International Journal of Architecture, Arts and Applications
2025, Vol. 11, No. 3, pp. 151-168
https://doi.org/10.11648/j.ijaaa.20251103.16

Research Article

A Mobile Heritage: Reading the Architecture of Ijo Migrant Fishermen

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Abstract

This article is part of a much larger study conducted first in 2008 and with a follow up study in 2024. It investigates the vernacular architecture of the Ijo migrant fishermen in Nigeria's Niger Delta regions. Using an in-depth case study approach, interviews and focus group strategies as methodology, this paper examines new and old concepts in nomadology such as migrant labour mindset and anticipated mobility as the main generative concepts and underlying philosophies that have influenced the production of this unique dwelling type. The paper also discusses certain attributes in terms of spatial layout, material use, construction techniques and method of abandonment of the dwelling, observed during survey, which may qualify it to be subsumed under the nomadic architecture category.

Keywords

Architecture, Culture, Mobility, Migrant Fishermen, Ijọ, Nomadology

1. Introduction

In the book 'Drifting Architecture and Migrancy', Cairns posited that the term migrancy is synonymous with terms such as uprootedness or displacement, mobility or movement and the transience or impermanence of individual and groups of people in a location [12]. He dismisses the binary relations between the settlement, stability and permanence of architecture and the movement, flux and fluidity, and possibly the ephemerality of migrancy. Therein lies the dichotomy and yet the symbiotic relationship of these two seemingly strange bed-fellows that have somehow thrived even before the Neolithic era.

Although, previous studies on this topic [6, 7] have supported other earlier studies in architectural anthropology and cultural geography, to repeatedly subsume the migrant fisher under the larger nomad category, Cairns believes otherwise. He suggests that since migrancy is shaped by expectations of eventual settlement, where immigrants are accommodated into host communities, the migrant was not the same as the nomad who did not seek settlement. Deluze and Guattari aptly describe the nomadic state as one of constant deterritorialization, whereas the migrant undergoes reterritorialization following seasons of periodic deterritorialization. Deleuze and Guattari are the founders and main proponents of 'nomad thought' or 'Nomadology' [14, 15]. This study examines this concept through their lenses, and discusses how architecture, produced under these circumstances, has been intuitively yet intentionally 'scripted' into migrancy by serving as a tool for the deterritorialization and reterritorialization of this unique

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Received: 17 June 2025; **Accepted:** 23 July 2025; **Published:** 18 August 2025

group of people.

As earlier stated above, and also discussed in a recent article, ephemerality, which talks of transience or temporariness, like every other aspect of African architecture is not just intuitive but also intentional [10]. This article argues that the architecture that forms the subject of this paper is based on concepts in Nomadology, inspired by the need for mobility, which in turn births architectural temporality.

2. Methodology

In discussing methodology, it is important to first understand the context of the study since the interrelation of people and their environment is predominantly context bound. This study entails a fusion of the fields of *vernacular architecture*, *cultural* and *migration studies* that find a point of convergence on the subject of dwelling or shelter. In all three fields of study, issues that relate to the social, economic and cultural aspects of the society are paramount. For this aspect of the study, interviews, focus groups and case study research strategies were adopted.

A one-on-one structured interview technique was adopted to obtain the in-depth information necessary for a study such as this and focus group discussions also proved very useful at the fishing camps. The case study data used for this study was obtained from the earlier 2008 study and the follow up study of 2024. A total of 74 fishing camps were visited within communities in Bayelsa State and the Bakassi Peninsula to obtain data on the dwellings of these Ijo migrant fishermen. One of the main forms of data obtained from the fishing camps were annotated and measured drawings. These drawings produced during fieldwork were expected to cover three main areas of interest:

1) *Camp layout and planning pattern* – In this aspect the layout of the various buildings that make up the camp was drawn to ascertain details such as; proximity of various functional spaces and connectivity between various units in the base camp. Also, the orientation of the building windward or leeward, the river routes and how the current flows in relation to the base camp setting are shown through these sketches.
2) *Design of dwellings* – Detailed annotated sketches were made of the different house types and out-buildings within the fishing camp. The arrangement of functional spaces within the dwelling, furniture allocations, placement of fenestration and spaces allocated for specific activities were recorded. Also recorded were the traditional linear measurements and anthropometrics used. This is to further elucidate the concept of dwelling as perceived by the migrant fisherman.
3) *Material selection and construction techniques* – The types of materials used and their method of usage were also recorded in addition to the different techniques employed in constructing the dwelling patterns.

3. Literature Review

3.1. Mobility, Nomadism and Migrant Fishing

In the last three decades, nomadism as an all-encompassing expression of a specific lifestyle involving spatial mobility has increasingly required typological clarification. The synonymy of the term with migrating pastoralists and the often-resulting confusion generated may have influenced anthropologists and archaeologists alike to continually re-assess the term. As a result, the use of the term 'mobility,' in the description of human spatial movement is now prevalent across the broader spectrum of study. As such, a mobile society is an all-encompassing term for groups that practice some form of mobility as part of their lifestyles. This has been further categorized into food-producing societies and non-food-producing societies [18, 46].

Non-food-producing communities were originally termed as 'wanderers' or cumulatively referred to as 'Gypsies' or 'Vagrants' and 'Peripatetics'. The Peripatetics are distinguished from wanderers, gypsies or vagrants by characteristically having a more defined and regular pattern of mobility, place of abode and profession, or mode of economic adaptability when the need arises [46]. Food-producing mobile communities on the other hand are referred to universally as nomads, the most common of which is the pastoral nomad. Other societies listed as food-producers include; migrant fishermen, hunters and gatherers and shifting cultivators.

Rao states that the primary subsistence resource at any given point of time can be taken as a criterion of definition and distinction [46]. This method of analysing mobile societies can also prove useful in properly categorising the form of mobility a group practices, based on their means of primary subsistence. Hence, those who fish or gather other forms of aquatic resources can then be described as maritime nomads, hunter-gatherer-fishers and aquatic or coastal hunter-gatherers, since fishing is their source of primary subsistence [56].

Based on earlier studies, there are other criteria for which mobile societies could be subsumed. One of such criteria could be building dwellings. Here societies could be grouped together based on the fact that they build their own dwellings in the course of their seasonal movements. Gypsies, Vagrants and Peripatetics on one hand, are not often associated with building fixed dwellings while moving. In some occasions they do not even live in any form of fixed shelter but are more associated with the use of wagons or caravans. On the other hand, migrant fishermen, nomads and shifting cultivators are known to build temporary dwellings in the course of their seasonal movements [6].

3.2. Migrant Workers and the Migratory Fishing Cycle

The business of migrant fishing can also be seen from the

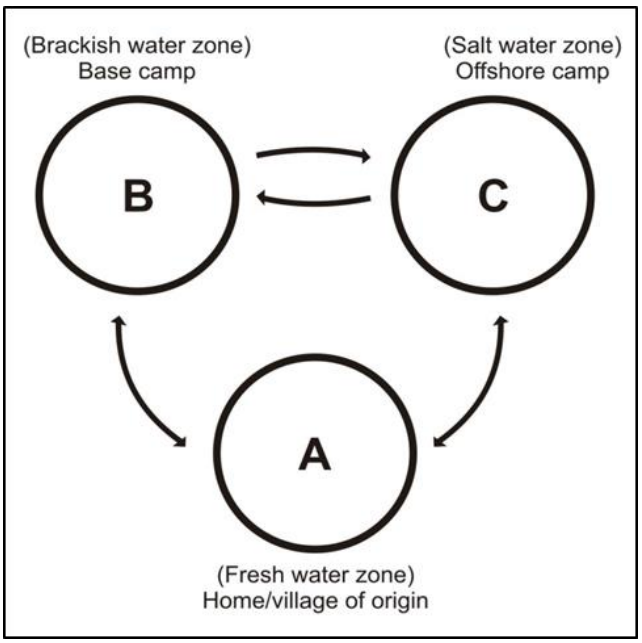
viewpoint of the labour migrant. The connection between labour migration and fisher-men was created by Diaw when he examined the social and production relationships amongst artisanal fishermen of West Africa. He observed that the migration patterns practiced by these fishermen were related to two essential forms of movement in fisheries, which are, "Regulated Fishing Migrations" and "Labour Migrations" [16]. Another scholar who has carried out extensive studies on labour migration in Africa, also observed that large scale internal migration was carried out by nomads, semi-nomads and fishermen, in the West African sub-region [1]. Similarly, others also investigated and confirmed the existence of work migration among fishermen from Niger's Central Delta regions [27]. These migrant fishermen also extensively practice internal and international migration as much as the conventional migrant workers. Studies conducted by [42, 49, 47] and more recently by [22, 57] amongst others, further confirm these migration patterns.

