van Eyck demonstrates through this project that when human qualities are well appropriated and interpreted they can lead to meaningful architectural space that fulfills man's intended experiences.

Van Eyck achieved the principle of *genius loci* of orphanage home by creation of a house like a small city if it's to be a real house, a city like a large house if it's to be a real city (Fracalossi, 2011). Van Eyck's design for the Orphanage therefore was both a home for the children, as well as the plan of a small city. He created a decentralized urban node with many points of interaction within the plan. Van Eyck was interested in a non-hierarchical development of cities and hence created a building with many in-between conditions to break down the hierarchy of spaces.

Alvar Alto was inspired by the birch trees in the Finnish landscape in his design of Villa Mairea. This founded the spirit of the place that was demonstrated by use of a collage of materials amongst the trunks of countless birch trees in his project design. Fence was made of roughly woven together long sticks. Regularly, directional and linear sticks were cladded on the wooden walls of the grass-roof sauna that continues on to form the roof of outdoor space and walkway (Sveiven, 2010; **Fig. 8**).

Aalto took advantage of natural environment to design blurring the lines between and being inside and outside the house. The verticality of the columns existing throughout the house and posts found by the staircase mimic the sea of birch trees that surround the house. Aalto purposely makes each column different, 'to avoid all artificial architectural rhythms' (Sveiven, 2010). The main living area appears to open and close, which reproduces a similar experience as when walking through a forest. Upon exiting out of the front door, one is submerged in a row of columns, which are placed specifically by Aalto to emphasize the continuity found between the environment of both inside the Villa and out (**Figs. 6 & 9**).

Fig. 8: Villa Mairea: Side view with cladded sticks on wooden wall
Source: Sveiven 2010

Fig. 9: Villa Mairea: Back view fronting the lawn with swimming pool
Source: Sveiven 2010

Le Corbusier took great interest in the La Sainte Baume site. He was inspired by the opportunities offered by the site in his design. La Sainte Baume is located in Provence's highest mountain range, full of caves including the *grotto* of Mary Magdalene, sitting above a densely shrouded forest. The place had Scandinavian character due to high altitude. La Sainte Baume was significant site of religious pilgrimage, where visitors ascended the wooded foothills, entering the Basilica through Mary's *grotto*, essentially re-enacting her story (**Fig. 10**). Le Corbusier achieved sense of a place and *genius loci* by allowing the pilgrims to continue downward into a dark chamber, likely symbolizing her excesses, before ascending upward again, evoking the rising of the sun, or symbolically, the existence of Jesus in her life (**Figs .11 a & b;** Samuel, 2003).

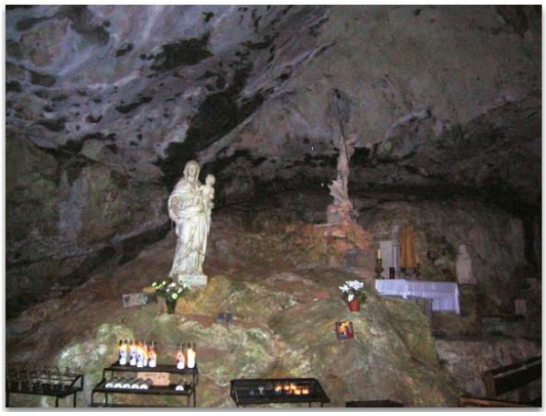


Fig. 10: Interior of La Saint Baume *grotto* where Baslique is located
Source: Samuel 2003

Symbolically, Le Corbusier engages pilgrim (body) through geometric movements in the shrine to attain a certain spiritual enlightenment. Le Corbusier writes:

"... Light, sound, color, rhythm, and space would be used to introduce the body to a sense of geometric harmony resulting in a state of spiritual transformation. At the end of this disorienting pilgrimage, likened to an initiation, the neophyte would re-enact her journey to the top of the mountain, emerging on the plateau above where he or she would be greeted by a sparkling view of the Mediterranean and the sun to the south, climax of the spiritual quest…" (Quoted by Samuel, 2003:223)

Fig. 11a: Le Corbusier's concept sketch of the geometrical movement through the cave for the La Sainte Baume site- La Saint Baume Provence, France

Source: Samuel 2003

Fig. 11b: The conceptual illustration of the geometrical movement in La Saint Baume

Source: Samuel 2003

Tactile and Visual Sensation

Critical regionalism emphasizes the tactile and visual sensation of a building. These are the most common modes of experiencing the built form. The built environment is experienced in terms of sight under varying levels of illuminations, ambient sensations of hot and cold, humidity and air movement, varying aromas and the sensation of touch (Frampton, 1998). Hence, critical regionalism emphasizes architecture that possesses a unique capacity of being experienced by all the human senses; auditory, visual, olfactory, gustatory and tactile.

Speck (2007) shows that the materials were honestly used in the Alto's project. The idea of tactile relation to site allows a reading beyond the visual and suggests a possibility in resisting commands of universal technology (Frampton, 1998). This concept of a morphing technology continued throughout the Mairea Villa, as materials shift form a stone to stone slab to glass and steel in the winter garden room. From the front door to the inside of the house, the materiality of the floor also changed as it become progressively more domestic and intimate, from stone to tiles to timber boarding and rugs **(Fig. 12)**. The work of Aalto embraces local finish traditions which acted as inspiration for appropriate environmental response and being honest to materials. He responded to site, material, human condition and context. Hence, Aalto developed his own regional language, eschewing the absolute character of mainstream modern movement.

In Amsterdam Orphanage project, the brick and glass were used in the walls (**Fig. 2**). Full glass was used on some portions of the wall, thus creating transparency and visual linkage of indoor and outdoor spaces. The

dome roofs were made of reinforced concrete. The facades in the building were either a glass wall or a solid wall made with dark brown bricks. The brick was warm for children. The materials offered kinetic feeling and generated intimate and scaled spaces. Sparkling materials and mirror were added in finish the floors and walls to improve visual sensation in space. The building is constructed out of two sizes of modules, a smaller size for the residences, and a larger size for community spaces. The modules consist of four round columns at the corners with a domed roof of pre-cast concrete on top. The modular coordination achieved in this project gave correctness of the visual sensation of building views.

