IMPROVISATION IN ARCHITECTURE

A critical study of the Makoko fishing community of Lagos, Nigeria

By Komi-Oluwa Olafimihan, B.A.S

A thesis submitted to

The Faculty of Graduate Studies and Research in partial fulfillment of the

requirements for the degree of

Professional Master of Architecture

Azrieli School of Architecture and Urbanism

Carleton University

Ottawa, Ontario

2008-2009

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Your file Votre référence
ISBN: 978-0-494-51987-5
Our file Notre référence
ISBN: 978-0-494-51987-5

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Thesis Abstract

This thesis proposes an urban reform and design meant to address the present living conditions in the Makoko area of Lagos, Nigeria. The approach to the design is governed by the results of experimental projects carried out throughout the course of the research into Improvisation through Poiesis - *the act of making*. The project encompasses studies of the building materials available on site, as well as the development of strategic labor and cost efficient building techniques. In studying the implementation of improvisation in architecture, this thesis affirms that the allocation of boundaries during the process of improvisation differentiates the resulting product from a random combination of systems. Drawing on the fundamental characteristics of collage and assemblage, the process of design would be an embodiment of the idea of improvisation; the process and resulting product would inform the basis of the concept. This project is not the introduction of a modern architectural intervention on a site unprepared for such, but an attempt to introduce strategic solutions to cater to already existing urban problems. The resulting product of this thesis would prove that drawing on the preexisting; the process of improvisation can be used as a tool when addressing slum eradication problems in developing countries.

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Acknowledgements

To God for giving me the strength to put this thesis together and the opportunity to partake in a movement that could affect the lives of others through architecture.

To my family for their continuous financial and moral support during my six years at Carleton University.

To my thesis Advisor Yvan P. Cazabon, B.Arch, M.Arch, for his guidance, encouragement and genuine interest in my research

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Introduction

Improvise – *to make or provide from what materials are available.*¹

(Random house Webster's dictionary, 2001)

Architects ought to endeavor to be in a state of constant preparation of the unknown dynamic systems at play on any given site. The rigidity of the architectural practice limits the innovation of spontaneous resolutions to design impediments encountered during the construction process. The notion of improvisation in architecture presents the concept of readdressing materials and building systems within a set boundary.

David Brown asserts in *Noise Orders* that “Similarly, one must increase the understanding of the qualities of the materials at hand, not solely in the realm of their rational and intended expressions but in their latent qualities and properties.”² The alteration of an object or material from the common perception of its use or practical application in design draws on the relevance of improvisation within architectural design. This thesis project establishes that improvisation is an ephemeral phenomenon that can be reintroduced into architectural thinking based on the allocation of set boundaries. Improvisation in architecture is the notion of creating alternative solutions from the limitation of a given set of restrictions that exist in architecture within the comparative contextual substitution of a given material, spatial, or textural pallet. The boundaries and restrictions are the necessary elements that differentiate

¹ Carol G. Braham. Random house Webster's Dictionary. New York: Random House Inc, 2001. Page 363

² David P. Brown. Noise Orders: Jazz, Improvisation and Architecture. Minneapolis: University of Minnesota Press, 2006. Page 127

random combinations of possibilities from inventive resolutions, creating an element of order within otherwise chaotic permutations.

“Constant preparation also means that in any given situation, one must not only recognize the material intelligences at work, but must be open to what constitutes the material.”³ In further exploring the idea of material recognition and the inner constitution of objects and space through the fundamentals of the art of collage, this thesis will highlight the principle parallels between the application of improvisation in collage and architecture. “Architectural discourse has already co-opted the language of improvisational theory—buildings are often described as abstract compositions of gesture, incident, and dissonance.”⁴ Although any architectural design may possess elements of ambiguity and uncertainty the architect is obligated for economic and time constraints to present a conclusive design with limited room for unconventional substitutions. However, this thesis argues that the notion of improvisation presents the architect the alternative of developing flexible strategies dependent on the availability of materials, construction techniques and space.

The modification or contextual manipulation of materials before construction and the possibility of spatial variation during and after construction embodied in the idea of improvisation is explored through a design proposal for the urban revitalization of the Makoko

³ David P. Brown. Noise Orders: Jazz, Improvisation and Architecture. Minneapolis: University of Minnesota Press, 2006. Page 128

⁴ Ian Panabaker. Critical Studies in Improvisation Vol 3, No 1- Review of Noise Orders: Jazz, Improvisation and Architecture. 2007. Page 1

fishing community of Lagos, Nigeria. The Makoko fishing community which is located on the Lagos lagoon has been highlighted as one of the forty-two slums to be addressed during the city's mass urban renewal process towards slum eradication. The exploration of improvising the dynamic systems available on site, presently contributing to the factors deeming the community as a slum, into an alternative approach to building construction, presents a substitute resolution to the complete destruction of the community. This thesis will argue that drawing on the fundamentals of collage, the process of improvisation in architecture can be adopted to present alternative solutions to slum eradication specifically in developing countries.