Ezewu and Tahir's study show that the Ijo migrant fishermen embark on two forms of migration annually which are; an inter-regional and sometimes transnational migration and an internal or inter-location form of migration [17]. The first involves complete uprooting and relocation to another geographic region and sometimes country, while in the second involves various short migratory trips to and from fishing sites within the region they relocated to, based on the different fishing seasons. Both forms of migration may also involve short return visits to their villages of origin annually or whenever the need arises [7, 23].

Sikoki and Otobotekere are of the opinion that these fishermen take advantage of seasonal distribution patterns of fish movements and the migration paths that are possibly influenced by three main factors; moon phases; water currents; and fish behaviour [51]. The moon phases are considered to be instrumental to the introduction of the larger pelagic fish species into the region's waters, while water currents can restrict fishing operations and cause fish to stay more at the bottom where it is calmer. As a result, the fishermen prefer migrating to the lagoons, creeks and estuaries around the brackish water zones during rainy seasons because of the rough sea conditions in the salt water/marine zones [51].

Figure 1 below shows a cyclical pattern mapping the typical movements of an Ijo migrant fisherman as adapted from the study above [17]. This indicates a typical inter-location migratory pattern following the different seasons. Three main locations were identified where camps are usually set up for a fishing season. These include the brackish water, salt water/marine and the fresh water zones. Ben-Yami describes these locations as permanent villages, semi-permanent base camps and temporary fishing annexes [5]. The arrows serving as link between the boxes serve to explain the migration concept where (A) is the village of origin, and (B) or (C) depending on the migration pattern of the fishermen could be the base camp or the off-shore camp (See Figure 1 below).

The permanent villages of origin are large communities 'usually along major waterways' that accommodate both a fishing and non-fishing population. The semi-permanent settlements or base camps although transit settlements, can also be used for extended stay at certain times. They are used as base camps from which the fishermen can access the different frontiers of their foraging grounds and still return in reasonable time. They are inhabited mainly by fishermen of the migrant class but can also accommodate non-migrant fishermen as well. All fishing activities from catch to processing are carried out in these base camps and serve as collection spots for fishmongers who come to buy the fish.



(Source: adapted from 17)

Figure 1. *The Annual fishing cycle of Ijo migrant fishermen.*

However, the model is not rigid as those who conducted the study of migrant fishing patterns amongst the Eastern Ijo tribes, discovered two other types of migration cycles. The first involves reaching three locations in which they inhabit three different dwellings, while the second involves movement to just two locations, which require living in two residences during each annual fishing cycle.

1) Village of Origin → Base Camp → Offshore Camp
2) Village of Origin → Base Camp or Offshore Camp

Those who practice the 'village of origin' to 'Offshore' cycle do not use or build base camps. Similarly, the fishermen that practice the 'village of origin' to 'base camp' cycle do not build offshore camps. In this study, the focus is on migrant fishermen who practice either the three-part migration cycle or at least the 'base camp' to 'village of origin' cycle. This is because the base camp is the primary settlement from which architectural data for this study was obtained.

3.3. Nomadology, Anticipated Mobility and Architecture

Nomadology is the idea of a movement-driven culture. Most of what is known in the past as nomads, suggest that these mobile societies live in vernacular environments. However, new interests and studies in nomadology does not necessarily suggests that mobile societies are synonymous with the vernacular. For instance, Robert Kronenburg's works on Portable Architecture [33, 32, 30] and Transportable Environments [31, 34, 35] are a compilation of studies on both vernacular and contemporary architecture, which are either mobile or suited to mobile societies. This research combined with other works on nomadic architecture presents the idea of dwellings suited to mobility as ephemeral and temporal in some cases; and collapsible and transportable in other cases.

Although there are new interests in nomadology, the issues of ephemerality, and movement in their architecture remain the same. Scholars that have carried out research on nomadology as a concept in architecture include [13, 4, 53]. There have also been studies highlighting the anthropological and architectural aspects of nomadic pastoralists' lifestyles [19] amongst others and those of the architecture of migrant fishermen or water nomads [39, 6, 50].

Residential mobility is key to livelihood survival amongst all nomads and hunter gatherers. Rettberg calls mobility and flexibility the two most important skills pastoralists need to have for survival, with frequency of movement requiring careful planning [48]. Temporary fishing camps which constitute the dwellings of most of these fishermen are often set-up based on their anticipation of mobility. Anticipation of mobility is the foreseeable length of time occupants expect to stay at a site before movement. It differs from the concept of anticipated use life which is concerned primarily with the length of time a building can be effectively used before it becomes uninhabitable. Anticipated use life of a building was examined in theory of architectural design [37], where a correlation was drawn between the investment of time and cost in dwellings and maintenance demands of such dwellings in the long run. Anticipation of mobility was developed by Kent from a study of hunter-gatherer societies in the Kalahari regions of Botswana [29].

Following the issue of anticipated mobility, different levels of residential mobility linked to duration of sojourn, based on different time frames have been identified. A model developed by Kent and Vierich of anticipated length of stay as against actual length of stay, was designed in three categories: short stay, medium stay, and long stay [28]. This model was adopted in identifying different time-influenced migrant fishing practices in the Niger delta and subsequently stratifying them accordingly. The sole criterion is the length of time spent at a fishing ground or the length of time fishermen anticipate they will spend there before moving away. Other studies among Ijo migrant fishermen revealed that some migrant fishermen stay from between one month to four years, in a particular location [43]. The survey conducted for this study also revealed other shorter time frames (See table 1 below).

Table 1. *Description of anticipated mobility types.*

Length of time	Anticipated mobility
2 days – 14 days	very short anticipated stay
15 days – 3 months	short anticipated stay
3 months – 6 months	medium anticipated stay
Over 6 months	long anticipated stay

(Source: Adapted from [28])

The length of time given in the table is based on the results of the 2009 and 2024 survey carried out during fieldwork for this research. It is the anticipated mobility period, but does not necessarily reflect the actual mobility period that elapses at a particular location. This is because, actual length of stay is often dependent on how fast a catch is made, favourability of weather and tide situations, and other unforeseen circumstances. Although Okara puts the short term stay at between one to three months, her research concurs with the time frame for the medium anticipated stay [43], but Kent does not include the very short stay category [29]. This is however a common feature amongst Ijo migrant fishermen. In the Ijo language, the two-day fishing trip is referred to as *dinbaitoru fishing*. The *dinbaitoru* or overnight fishing as the name implies, involves movement to the selected fishing ground, where fishing is carried out through the night, before returning to the base camp, the following day.

Each period of anticipated mobility is important, as it directly affects the time invested in the design, form and construction of the dwelling, in the fishing camp. It determines to a large extent, the size of the built form; the number of units considered necessary to construct in the area; and the amount of design detail put into the project. The two days to two weeks anticipated mobility for instance, may or may not require the construction of a dwelling around the fishing grounds. But any stay beyond 14 days will require the use of a dwelling, whether time share for an existing one or building of a new one.