Fig. 12: Villa Mairea tactile effect demonstrated in the project by skillful use of materials for floor, wall, columns, staircase, windows, and furniture among others

Source: Sveiven 2010

Response to the Site Topography and Climate

Frampton (1998) sees typology of building as culturally grounded in real and/or mythic history of a place. Topography naturally makes the buildings belong to a specific site. The main concern of critical regionalism is response to existing natural environment, the ecological, climatological and symbolic aspects of the site. These responses emerge an architectonic expression of a place that demonstrates how the built form interacts with nature. Critical regionalism responds to the basic requirements of a built form such as natural lighting and ventilation, as well as climatic conditions of geographic region. This resorts into buildings using minimal artificial mechanical services such as air-conditioning and artificial lighting systems that may lead into excessive consumption of electrical energy and pollution of environment, and high building electrical and mechanical services maintenance cost. Sustainable buildings are key input in realizing critical regionalism.

In the Orphanage project, the site was flat and surrounded by tall buildings. The low-lying volumes resonated well with terrain (**Fig. 2**). The created scaled enclosures were intimate for children. The expansiveness of site was not felt although it was flat due to creation of streets, scaled courtyards and buildings of different functions. This is exemplified by free plan, local courtyards, repeated modules with individual hipped roofs as common features in the design. Pools, sands pits and vegetation were added into courtyards.

The St La Baume and Villa Mairea were some of cases where their architectural designs were strongly informed by topographies of the sites. St La Baume located in *grotto* at the side of forested mountain had meandering trail and steps (**Figs. 13 & 14 a, b & c**). Religiously mountains being place for gods, it made the pilgrims feel evocation spirituality as they climbed the mountain to where St La Baume. In case of Villa Mairea the Finnish birch forest inspired Alva Aalto to design most spaces having in mind the tree trunks and character of the forest. The entrance had main and small trunks, the staircase had a collage of timber sized materials (**Figs. 6 & 12**). The architects of this projects abstracted symbols of the topography to create regional architecture.

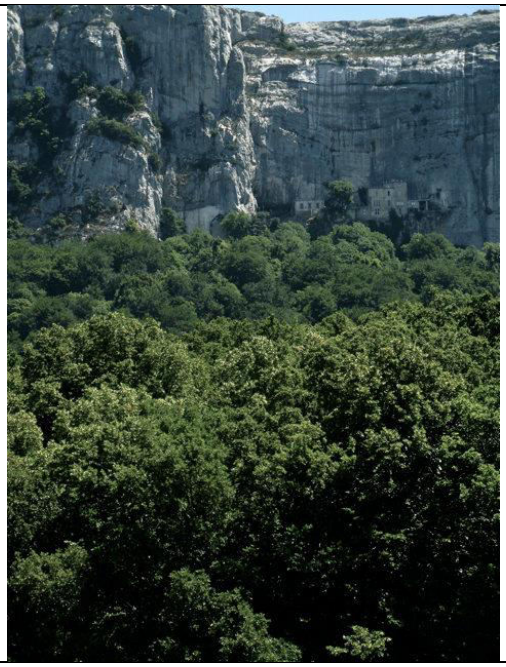


Fig.13: La Saint Baume site inside the forested mountain
Source: Samuel 2003

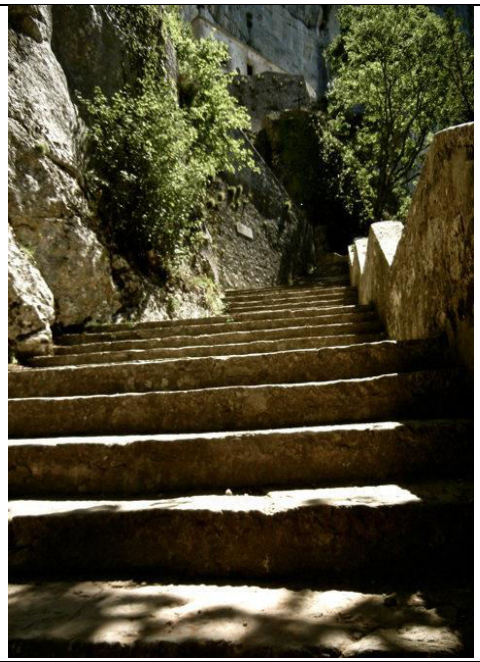


Fig. 14a: The trail through the forest towards La Saint Baume Site
Source: Samuel 2003

Fig. 14b: La Saint Baume steps leading to entrance and rock wall with crosses of saints
Source: Samuel 2003

Fig. 14c: La Saint Baume with zigzag and stepped passage from entrance and rock wall with crosses of saints
Source: Samuel 2003

Openness to the Roots and Other Sources of Archetypes

Le Corbusier captures this principle of basing regional architecture on local precedents but remaining modern. He writes:

"...To be modern is not a fashion, it's a state. It's necessary to understand history and we who understands history, knows how to find continuity between that which was, that is and that which will be..." (*Quoted in* Le Corbusier Archives – ArchEyes. 2016, *p1*).

This implies architecture should be seen as part of unique identity of a wide community as well as integral part of the traditions of the local community. The struggle in critical regionalism in architecture is how restore traditionalism in the light of forces of modern human desires and needs, functions, materials and technology among other things. Modern, as Le Corbusier observes, is a state of mind that man should be able to conceptualize what is his best physical expression of present and future but rooted in the precedents.

In order to achieve regional architecture, Ozka (1985) observes that the architects should take benefits of the universalism and traditionalism styles. In addition, Anyamba (2011) agrees with Ozka with respect to developing African architecture with authentic identity. He writes:

'... to develop an appropriate framework there is need to study and understand what is on the ground ... architecture should be seen as a personal art responding to what its creator brings to it in terms of experience and knowledge ... which are the bases of generating hybrid architecture…' (Anyamba 2011, p 280)

Frampton (1998) supports this view as he states that critical regionalism ought to be adapted from modern architecture with universal progressive qualities with regard to value of the geographical context. Orozco (2011) places this concept in correct perspective by observing that critical regionalism is supposed to give room to modernism ideas in order to fully confront the social, economic and physical realities of the community designed for. Frampton (1998) concludes this debate by noting that the strategy of critical regionalism is to mediate the impact of universal civilization with elements derived indirectly from the peculiarities of place.

Aalto experimented his thoughts and style with Villa Mairea project. The dwelling marked a transition from traditional to modern architecture for Aalto. The constant theme of a shifting and advancing technology is ever present in Aalto's design. The transformation of materials and therefore the experiences created by them form fences and then walls around and through the Villa.