PART I. POIESIS - PROCESS

CHAPTER 1.

POIESIS AND THE ART OF COLLAGE

Poiesis is the act of making which is derived from the Greek word *poieîn* (to make), it is therefore the process of making, constructing and the act of creating. The idea of Poiesis can be applied to any form of creative art or applied thinking; this phenomenon is the governing idea behind this research into improvisation in architecture. The act of making and creating presents a platform on which the transformation of materials and textures become evident through the technique of Collage.

The term Collage is derived from the French verb *coller*, the act of gluing or sticking together. Closely associated with the idea of collage-in both French and English – is the idea of assemblage, the fitting together of parts and pieces⁵. Attaching materials in collage and in architecture creates an intense level of layering, through which each layer is distinctive with its own characteristics. However, the visual appeal of the whole is most successful when the layers begin to merge and reconcile. The act of Collage encourages the artist to take a fresh look on otherwise mundane objects. “Paper for example, is not limited to being a flat rectangle for writing or wrapping. Crumpled it is a mass of irregular planes with interacting facets of light and shadow, shallowness and depth.”⁶ The transformation of the banal qualities of an object as simple as a piece of paper during the act of collage, through the effortless exertion of pressure

⁵ Christine, Poggi. In defiance of painting: Cubism, futurism and the invention of collage. New Haven: Yale University Press, 1992. Page 37

⁶ Meilach, Dona. Collage and found art. New York: Art Horizons Inc, 1964. Page 6

suggests the conversion of a two dimensional flat surface into a component rich in form and structural composition asserting to volume and mass which are both key architectural elements. This emphasizes the exploration of the potential qualities of objects otherwise hidden to the artist or architect through a physical or metaphorical alteration of planes and features.

The history of collage dates back to around 200 BC with the invention of paper in China. However, the ideology of collage and layering of paper did not appear until the middle of the 10th century in Japan when calligraphers glued layers of fabric and paper together to provide an appropriate backdrop to accompany their poetry. Though his work of collage was an interpretation of the writings and paintings of Paul Cézanne, Pablo Picasso is generally credited as the first artist to use collage in fine art by gluing a piece of patterned oilcloth to a cubist still life in 1912. However, Cézanne's theories suggest that the "Subjects (are) reduced to planes viewed simultaneously from various angles (instead of from a single perspective). By these and other means, the artists hope to arrive at the inner structure or reality of whatever object they paint."⁷ Just as the artist develops an understanding of the inner structure and figurative constitution of an object through collage, so does the architect develop an understanding of the inner spatial qualities of an object in this case which may be a building- through layering and formal experimentations with collage.

Architects strive to heighten the architectural experience of a space through the stimulation of the human senses by the strategic use of texture, light, smell, and sound. To

⁷ Brigadier, Anne. Collage a complete guide for artists. New York: Watson-Guipill Publications, 1970. Page 9

further accentuate the connection between architectural space and collage, parallels can be drawn between the collage studies of Le Corbusier and Alvar Aalto, both prominent architects whose experimental explorations of collage influenced their conceptions of space form and materials. Colin Rowe illustrates in reference to Le Corbusier in the book *Collage City*:

“Indeed among architects only that great straddler Le Corbusier, sometimes hedgehog, sometimes fox, has displayed any sympathy towards this kind of thing. His buildings, though not his city plans, are loaded with the results of a process which might be considered more or less to that of a collage. Objects and episodes bare obtrusively imported and, while they retain the overtones of their source and origin, they gain also a wholly new impact from their changed context. In, for instance, the Ozenfant studio one is confronted with a mass of allusions and references which it would seem are all basically brought together by collage means”⁸

(Rowe & Koetter, 1978)

The results of collage exploration are evident through the juxtaposition of elements in the Ozenfant Studio and the Beistegui Penthouse by Le Corbusier. The superimposition of the masses in both projects, which were taken out of their original context, is reminiscent of the contextual substitution of elements through collage.

Figure 1. Ozenfant studio- Le Corbusier

Figure 2. Beistegui Penthouse - Le Corbusier

⁸ Colin, Rowe. *Collage City*. Cambridge: MIT press, 1978. Page 140

Alvar Aalto's approach, however, was somewhat different; he approached materiality studies in his architecture through the interconnection of materials in Painting, Architecture and Sculpture:- "the three art forms, architecture, painting, sculpture, are connected because they are an expression of human intellectuality based on 'materia'...Naturally for me it means 'materials', and yet I think of the word 'materia' in a broader sense in which the purely material activity is closely connected with an intellectual process...it is not through simple sketches and superficial similarities in shape that they influence each other, but through 'materia': an intellectual analysis of the chosen material"⁹

This interconnection of the three arts through 'materia' began to inform Aalto's collage studies, which in turn enabled him to take on a richly varied palette of materials, and enrich his explorations through the layering of the traditional and the modern in his architecture. As earlier stated, the artist through collage begins to arrive at an understanding of the inner structure of objects. Hence, 'materia' in itself is an allegorical manifestation of collage, since both strive for an intellectual examination of objects or materials. Although through 'materia' materials are translated and interpreted through various forms of logical processes while through collage materials are re-interpreted and cross-contextualized.