Sites where migrant base camps are located are usually handed-down through subsequent generations to direct descendants or relatives. Although a strong sense of place attachment may develop, no attempt is made at erecting buildings or modifying existing ones using materials or methods that suggest permanence of any sort. These values shape their worldview and particularly their dwelling types. During fieldwork, one of the questions in the semi-structured interview was to understand the intentions behind the architecture of the migrant fisher base camps. Three main responses were derived from the fishermen: firstly, the dwellings were de-

signed and built as cost saving measures. Secondly, the dwellings were built simply based on ideas or observed models handed-down by parents or grandparents. Lastly, the dwellings are simply temporary structures, with the possibility of abandonment when fish stock have depleted or in the event of any emergency. Most of the respondents gave a combination of all three reasons for the outcome of the base camp dwellings.

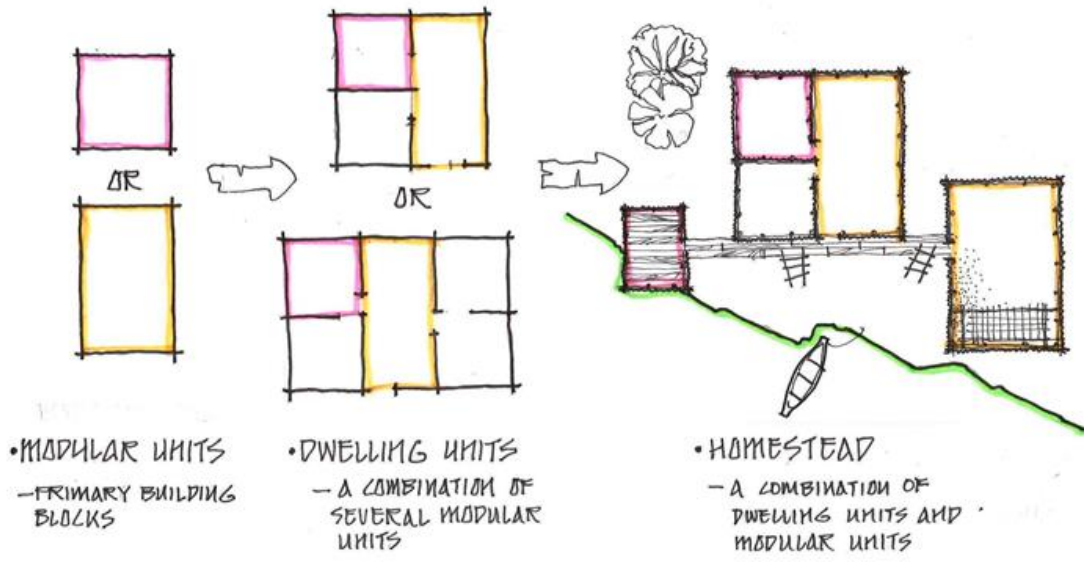
4. A Reading of Ijo Migrant Architecture from First Principles

Kunze's treatise on reading is fundamental in creating an analogy of the concept of reading as it applies to architecture [36]. In some earlier articles, architectural reading was described as a consumption of 3- or 4-dimensional reality to create boundless virtuality of the unpresent (conceived/unbuilt) as well as gaining a deeper understanding of the present (built) [9, 55, 21, 24, 44]. In reading the Ijo migrant fisher architecture, the layers are peeled back and deconstructed to understand the essence and underlying principles on which this form of architecture is built. In this study, three basic principles on which the Ijo migrant fishing architecture is built has been identified. These are the modular system, the grid system and the anthropometric scale. These principles are simple, replicable and allow for ease and speed of construction, as well as disassembling.

4.1. The Modular System

Architecture is no stranger to modularity, going back as far as the classical period. It is a system based on the grouping of components called modules which interact or interface by coupling or de-coupling without affecting each other [54]. The modular system in architecture also allows for economy and efficiency in the design and realization of architectural projects [2].

The modular system of the Ijo migrant architecture is based on a three-tier approach: Modules – dwelling unit – homestead (see Figure 2 below). This is similar to the cell – matrix – compound pattern identified by Preziosi [45]. The module in this context is regarded as a 'primary building block', which is the basic unit of assemblage in architecture and lends itself to any cultural context. This means that the basic module could assume any geometric form if bounded, based on how the culture defines a spatial unit. For the *endidougbene ware* (base camp dwelling), modules are mainly rectangular or square shaped spaces. Modules are combined together to form a dwelling unit. However, a dwelling unit may also consist of a single module, enlarged or reduced to its intended purpose (see Figure 2). Different modules though geometrically similar may have varying uses. Lastly, an agglomeration of dwelling units and modular or other dwelling units makes a homestead. However, a homestead may comprise of as little as a single dwelling unit to as much as several dwelling units.

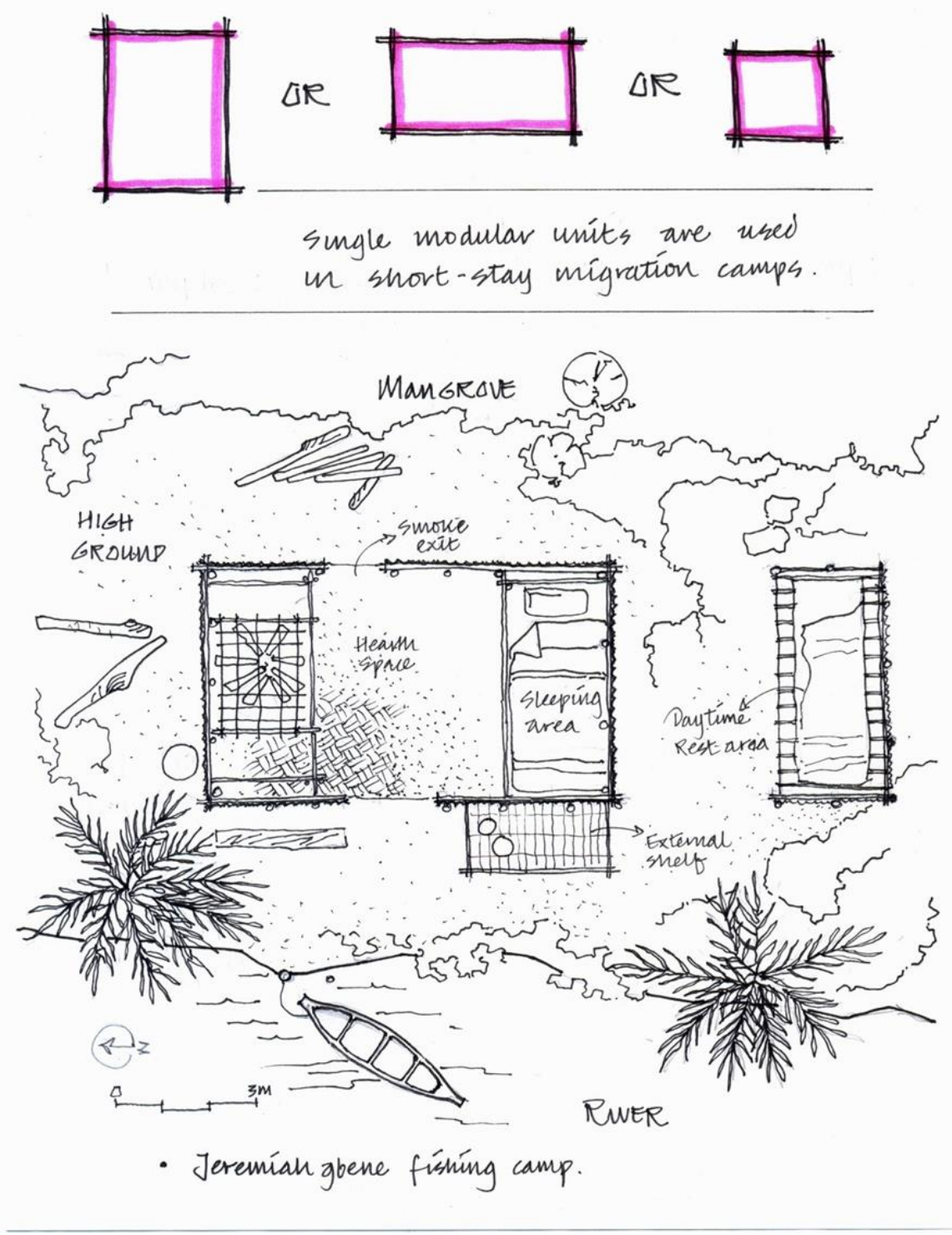


Source: Author

Figure 2. *Modules, Dwelling units and homestead, 2011.*

In Ijo migrant fishing architecture, the use of the rectilinear module has been identified in this study in its three basic forms these are; the single, double, and triple modular units (see Figures 3, 4 & 5 below).