Aalto fuses a modern open plan with a traditional style- *tupa*, which has large living room of a farmhouse with poles from the ceiling to the ground. The poles mark the boundaries of areas created specifically for different activities. The L-shape of the floor plan is characteristic of Scandinavian architecture and hints towards a traditional style. Speck (2007) describes these qualities of Villa Mairea. He writes:

"...part of Nordic sod-roofed hut, part vernacular log cabin with gutters hewn from tree trunks, part reinterpreted board-and-batten-clad volumes. But it is also part Scandinavian functionalism that had developed quickly in the decade of the 1930s and part new industrial Finland with its emerging ceramics and wood-products manufacturing… The Villa Mairea is rugged and crafty and relaxed like Finland, but it is also clean and orderly and precise like Finland. The regionalism here is not a one-liner. It draws on the shapes of the local topography and the textures of the landscape as well as on building traditions and social customs…" (Speck, 2007, p 77)

Alto captured well what is the modern and created frontier of continuity and change scenario for Finnish architecture. In the Orphanage project, Van Eyck sought to design a modern building with a new urban vision. The architect's design focused on a balance of force both a home and a small city on outskirts of Amsterdam. The review of the critical regionalism principles and application in the three international case studies has demonstrated the new direction in architecture that appreciates the context of a place.

MATERIALS AND RESEARCH METHODS

Case study is the research design used to collect data from Ufungamano House, Shelter Afrique and St Mary Shrine buildings designed by Richard Hughes, FMA Tectura Space and Systems respectively. Purposive sampling method was used to select the buildings. The criteria for selecting the case study were; building type

designed by different architects, and building having a unique contextual form. Observational techniques were used to collect the data. The observational data sought from cases was the spatial organization and form of building, the factors that associate with sense of a place and its genius loci, the topography and climate responses of the building, the tactile and visual aspects captured in the projects and finally aspects of related to openness to local traditions and modernism. Qualitative analysis of cases was carried out using content techniques to analyze the data. The findings were presented using descriptive and graphical methods. Plans and photographs were some of presentation media used.

RESULTS AND DISCUSSIONS

Application of critical regionalism principles on case studies of Nairobi City

The purpose of this study was to examine principles of the critical regionalism in architecture and to establish the extent different architects had applied them. The different works of architects Richard Hughes, Space Systems and FM Tectura are presented below under the following themes:

Spatial Organization and Form

Ufungamano House: The Ufungamano house is flanked by Mamlaka Road to the south-West and State House Road to the North-East. It also lies adjacent to the University of Nairobi's Hall 9 to the South-East and Mamlaka Hostels to the South across Mamlaka Road **(Fig. 15a)**. Ufungamano House built in 1977 and was designed by Richard Hughes. It is also referred to as Christian Students Leadership Centre. The main functions of Ufungamano building are auditorium with 550 seat capacity, chapel, common room, library, offices, dining and kitchen, games room, residential tower and service area. The spatial organization of these functions is well illustrated in **Figs. 15 b & c**. The form of Ufungamano House can be described as a composition of cuboidal masses that vary in size and proportions dependent on their functions. The primary geometry used in rectilinear forms joined to serrated form to ensure that the fenestrations face in the North to South axis (**Fig. 15a**). The composition is united through use of brick facing cladded facades that create uniformity of built form (**Fig. 16**).