4.1.1. Single Modules

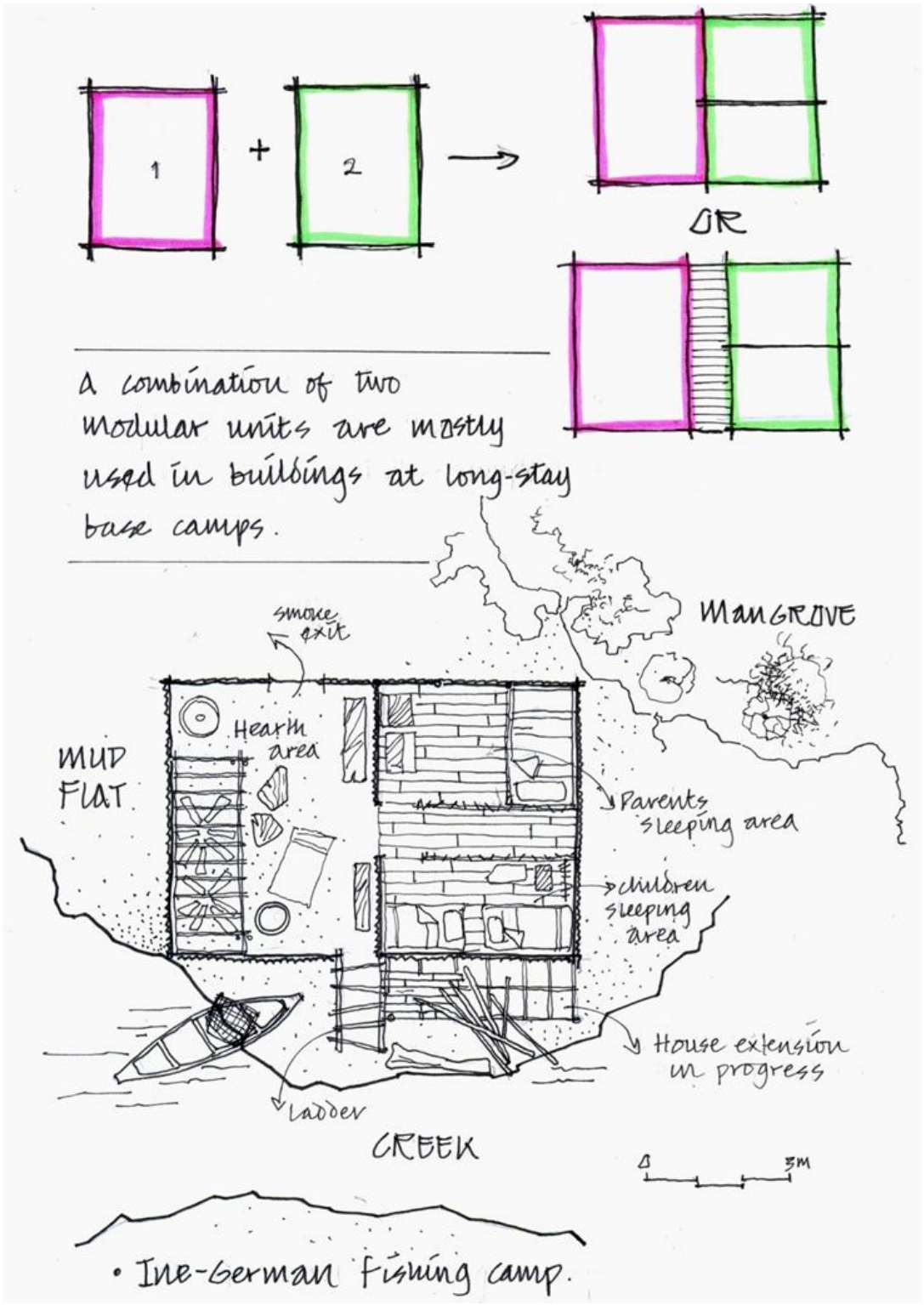


Source: Author

Figure 3. *Example of single modules used in single homestead base camps, 2011.*

The single module is often used in base camps, when there is a need to consolidate all services or functional units into a single space. This is both a cost and time saving arrangement. Single modules are also used in offshore migration camps as well, as they are ideal for short stay migration trips.

4.1.2. Double Modules

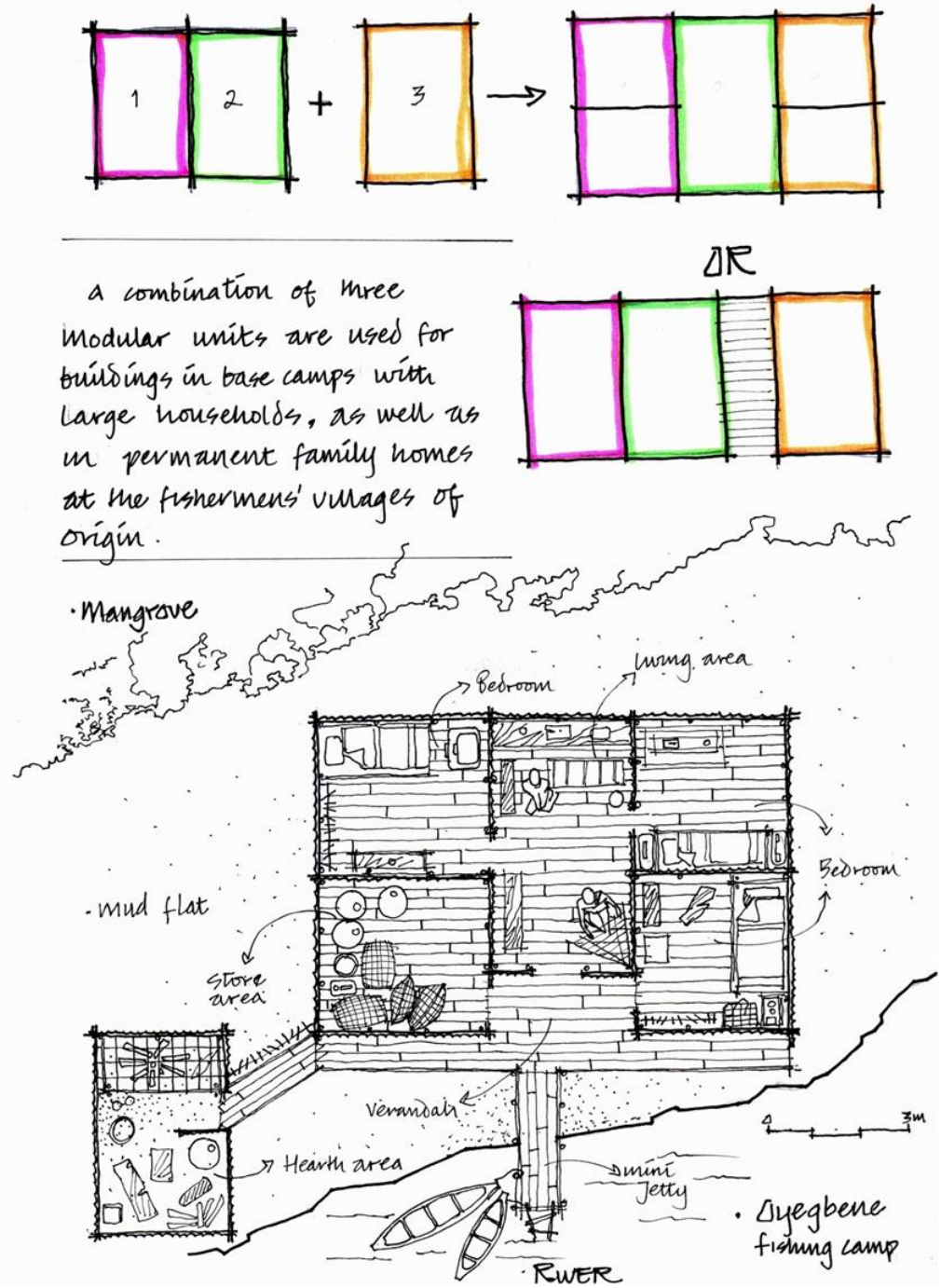


(Source: Author)

Figure 4. *Example of a combination of two modules used in single homestead base camps, 2011.*

Double modules are mostly used for dwelling units as this provides spaces for the two main (core) functions in the base camps, which are the sleeping area and hearth space.

4.1.3. Triple Modules



(Source: Author)

Figure 5. *Example of a combination of three modular units used in base camps, 2011.*

The triple modular unit is adopted mainly by larger households who require more sleeping areas, extra storage space or a living area.

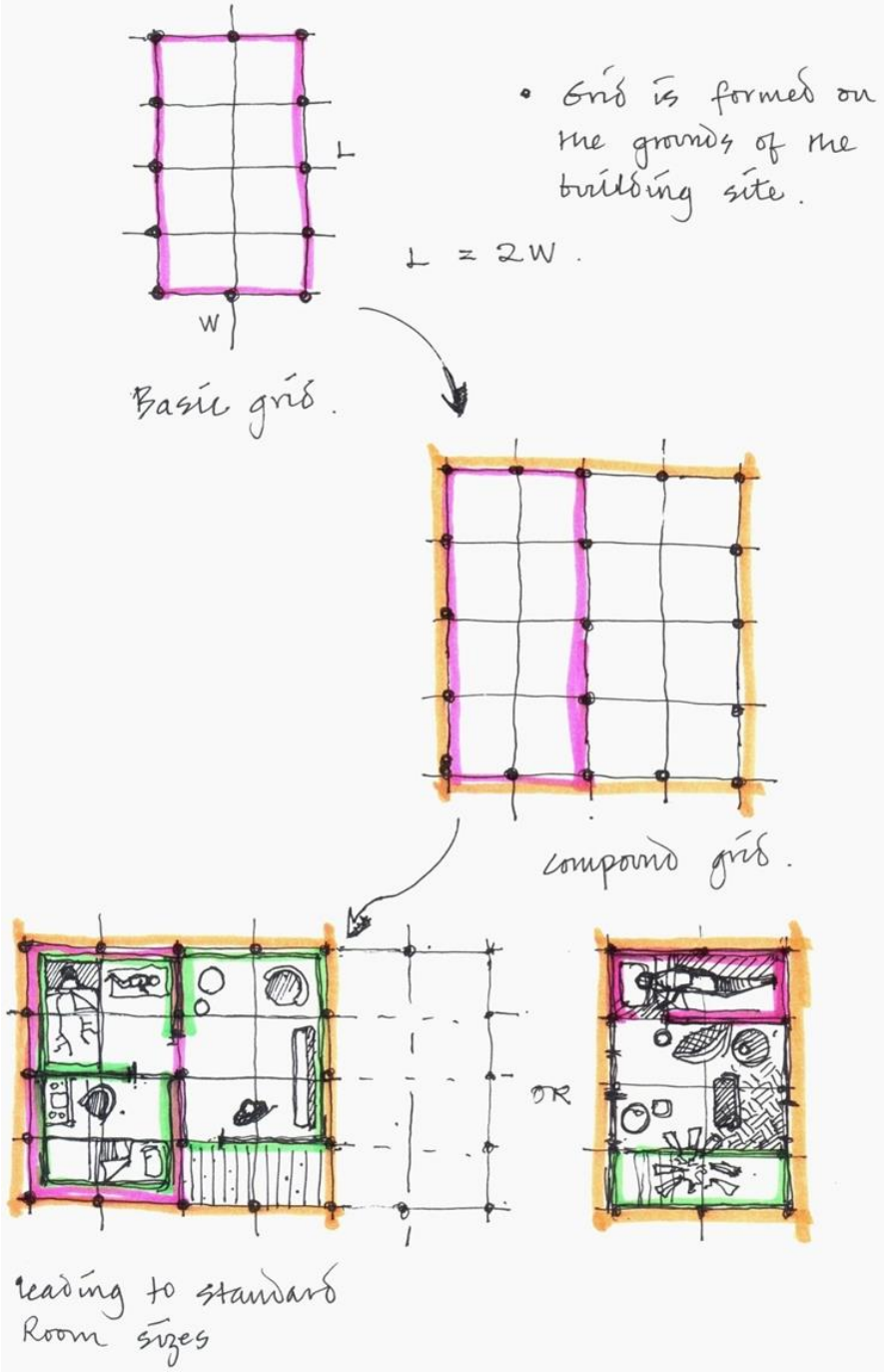
4.2. The Grid System

Having established the stages of modular development in migrant fisher architecture, from the most basic modular unit to the more compound homestead, understanding the principles behind the design and the production of each dwelling unit is the next process. An examination of the ground plans of several detached units of the base camp dwelling reveals the use of a grid pattern, deployed in both the design and layout stage. This grid system was identified in all dwellings in this

study. Since drawings are not used by the builders, ground plans are developed in-situ from the positioning of the main structural frames on ground. One of the interviewees describes the grid technique,

> "We put the *ikoki* (main structural frames) like this and like this. here, here and here for a small house. If we want a bigger house, we just increase the number and after this we can start building" (Emomotimi Dennis – interview May 2008).

When asked if he could draw the grid pattern on paper, the respondent produces a sketch which has been replicated in figure 6 below. The technique of spacing stilts to ascertain the required grid for a particular size of dwelling is an art developed with practice over time. The floor plan of the dwelling unit is often rectangular in shape, with the longer side (length) being approximately twice the dimension of the shorter side (width) i.e. L = 2W (see figure 6 below).



(Source: Author)

Figure 6. *The grid system for the base camp dwelling, 2011.*

As a rule, access into the dwelling unit, is mostly gained through the longer side i.e. the doors and other forms of fenestration are often placed along the length (L). The alignment of key partition walls along grid lines shows how the dwelling is developed using the grid system. It enhances speed, repetitiveness and it is economical. These are all key attributes in temporary dwellings of societies that migrate. Also, the grid system makes the estimation of the number of structural support components required fairly accurate. This helps to make the process of sourcing and acquiring building materials more efficient. An example of how estimation of building components works, based on the grid system is shown in this interview extract,

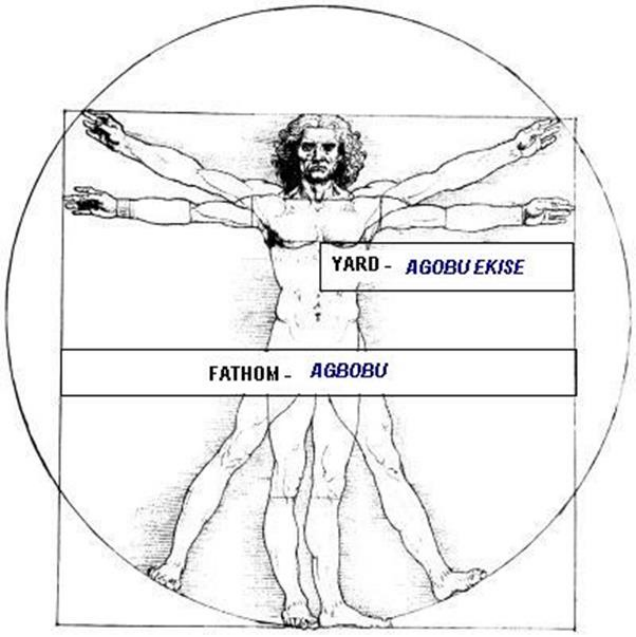
> "To build a small house we use at least 10 – 15 stilts and to build bigger houses we use between 20 – 40 stilts normally, depending on the size of the house" (Headman Inegerman II, Bakassi - interview April 2008).