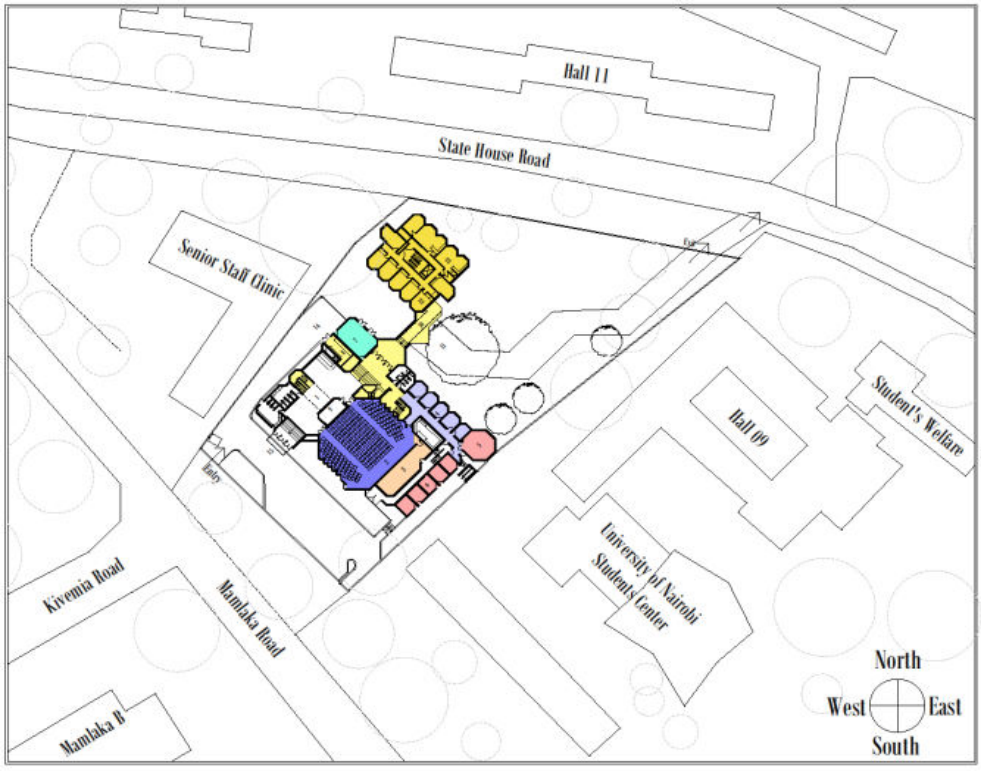


Figure 15a: Ufungamano House location plan

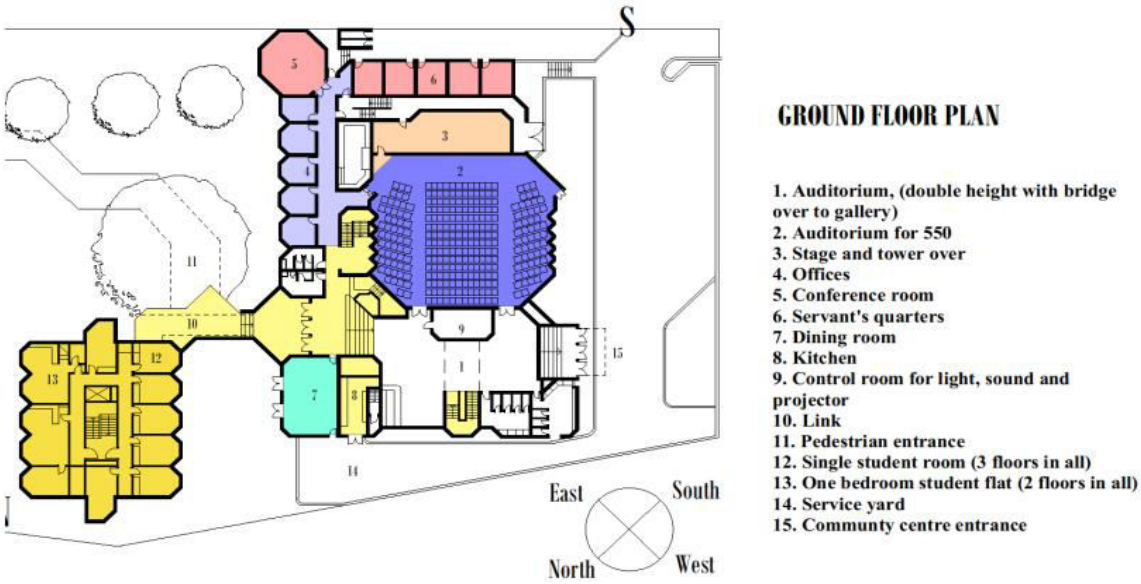


Fig. 15a: Ufungamano House: Ground Floor Plan

Source: Author 2018

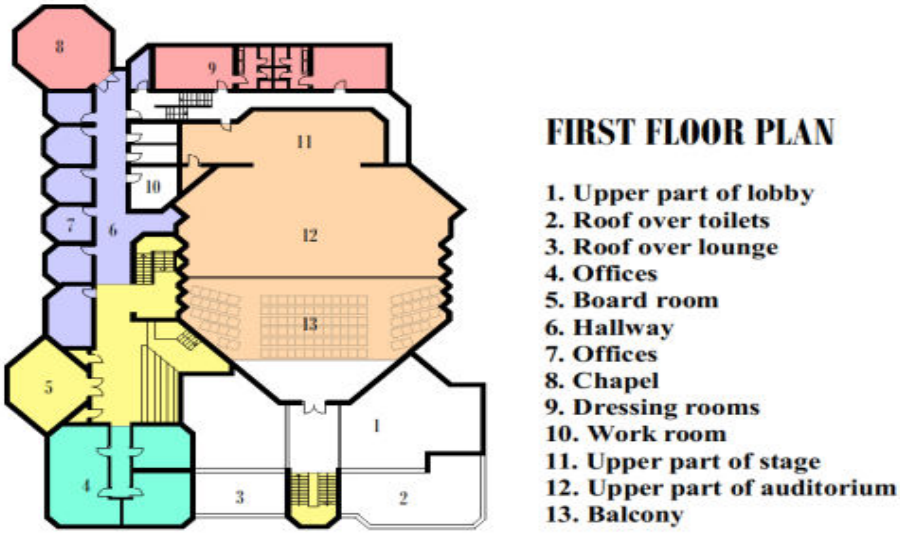


Fig. 15b: Ufungamano house: First Floor Plan

Source: Author 2018

Fig. 16: Ufungamano House: The slope response and windows oriented North-South direction

Source: Author 2018

St. Mary Shrine of Don Bosco: The building is located at Nairobi Upper Hill area and is along Upper Hill road **(Fig. 17 a)**. St. Mary Shrine of Don Bosco was built in 1993. The project Architects are Space Systems. The church accommodates 800 people and has a crypt chapel that accommodates 100 people. The church has baptismal font, a confessional area, a conference hall and a Shrine office. There is car park with greenery within the church compound. The space organization of the Shrine is shown in **Fig. 17b**.

The design of Shrine is based on African concepts. The architect integrated meaningfully African aesthetic values with Christian belief and practice. As a result the Shrine expressed message of Christ and his mother being quite at home in the African culture. Holy Scriptures identifies high mountains as place of God, just as most African culture also believe. The design concept of Shrine is achieved by having the statue of Mary stands at the top of one of the four central domes. The front façade of the Shrine is made up of three large cylindrical walls that look like the base of the three roof domes that give the appearance of the traditional houses. Separating the domes and the walls is a decorated circular canopy adorned in mosaic. **Fig. 18** shows external and internal parts of the Shrine.

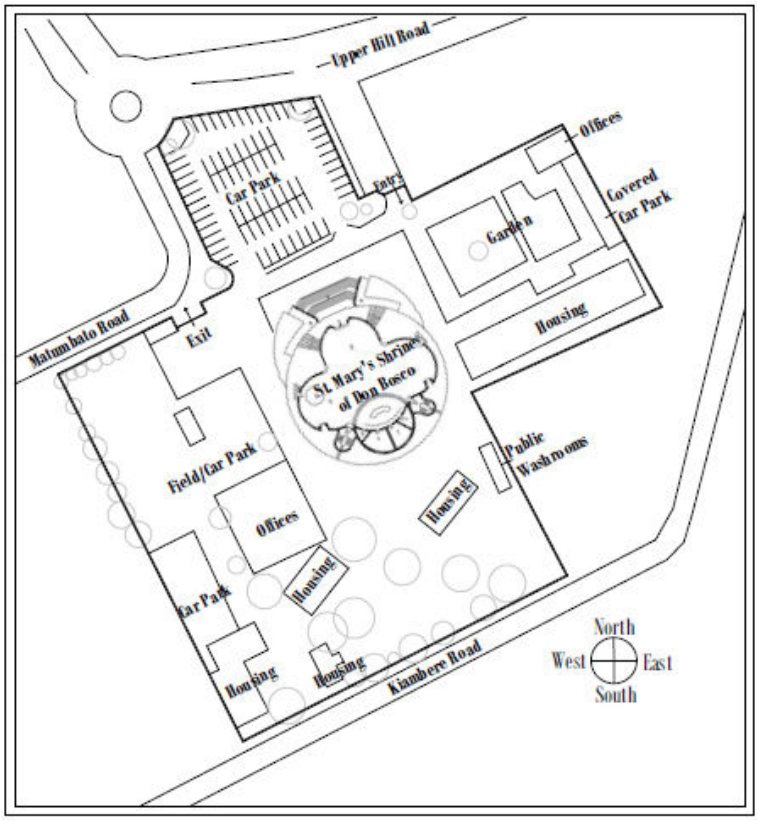
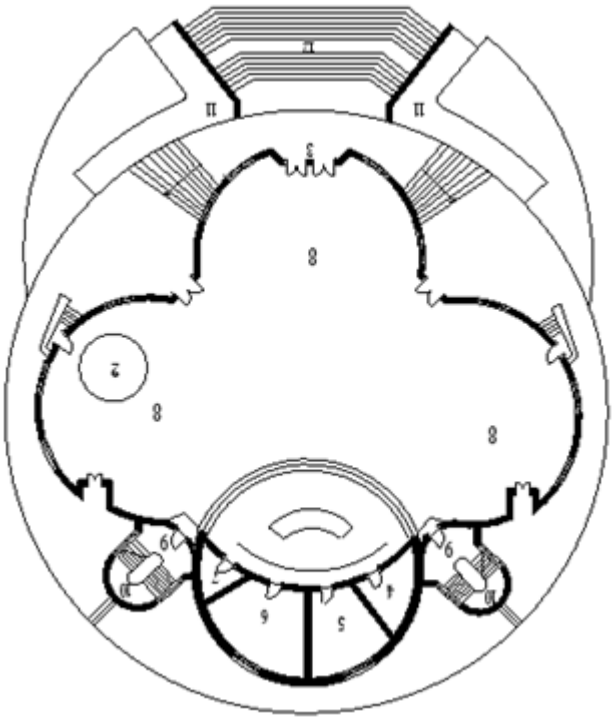