The pattern suggests that a fairly standard number of stilts/structural supports are required for the base camp dwelling depending on the size of the dwelling. The size of the dwelling is in turn determined by the number of modular units combined. In effect, determining the number of stilts on the grid is not based on a 'fortuitous' attempt, but rather on calculations from local knowledge developed over time. An approximate arithmetic progression can be achieved for the number of stilts depending on the number of modules combined for each dwelling. Adherence to the grid system results in a series of standard measurements of spaces in the dwelling, especially spaces such as the sleeping areas. Actual partition walls are used in demarcating functional spaces rather than simply having an open plan space that is segmented by various functions.

A key to understanding the reasons behind the spacing of the structural grid, which results in the standardisation of spatial dimensions, is hidden in the traditional method of measurement, employed in the Ijo vernacular system. This method is inspired by measurements obtained from the human body, in other words the anthropometric system.

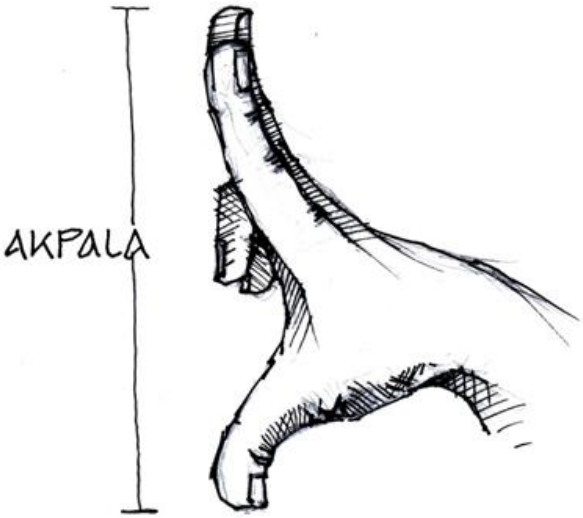
4.3. Anthropometrics in Ijo Vernacular Design

Like most vernacular societies, Ijo migrant fishers employ standard means of measurement developed over centuries of building migrant fishing camps. A study of this cultural geometric standard is essential to create an understanding of the migrant fisher architecture. The *Endidougbene ware* is built using measurements based on human geometric proportions of which, two basic units of measurements have been identified, these are; the *agbobu* and *akpala*. *Kene agbobu* (one *agbobu*) is the distance that spans between the ends of the fingertips of a man's outstretched arms, similar in principle to the 'fathom'. *Kene akpala* (one *akpala*) is the distance between the tip of the middle finger and the thumb when stretched and slightly exceeds a span in measurement (see figures 7 & 8).



(Source: Image Courtesy of wikimedia.org/wiki/file:Vitruvian_man)

Figure 7. *Vitruvian Man – with locally used measurements added, 2011.*



(Source: Author)

Figure 8. *The Span - Akpala unit of measurement, 2011.*

Traditionally, the Ijo geometric standard equates the *agbobu* to the fathom of the British admiralty or imperial system, intended as a standard unit of measurement for the depth of water. Most migrant fishermen, though without any formal education are conversant with the use of the fathom as a unit of measurement. This may be connected to the fact that the early European visitors they came in contact with were sailors. Although similar in principle to the fathom, the *agbobu* is not restricted to obtaining nautical measurements but is also used in measuring large fish, as

well as land.

Although these proportions are regarded as standard units of measurement, the actual units are not based on set figures. Unlike Vitruvian dimensions which are based on the physical proportions of a "well-made man", the *agbobu* and *akpala* follow the proportions of the implementer in most cases. However, in cases of land allotment or sales, the buyer must be of average height as a much taller person would have an unfair advantage. These measurements based on physical proportions have also been converted to metric systems (see table 2).

Table 2. *Converting fathoms into metric systems.*

Ijo Vernacular System	Imperial System		Metric System Metres (m)
Kene agbobu	1 Fathom	6 ft	1.8 m
Kene akpala	1 Span	10 in	250 mm
Kene agbobu ekise	1 Yard	3 ft	0.9 m

Kene abgobu = 7.5 *akpala* depending on the size of one's palm.
(Source: Author 2011)

In designing the base camp dwelling, standard measurements are assigned to certain core components and features of the dwelling, while the dimensions of other aspects are derived as the construction progresses (see Table 3). The components and features regarded as core aspects of the building include,

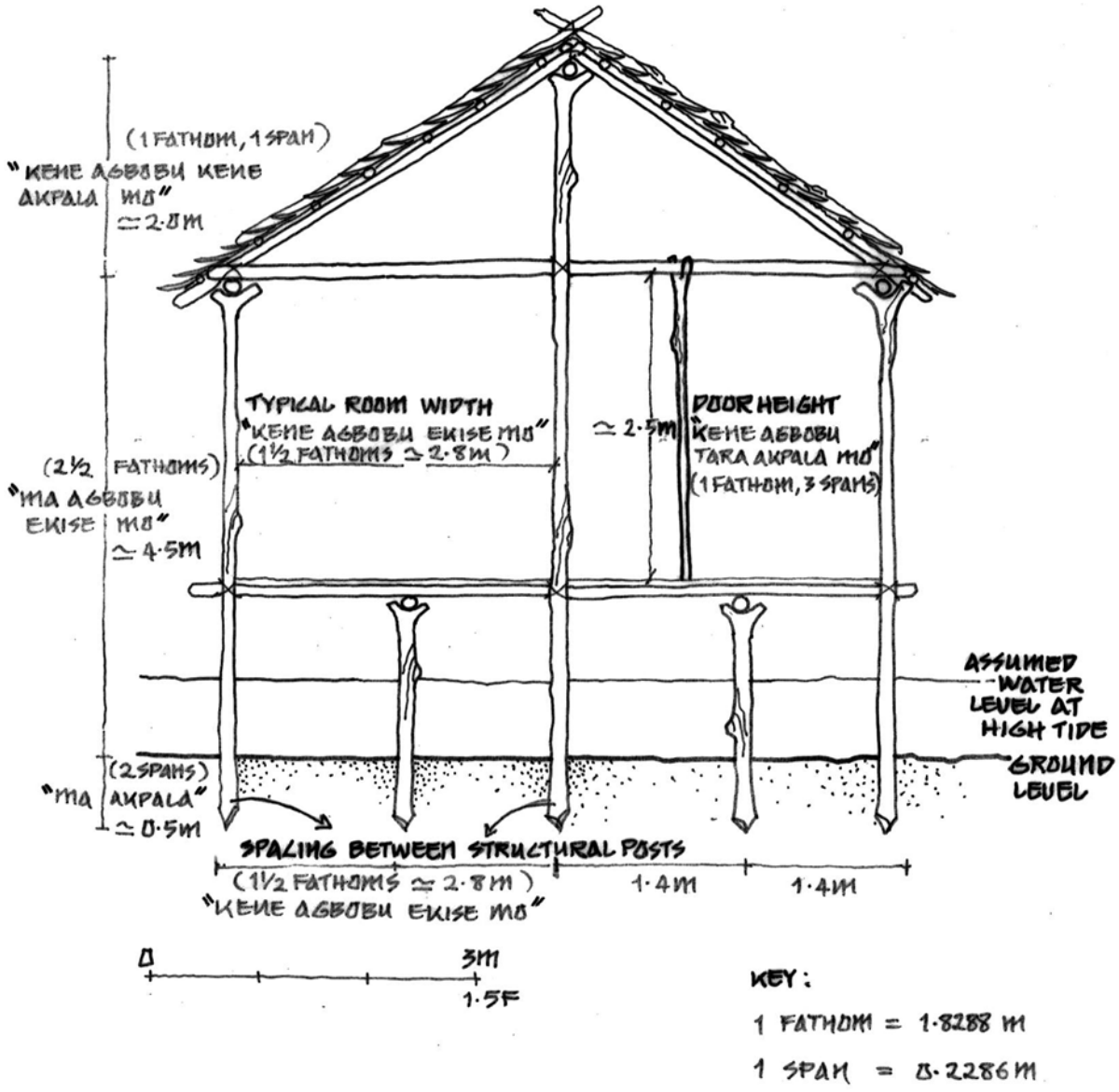
1) Main structural frames
2) Spacing between structural supports
3) Door height
4) Standard room dimensions
5) Height of roof pitch

Table 3. *Dwelling components and spaces with standard measurements.*

Components/Spaces	Ijo Vernacular System	Imperial System		Metric System (approx. value)
Standard length for structural frames	*Ma agbobu ekise mo*	2½ fathoms	15ft	4.6m
Spacing between structural supports or stilts	*Kene agbobu ekise mo*	1½ fathoms	4 ft 6 in	1.4m
Typical door height	*Ken agbobu tara akpala mo*	1 fathom and 3 spans	8ft 6 in	2.6m
Typical approximate room dimensions	*Ken agbobu ekise mo ba tara agbobu mo*	1½ fathoms by 3 fathoms	9 ft x 18 ft or 4 ft 6 in x 9 ft	2.7m x 5.5m or 1.4m x 2.7m
Typical height of roof or kingpost	*Ken agbobu ken akpala mo*	1 fathom and 1 span	6 ft 6 in	2m

(Source: Author 2011)

Other building components that come in specific dimensions include the matted raffia palm used as roofing sheets, and full-length timber planks used as floor boards for the base camp dwelling. Other than a pattern of approximate measurement observed amongst sizes of bedrooms, the sizes of other spaces are determined by each user based on their needs and preferences. Full measurements of components are given below (see figure 9). The study of the domestic migrant fisher dwelling, also reveals that the use of the space is more important than the size of the space. However, use inevitably affects the size of the space. In this study, the use of space has been defined based on the predominant activity or activities that take place within that space or setting.



(Source: Author, 2011)

Figure 9. *Measured drawing of typical migrant fisher dwelling.*

5. Defining Temporality Through Construction Techniques and Materiality

Dwellings of mobile communities whether nomadic, hunter-gathering or peripatetic, are characterized by their tendency to be movable; collapsible; easily assembled and/or dismantled; or easily abandoned. Evidence of these traits is mainly deduced from the technique of construction employed and the nature of the materials used. However, some scholars have also suggested that the shape of the dwelling plan or house form is equally indicative of it belonging to a mobile or sedentary community [20, 37]. In addition to construction techniques and building materials, another set of indicators used in ascertaining the level of mobility of a society are levels of labour invested in the dwelling [3, 52], size of the dwelling [28]. The different aspects of the dwelling that will be examined include the levels of investment in the dwelling as observed in the building process, the construction techniques employed, the type of materials used, the size of the dwelling.

5.1. Materials

Four basic materials are used in the construction of base camp dwellings;

1) Timber – *Ngala* (mangrove plant) and *ayone tein* (iron wood)
2) Raffia Palm – *Akein* (Thatch or woven palm fronds) and *kigi* (braided palm fronds)

3) Ropes – *Egbareba di* (barks of the cane plant)
4) Mud – *Chikoko* (clay and dead vegetable matter)

The timber obtained from the mangrove tree is readily available and often sourced from the immediate vicinity of the building site. Iron wood on the other hand, though heavily abundant, requires some searching, to find species mature enough for felling. Both the Ironwood and the *ngala* (mangrove wood) requires no special form of processing besides peeling of the bark if used as structural supports, beams, posts, and for fixtures.

Figure 10. *Chunks of Chikoko mud.*

The raffia palm is equally abundant, readily available and easy to collect as the fronds hang low. The stem of the palm frond stripped of the leaves or the leaves themselves woven or braided together are used as cladding for walls. The woven raffia leaves are also used as thatch for roofing. Braiding or weaving requires specialized knowledge, which is handed-down from elders. Braiding is done by women.

Figure 11. *Matted raffia palm (Source: Author 2011).*

Ropes are the only means by which components are fastened. The materials, from which they are derived, are also significantly abundant and within easy reach of any building site. Barks of the plants are peeled and to achieve increased strength, woven together to two- or three-fold cords. But in recent times fishermen buy industrially produced twine ropes or other types of marine ropes that are cheap, yet durable and reusable.

As earlier stated, the availability of *chikoko* mud is one of the factors considered in base camp location. But collection requires a process of digging and piling up. No process of refinement is carried out on the mud, as it is always used in its natural state.

Figure 12. *The main Y-shaped timber post (ikoki).*

Figure 13*. Beam (som), rafter (bamea) and purlins.*

5.2. Man-hours in Endidougbene Ware Construction

From the survey, detailed descriptions of the time scale for construction projects were obtained. A corresponding time scale for completion of dwellings, based on the number of labourers involved was identified. Labour involving two or more households is regarded as communal labour. This is common among most multi-homestead fishing camps. It is

mostly men that carry out building work but women are given the task of weaving the raffia palm fronds for the thatch, thus constituting a household labour force.

Site preparation and groundwork carried out by one person, is achieved within 6 hours of work for the *agbada ware*, and 10 hrs of work for the *atouko ware*. This is for a typical single module dwelling unit used in base camps. Construction projects embarked on by one man takes a maximum of two weeks to complete a typical single module dwelling, and four weeks for a typical double module dwelling. For communal labour carried out by three men, the findings show a consensus of between 2-3 days for the construction of a single-module dwelling and 5-7 days for a double-module dwelling.

5.3. Techniques and Process in Base Camp Dwelling Construction

The technique employed in constructing the Endidougbene ware is the ancient post and beam system. The main structural posts (*ikoki*) that carry the main beams (*som*) are Y-shaped at the apex. Similarly, the external structural supports or stilts are also Y-shaped at the point of contact with the floor joists. The Y-shaped gap provides a secure sitting for the beam as no nails are used at any stage throughout the project (see figures 10 & 11).

The idea of migrant fishermen employing such structural-functional basis for their architectural composition does not indicate primitivism. Rather, it can be interpreted as taking advantage of this basic principle, in order to achieve sustainable and speedy construction techniques needed for mobile livelihood practices.

The building process consists of six steps;

1) Setting-out and positioning of the main structural posts (*ikoki).*
2) Coupling of the timber framework of poles, beams (*som*), supporting beams (*mgbere*) and door frames (*ware bobou tein)*.
3) Assembling the roofing frame with the rafters (*bamea*), trusses *(ibomou)* and purlins (*izenseri)* tied together using the twine or cane ropes (*di*). After which the roofing frame is covered with thatch (*ware you*). Slim timber poles (*tutere tein*) that cross at the top are used to hold down the thatch roof.
4) Cladding of external framework using woven thatch (*kigi*) or palm frond stems or midribs (*akporo*). The *kigi* is usually made by the women, and both the men and women install it.
5) Flooring of the dwelling. For the *agbada ware*, sawn timber planks (*agbada*) are placed on top of joists and secured. But for the *atouko ware, chikoko* mud is rammed down to create a hard and fairly even surface.
6) Furnishings and fixtures made from leftover timber used for the building are added.