Fig. 17 a: St. Mary Shrine of Don Bosco location plan



1. **Altar**
2. **Baptistery**
3. **Main entrance**
4. **Reception**
5. **Shrine office**
6. **Main sacristy**
7. **Altar servers' vestry**
8. **Main seating**
9. **To crypt**
10. **To conference room**
11. **Ramp**
12. **Main stairway**

Fig. 17b: St. Mary Shrine of Don Bosco: Ground Floor Plan

Source: Author 2018

Fig. 18: St. Mary Shrine of Don Bosco: The symbolic African homestead houses represented on the roof

Source: Author 2018

Shelter Afrique Centre: The building is located at Nairobi Upper Hill area along Longonot road (**Fig. 19a).** FMA Tectura were the architects for Shelter Afrique Centre and it has seven storeys. It was constructed in 1991. It is the headquarter office for African Union. It deals with shelter issues in Africa. The building accommodates offices and conferencing facilities. **Figs. 19b & 20** present the space allocation for different functions and front façade of building respectively.

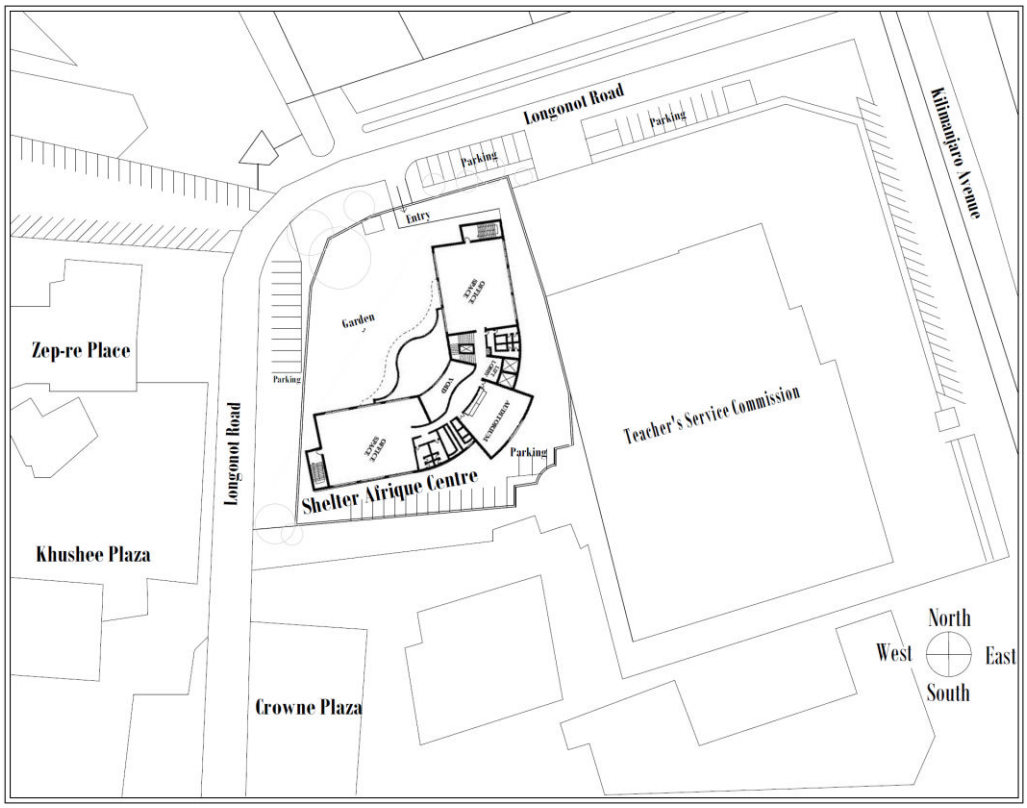


Fig.19a: Shelter Afrique Centre location plan

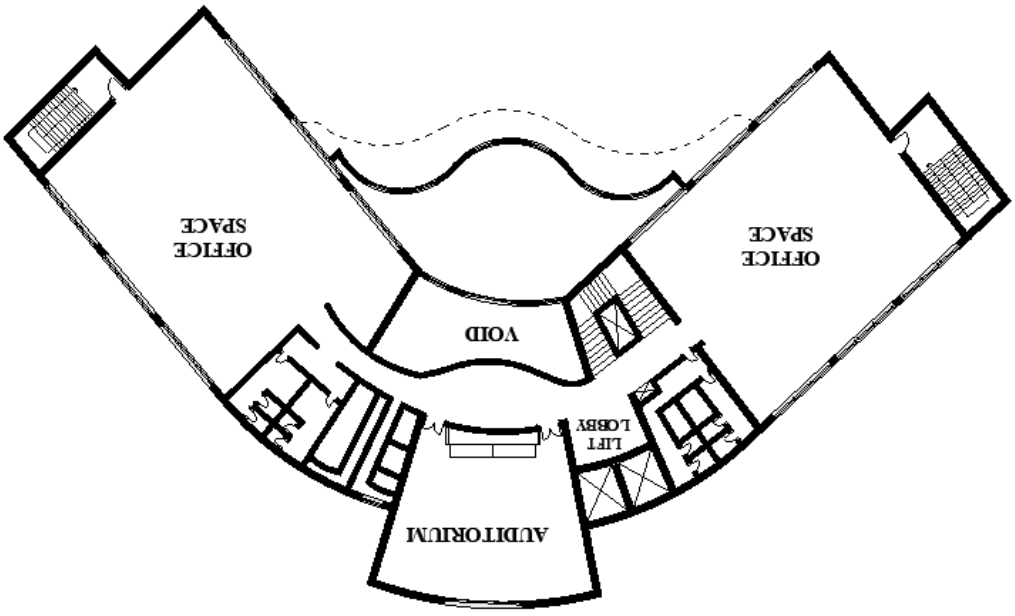


Fig. 19b: Shelter Afrique Centre: Ground Floor Plan

Source: Author 2018

Fig. 20: Shelter Afrique Centre: Built form character and boundary fence
Source: Author 2018