5.4. Built-in Fixtures: Furnishings and Fittings

In analysing furnishings in the base camp dwellings, emphasis will be placed on built-in features, to assess how these fittings are incorporated in the whole building design, and the fundamental principles that inform the design of these fixtures. The findings reveal that fixtures such as beds and shelves and the beams of the drying rack are connected to beams or poles on at least one of the external walls, while being supported in front by Y-shaped pegs.

Similarly, all other fixtures such as shelves and beds used in the endidougbene ware are built using short Y-shaped pegs and cross beams. This method is similar to the technique employed in the building of the migrant fisher dwellings. The timber used for the shelves, bed and drying rack (iri) are all obtained from the mangrove plant. This shows that the underlying principle of temporariness and the possibility of dismantling the components when necessary are consistent for both the design of the entire building envelop as well as the interior fixtures.

Figure 14. *Fully assembled hut (Source: Author 2024).*

5.5. The Concept of Breaking Camp

The simple yet important act of 'breaking camp' further defines and re-enforces the disparities between pastoral nomadic groups and hunter-gatherers. For most Saharan and sub-Saharan nomadic cultures, tent structures are used which are easily demountable and transported by animals when 'breaking camp'. With regards to some pastoralist and hunter-gatherer societies, one term seems to stand out when it comes to 'breaking camp' and that is *'*abandoning*'*. Pastoralist Afar houses for instance, are abandoned, and this cuts across most pastoral nomadic cultures. First is through breaking camp to find when the mats covering the light timber frame structure is removed and the framework is left behind when they move to find new resources, having exhausted the existing one. The other is when a female inhabitant of a

compound dies, her house is abandoned and left to naturally decay.

This concept of breaking camp is similar amongst Ijo migrant fishermen. Here the dwellings have a life span of between two to three years. Spaces or buildings designated as hearth areas are the structures that last up to three years. Repairs are made frequently but after a maximum of three years, the buildings are systematically abandoned. Sometimes the timber from the main structural frame is re-used if still in manageable condition, but usually the entire house is abandoned and left to naturally decay (see figure 15).

However, there are two primary causes of abandonment. The first is basically the expiration of the life span of the building, when economically and structurally it becomes less feasible to continue effecting repairs on the building, as collapse is imminent. The second and equally common reason for abandonment is the need for the fishermen to relocate to new base camps or new offshore migration camps as they follow fish migration. The need comes as fishermen move in search of more fertile river strips or when some members of multiple homestead camps, move away to establish their individual camps. Also, the death or incapacitation of a fisherman may lead to a camp being abandoned.

(Source: Author)

Figure 15. *Abandoned hut which eventually collapsed, 2011 (Ekperiyaigbene base camp, Bayelsa).*

6. Discussion

Temporality was used instead of portability or transportability and the reason is that architecture that is portable or transportable can still be permanent. But in my previous study I argue for the use of ephemerality, as I believe it captures the state of flux and consistent transition or deterritorialization that migrancy and anticipated mobility conveys. Cowan pointed out that there is a difference between permanent architecture incorporating movement, and dwellings that are constantly being moved or re-constructed on new sites [13]. Since there are no standard parameters against which level of temporariness is measured, attributes indicative of temporality have been ascertained by comparing them to qualities in the dwellings of established mobile or nomadic groups. The existence of these attributes was examined from five main points ranging from design philosophy to methods of breaking camp.

Firstly, the ideas that influenced the design of the built forms in Ijo migrant fisher base camps were examined, and two major philosophies for building the way they do were identified. These were the migrant worker mindset and anticipation of mobility. The migrant worker concept does not necessarily focus on architecture but it emphasizes economic aspects such as cost saving measures. This is where investments are made in cheap accommodation in the place of production to achieve more savings to invest in more permanent dwellings in the home of origin. Anticipation of mobility was identified as one of the most crucial factors in site investment by hunter gatherers.

Secondly, in reading the basic principles governing the design type, the use of the modular and grid methods that provide efficiency, economy and ease of reproduction of units were also identified. These techniques were complemented by achieving standard measurements through the convenience of using basic human proportions.

Thirdly, the use of space revealed areas regarded as core spaces, both bounded and unbounded and how multiple use of space amounts to low level of site investment. This supports Mcguire and Schiffer's theory which suggests that sites where less investments in terms of time and monetary capital are made are essentially temporary [37]. This is because they tend to attract high maintenance costs and where maintenance exceeds production costs the sites are abandoned. Anderson [3] also used the issue of site investment in assessing mobility levels amongst the pre-Hogan culture in North China.

Fourthly, the level of site investment in different stages of the building construction, as well as the selection of materials and the construction techniques employed, served as an indicator in analysing the temporality of the dwelling type. Construction was based on the use of the simple Y-shaped post and beam system without any permanent fasteners. All joints and connections rest on Y- gaps or are held in place by ropes. The idea is that the dwellings can be easily dismantled if parts of the frame are to be reused on another site. Also, the technique in which foundations are not dug, rather main structural posts are simply pinned into the ground, after which woven mats are overlaid on the timber framework are similar to the T-ridgepole frame structure of the Tuaregs and the Teda Mat skin architecture of Western Saharan semi-nomadic tribes [13]. Cowan also rightly observed in his review that stick frame dwellings are characteristic of hunter-gatherer groups around the world, many of who are semi-nomadic.

Lastly, the method of abandonment, adopted as a means of breaking camp, is indicative of non-attachment to a specific location and the readiness to move when the need arises. This trait is also prominent among hunter-gatherer groups [40, 11, 38]. The study showed that the use of abandonment by Ijo

migrant fishers, as a means of breaking camp, is carried out even when the building has not exceeded or even reached its expected use-life. This infers that migrant fisher architecture is predominantly influenced by the anticipation of mobility or the need to relocate residence based on the movement of the shoals of fish [51, 25]. Ijo migrant fishermen fulfilled the requirements of supporting mobile lifestyles by allowing for speedy construction and breaking camp when necessary.

7. Conclusion

In the course of the study, two ideas that contribute in shaping the migrant fisher architecture were both old and new interests in Nomadology, and these include; migrant worker mindset and anticipation of mobility.

The study showed that the architectural principles used by Ijo migrant fishermen are based on the migrant worker mindset are derived from investigations on the attitude of workers who live and work away from home. They tend to minimize investments of time and costs on dwellings in the work area and remit money back home for investments in more permanent dwellings [8]. As such, the dwellings in the work location for migrant workers are normally cheap hostel facilities, squatter settlements or even rented houses, they are usually furnished with only basic necessities, thus saving costs [26, 41].

The analysis shows that savings are made in site investments relating to time, labour and finance of the dwelling, all of which are attributes of dwellings evident in mobile and nomadic cultures. Based on this time and labour-saving principle, the buildings appear as practical shelters produced with a minimalist approach to the investment of money and time in construction. They are designed primarily to aid the practice of fishing, while still meeting the environmental challenges the territory poses. As such, with this form of architecture, functionality and economy are prioritised above comfort. One of the primary functions of this architecture as shown in the analysis is its compatibility with the mobile and cost saving lifestyle of these migrant fishermen.

In addition, anticipated mobility has been identified as the second factor influencing the design of Ijo migrant fishing base camps. Although a strong sense of place attachment may develop, especially when long-term stays at fishing camps may occur, yet no attempt is made at erecting buildings or modifying existing ones using materials or methods that suggest permanence of any sort. This is because mobility or movement is key to the success of any artisanal fishing enterprise and the anticipation of mobility or knowing when to move is a fish-tracking skill developed over time and one of the core values passed on to successive migrant fisher generations. These values shape their worldview and particularly their dwelling types.

Conflicts of Interest

The authors declare no conflicts of interest.

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