Fig. 21: A typical Agikuyu homestead exhibit at Bomas of Kenya
Source: Author 2018

Sense of a Place and Genius Loci

St Mary Shrine had the local traditions meshed well with modern style. St Mary Shrine utilized African traditional architectural concepts in the design of the Shrine form. The symbolism of the African homestead in its spatial organization and form was interpreted in the Shrine design (**Fig. 21**). African traditional principles as centrality, communalism, the proportional and scale of spaces, the sequence and the articulation of spaces as well as decorations were applied in the church architecture. The Shrine design appreciated the orderly spatial tradition concept of organic growth organization, communitarian and religious believes. However, the designer of the Shrine did not adequately synthesize the traditional form since it did not capture the simplicity and clarity of tradition form. The achieved form of the Shrine was too solid. The domes were direct replica of the African homestead house arrangement without questioning its symbolic relevance in African contemporary life.

Shelter Afrique Center shows the incorporation of traditional forms and details into office building to achieve a modern expression. The built form was inspired by the African traditional architecture of the Maasai *(en'kang)* of East Africa and Tuareg's (tent structure) of North Africa as explained by project FMA Tectura architects (**Figs. 22 a & b**). The use of the traditional forms was not explicit due to high standardization of the form making elements.

Ufungamano house did not have explicit source of its roots apart from its use of brick face cladding, scaled cuboid forms and response to climatic conditions. African traditions were never applied in the design of Ufungamano house form.

Fig. 22a: Tuareg tent in the Sahara
Source: Bolwidt 2019

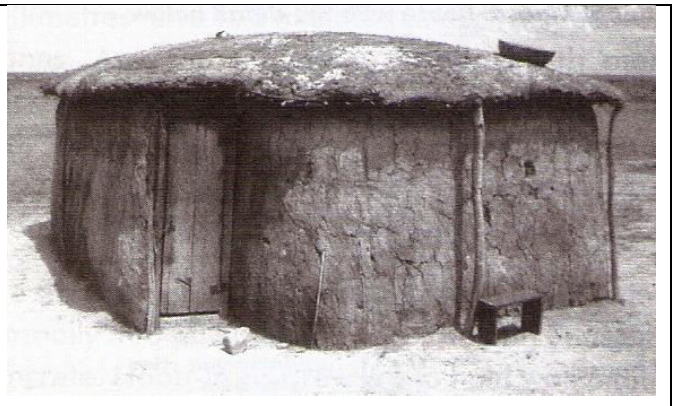


Fig. 22b: Maasai traditional house
Source: Rukwaro & Maina 2006

This study shows that designers of Shelter Afrique Centre and St Mary Shrine made an attempt to fuse local traditional and modern styles through recognizing the value of each other. The analyzed cases adapted traditional and modern details without clear comprehension on values being integrated and the nature of design details that balances the regional styles.

The study demonstrates that regional aesthetic and symbolism need clear fusion of modernism and traditional ideas to bring life the sense of a place. It is only through proper fusion process that an innovative architectural product resonates with the needs and aspirations of the people. The benefits and limitations of each style needs to be comprehended for proper synthesis of the regional form. The traditional and modern techniques and materials ought to inspire creativity and answer functional requirements of the designed building. The studied buildings did not inform much on places with meaning and the character of the site. The spirit of the site should be a source of character of the building.

Tactile and visual sensation

Ufungamano house and St Mary Shrine have optimized benefits of the new and local materials in achieving tactile and visual sensation as well as tectonic properties. The cases show use of new and local materials such as clear and tinted glass, brick, colored stone, reinforced concrete and timber in such a way to bring out tactile and visual sensation, as well as tectonic properties. The local materials such as wood, bricks and stone were used in simplified ways to bring out the modern aesthetic components in Ufungamano house and St. Mary Shrine cases. The bricks and stonework were simple unornamented and used in rectilinear masses and planes. Amsterdam Orphanage and Villa Mairea had also shown similar principles being achieved by the architects (**Figs. 2, 6, 16 & 23**). It was observed with the advent of innovations in different modern materials there has been emergence of new synthesized built forms that were compatible with local environment. Ufungamano house and Villa Mairea demonstrate the ubiquitous use of local building materials to create innovative forms derived from traditions.

Shelter Afrique Centre used modern materials such as glass, iron and concrete that gave the building clean lines lines and smooth planes. Shelter Afrique Centre emphasized more the expression of functional, technical and spatial properties than tectonic and tactile qualities as shown in the other two cases. The designer of Shelter Afrique Centre promoted scenography rather than tactile and tectonic qualities that give a visual appeal to the building.

St. Mary Shrine external view shows how different materials were used to create tactile and visual appeal of the building especially in the interior (**Fig. 24**). The Shrine was built using colored stone, paint, blue mosaic, timber doors, concrete structure, roof lighting strained glass, steel framed roof structure with colored roofing tile. Ufungamano house interior floor and wall finishes were polished brick (**Fig. 25**).

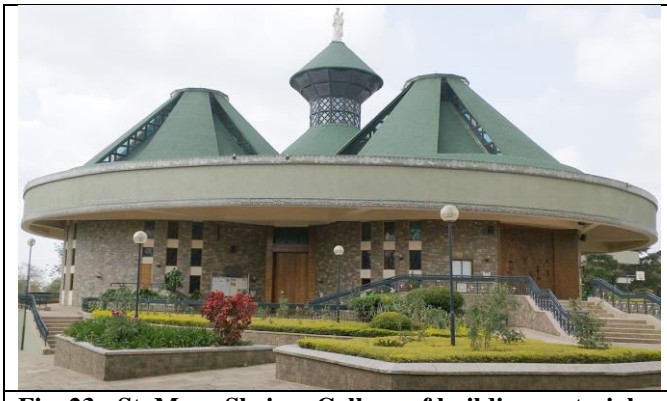


Fig. 23: St. Mary Shrine: Collage of building materials used to achieve tactile, visual and tectonic properties
Source: Author 2018

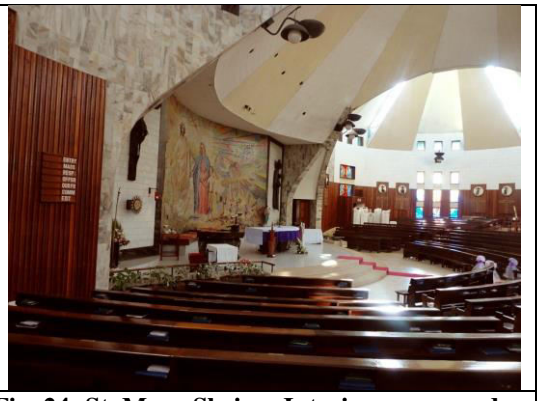


Fig. 24: St. Mary Shrine: Interior space made of collage of materials
Source: Author 2018

Fig. 25: Ufungamano house: Polished bricks finish on the wall and floor along the main passage for tactile and visual properties

Source: Author 2018

Response to Site Topography and Climate

Ufungamano house is oriented in North-West and South-East axis with glazed elevations oriented to the North South directions. The building plan has double-banked rooms with central corridors which are ventilated at high-level windows. This is evident at the office areas and the hostels. The corridor at hostel was normally poorly lit and ventilated since there were no direct openings to fresh air. Most of the habitable spaces received adequate daylight through glazed areas **(Figs. 15 a & b)**.

The Ufungamano site had fence hedges and preserved trees which gave shade in the external sitting areas. The site planning of the building recognized the slope of the site. Steps were used in the internal and external spaces to achieve change of levels of building. Gradation of ground was well done to the external areas to allow suitable slopes for human activities (**Fig. 16**).

Shelter Afrique Centre is flanked by Longonot road to the North and East, adjacent to Teacher Service Commission building to the South and to the West is Crowne plaza. The building is oriented to North-South direction but since it has a curvilinear floor plan, the direct radiation was reaching the rooms oriented to East-West façades. The building had over 75% of its façade made of curtain wall. The building envelope was not properly oriented to prevent glare and had no sun shading devices. The fenestrations were incorporated within the curtain wall hence allowing heat gain into the building. This has resorted in installation of mechanical ventilation systems in the building to improve thermal comfort in the interior spaces. Air conditioners are visible to the western façade of **Fig. 26**. These thermal control systems increased the cost of maintenance of the building. The offices were double banked with a central corridor that terminated at fire escape staircases (**Fig.19b**). The curved roof was made of steel structure and corrugated iron sheets with insulated underlying that kept off direct heat gain in offices at seventh floor **(Fig. 26)**.

The building is located on a small plot with about 75% plot coverage. The compound was flat, had limited vegetation, and had masonry and steel fence (**Fig. 26**).

Fig. 26: Shelter Afrique Centre: Mechanical ventilation systems along the western façade

Source: Author 2018

The St. Mary Shrine form has a curvilinear geometry with a deep reinforced concrete slab eaves shading the windows but not those to the western façade for the direct sun in the afternoons. The facades had 20% of glazed surface. The entrance of the building was oriented North-South direction. This orientation related also to the entrance-altar axis. The building was made of thick masonry walls and concrete beams. The interior of the building was painted white which was good for reflection of solar radiation. The building envelope was made of a high thermal mass and was appropriate for increasing thermal gain time lag. The high and low level windows allowed ambient light to penetrate into central seating areas within the building. There are fire escape doors either side of the front at the altar. The spaces were single banking thus allowing for cross ventilation to take place within the building (**Fig. 24**).

The site planning of the building conformed to the slope of the land towards the altar area. Beneath the altar there was half-basement where the conference room and crypt were located. The building accessibility to different levels was achieved by providing steps and ramps. The external areas have parking and limited plantings that articulated passage around the compound (**Figs.17a &b**).

The studied building had responded differently to the topographic characteristics and climatic conditions of the site. Ufungamano house just as Amsterdam Orphanage had windows oriented to north-south direction and the buildings followed the slope of the site (**Fig. 16**). The Amsterdam Orphanage had internal courts that shaded the internal spaces and it was also a low-lying building on a flat site (**Figs. 1 & 2**).

Openness to the Roots and Other Sources of Archetypes

The analysis of case studies indicates that architects of different projects appropriated relevant ideas from the local tradition and modern styles to a certain extent. The cases discussed show that critical regionalism archetype creates a venue to develop new values and modernize traditions of local architecture. The designer self-critique on local traditions allowed them to realize the existing limitations of local traditions and to open up to fresh experiences. This is demonstrated by St. Mary shrine where form was interpreted from the African homestead and house forms. The cultural symbolism of the forms was advance to the Shrine form. In effect the designer of the Shrine recognized local tradition and modern styles that were beneficial to Christian community being designed for. The designer developed principles and concepts that advance the state of community culture.

The architect of Ufungamano House created a meeting and accommodation facilities for university students. The specific cultural constants that informed this building design included creating a gathering and scaled spaces for people, and providing required privacy levels for activities. The building fulfilled the functional and aesthetics requirements of the users. The architect relied on modern principles for spatial form and organization. He responded appropriately to the site topographic and climatic conditions. In this case the architect considered the university students having come from different cultural backgrounds hence needed a universal approach to the spatial organization and form. Through education, cultures become dynamic, thus people acquire new values and it would have been wrong to return people to the past. The architects understood the cultural and economic changes of users before prescribing the contemporary regional solution in architecture.

Shelter Afrique Centre is a modern office building where most of materials used were modern. They included reinforced concrete, curved iron sheets on steel trusses, and glass on the curtain wall **(Fig. 26)**. The building does not capture the local tactile and tectonic identities. Modern principles were dominant in its expression. The building had clean lines, curtain wall, mechanical ventilation system, standardized building elements and used modern building materials. Standardization in building design was abstract, rational and fitted the industrial products that were not inspired by nature's biological diversity and human experiences in space.

Finally, this analysis of the three cases show that the different designers had challenges and successes in creating regional architecture in the City of Nairobi. The main challenge was on how to integration of modern (Western) values with the local cultural context. The main success was fulfilling the functionality requirements of the users of the building.

Guidelines for Critical Regionalism Architecture

The literature review and evaluated case studies indicated the guidelines for achieving critical regionalism architecture. Regional architecture is well guided by having an open interpretation of global perspective in modernizing traditional architecture. This is achieved by identifying, criticizing and synthesizing and probing limitations of and opportunities of local traditional and modern styles to draw the benefits of either in developing a regional architecture. It is important to adapt an integrated modern and traditional ideology that derives production of the regional aesthetic and symbolic architecture based on dynamic cultural, economic and social needs of the people and climate of a place. The modern regional design expressions should be adaptive to changes in the society. It is a delicate synthesis that transforms into a hybrid configuration with new spatial organization and forms into relevant structures of age. Finally it is of essence to focusing on deliverable framework on how fused traditional and modern constants can be applied in regional building designs.

CONCLUSION

The purpose of this study was to establish whether the buildings in Nairobi are applying the critical regionalism principles in their designs. The summary findings of the cases evaluated are presented below. The findings of this study indicate that some principles were successful applied while others were not. The spatial layouts of functional spaces were well interlinked through corridors and lobbies in all cases. All cases had well-articulated main entrance which related well to the circulation to different spaces in the building. St. Mary Shrine and Shelter Afrique Centre had used Africa traditional forms in their envelope design. The simplicity and clarity of tradition forms were not adequately synthesized in their modern forms. The architects imitated traditional forms without proper interpretation of the traditional constants in search for equivalence expressions in modern regional terms.

The architects did not fully comprehend the architectural problem s/he was dealing with and the limitations of the local tradition being designed for as well as being open to the benefits of universalism. There was no proper interpretation of traditional and modern ideas in Shelter Afrique Centre and Ufungamano house on authentic and aesthetic values of local traditions.

Both modern and local materials were used in the construction of the buildings. St. Mary Shrine and Ufungamano house predominantly used the local materials with less glass utilization in facades that was proper approach for glare and solar controls. Shelter Afrique Centre was a framed structure with much of façade being curtain wall. Buildings that used more solid made in their façade and less glass seems express more tactile and visual sensation in built form. All the cases had their orientation to North-South direction, but due their geometry the building glazed areas still received direct sun. This was evident in Shelter Afrique Centre and St. Mary Shrine. Glare and solar heat gain were challenges in these buildings. As a result, Shelter Afrique Centre had installed mechanical ventilation systems to create thermal comfort in the offices. The same building had not installed solar control devices to minimize solar radiation gain into the habitable spaces. St. Mary Shrine had deep concrete slab eaves that protected the glazed areas in most part of the day from solar radiation penetration and glare into the interior of buildings. The glazed areas of Ufungamano house were oriented North-South and this allowed natural lighting and ventilation. These findings show that the principles dealing with the contextual issues of a place were not adequately addressed and hence the resultant buildings lack of the authentic regional aesthetic and symbolism.

Finally, the study reveals that critical regionalism is a direct result of innovation by producing technological, social and ecological solutions to existing problems of international style being practiced locally. The significance of critical regionalism is determined through its dynamic abilities, resultant benefits and the ease of its application in a bid to provide solution for the different important environmental, economic, physical and cultural challenges in different places. The self-realization and positive attitude towards traditional and modern forms and values is critical for regional architecture. Advocating for a return to the source through modern styles to establish the appropriate regional architecture with acknowledgement of the needs and aspirations of people in current dispensation and age, physical and cultural parameters is the new direction to regional architecture in Nairobi city and Kenya as whole.

RECOMMENDATIONS

This study has identified the strength and inadequacies of regional designs in Nairobi City. The major role of architect in developing a progressive regional architecture is to comprehend the local precedents. By doing so, the architect shall be sensitive to the contextual solutions of the adapted modern systems. It is duty of the architect to develop new typologies that evoke growth and change of the local traditions. Drawing from the results of this study, the researcher presents the following suggestions that may guide development of critical regional architecture in Nairobi City;

Spatial form and organization

i) The spatial design should allow single banking and easy circulation in the building.
ii) Provide inter linkage of spaces that allow high level of interaction.
iii) Integrate tradition elements in the façade and envelope design of the building.
iv) Use local sourced materials in the design to give character of the region.

Sense of a Place and Genius Loci

i) Landscape, vegetation, and the cultural practices, among other things, need to be considered to help to create a sense of place with clear boundaries.
ii) Designers should concern themselves with influencing the spirit of the place from the materials they choose, setting out spatial relationships and the building forms to express the cultural idioms in the design details all in the desire to influence a place with meaning
iii) Standardization in building design should be inspired by nature's biological diversity and local precedents.
iv) The designer ought to discover what the place symbolizes in nature (*spirit of a place*) so as to draw the correct meaning in the interpretation of the built form.
v) Building should take something of its character from the site. Thus nature and culture should inform the symbolism and aesthetic of the building design.

Tactile and Visual Sensation

vi) Tactile sensation in space should be achieved through use of collage of ideas to synthesize the materials with precision design detail that effect human experiences in space needs to be put in place.
vii) Visual sensation should be achieved by interlinking indoor spaces with the external landscaping, use of proper furnishing, providing proper scaled arrival and transitional spaces; and well lit porous spaces.

Response to the Site Topography and Climate

viii) Architectural designs should be informed by context of its intermediate environment.
ix) Site planning should allow ease of flow of air movement as well as ensure building respond to the slope.

x) Building fenestrations should be orientated North/South direction to prevent direct solar penetrating the interior spaces of building.
xi) Solar control devices should be installed on East/West facades with fenestrations to protect the direct solar radiation penetrating into the internal spaces.
xii) Operable windows in the direction of the wind should be fixed to allow maximum natural ventilation.
xiii) Landscaping around the building should be incorporated to the site to improve micro-climate of the environment.

Openness to the Roots and Other Sources of Archetypes

xiv) Designers should dialogue different building archetypes (modern and traditional) in order to develop regional architecture.
xv) Designers should reach out for the roots as well as remaining modern in the selection of materials, symbols, spatial form and organization, and design elements among others things are of great important in achieving a building design.
xvi) Building design should respond to demands of the time and change in the society. The changes introduced by new constraints and opportunities on offer require the designer to adapt to and inform building design.
xvii) Designs should defy the simplicity of modernist designation or arbitrarily mass production of building.
xviii) Designs should remain relevant to the ever-changing realities of the modern world.

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