Collage art also seeks to engage the senses of the viewer especially through smell, light and texture through relief and the natural chemical components of the materials used. However, "In selecting texture, you must consider its type, color, weight, suitability, and

⁹ Alvar, Aalto. Synopsis: Painting, architecture, sculpture: Basel; Boston. Birkhauser, 1980. Page 25

relationship to the basic structural or directional movement of a composition.”¹⁰ When addressing design, the architect subconsciously or consciously adapts this concept of interconnectivity. The use of a material, a space or threshold should work in harmony with the general schematic direction of an architectural design with the exception of a deliberate gesture made by the designer to highlight a certain quality. This concept of interconnectivity and harmony between the various elements contributing to the general scheme is directly related to the process of improvisation in architecture. However, the eye of the designer must be tailored to limit the level of overcrowding of the material palette, as it is possible to get carried away with the idea of improvisation and assume that any combination of available resources is a manifestation of the idea. Nevertheless, the understanding of improvisation lies in the allocation of physical and metaphoric boundaries that govern the direction of a project.

Dona Meilach states in *Collage and Found Art* that “The sculptural aspect of collage should be emphasized, for it promotes greater awareness of the beauty that can be developed through structural contrast.”¹¹ However, it is necessary to note that though Picasso and Georges Braque used the actual material that they sought to represent in their art, a successful collage is one in which the objects in the composition begin to offer suggestive alternative meanings. The objects begin to transform when they are changed from their original context offering the object an alternative meaning. The recognition of an object within the composition breaks the spell of object transformation to the viewer. This Idea of Transformation is another phenomenon that governs improvisation. The boundaries set by the form and shape of the

¹⁰ Brigadier, Anne. Collage a complete guide for artists. New York: Watson-Guption Publications, 1970. Page 117

¹¹ Meilach, Dona. Collage and found art. New York: Art Horizons Inc, 1964. Page 54

object in a collage is reflective of the margins set by the limitation of the various factors that govern architectural design such as space, material availability and even building regulations. The adherence to these boundaries in the process of improvisation differentiates a chaotic convergence of random systems from a strategic process of layering and deliberate contextual substitution to achieve a certain purpose. Colin Rowe alludes to the significance of boundary demarcation and its connection to architectural spatial conception in *Collage City* by contrasting the multiplication of spaces with the proliferation of objects. "For it is surely apparent that, while limited structured spaces may facilitate identification and understanding, an interminable naturalistic void without any recognizable boundaries will at least be likely to defeat all comprehension."¹² He further asserts that "...if the appreciation or perception of an object or figure is assumed to require the presence of some sort of ground or field, if the recognition of some sort of however closed field is a perquisite of all perceptual experience and, if consciousness of field precedes consciousness of figure, then, when figure is unsupported by an recognizable frame of reference, it can only become enfeebled and self-destructive"¹³ The parallel comparison of subject to frame of reference applies directly to improvisation and boundary. Though, the object being referenced is tactile and the process of improvisation is an action, the same essentiality of boundary and frame that applies to object abjectly applies to process, which in the case of this thesis is improvisation. Therefore, just as the frame of reference validates the object, the boundaries authenticate the process of improvisation in architecture.

¹² Colin, Rowe. *Collage City*. Cambridge: MIT press, 1978. Page 64

¹³ Colin, Rowe. *Collage City*. Cambridge: MIT press, 1978. Page 64

CHAPTER 2.

POIESIS AND THE COLLAGE OF THE CITY

On a broader scale, the factors discussed in reference to collage in art are somewhat different in the translation of collage at an urban scale. The element of layering is directly interpreted on the urban scale not only through the layering of the new city on top of the old, but through the interesting moments of overlapping that occur among the constituent parts. The collage of the activities within the city and the interaction of the old buildings with the new buildings all provide layers to which the beauty of the city is seen as a whole. Colin Rowe argues in *Collage City* that various analyses of urban form in a number of existing cities are the end product of fragmentation, the superimposition of many diverse ideas layered by different generations. The direction towards an ideal city according to Rowe, lies within the process of contrasting the traditional with the modern city, which in itself is a form of collage: the superimposition of the old against the new.

Colin Rowe further argues his ideology of urban reform in reference to the model utopian city, refuting the common misconception of the grand utopian city as what he describes as “total planning” or “total design” but as an explicit instrument for social change.¹⁴ Though his general synopsis of the utopian city as an instrument for social change is not the focal point of this thesis in relationship to collage, his proposal for a “collage City” that accommodates a range of diminutive utopian moments superimposed within the city draws on the fundamental qualities of the proposed manifestation of this thesis through an urban intervention in Lagos, Nigeria.

¹⁴ Colin, Rowe. *Collage City*. Cambridge: MIT press, 1978. Page 87

The layering of miniature utopian moments in an existing urban context introduces the idea of reconciliation among the constituent parts, the old and the new. Being that the introduction of a foreign object or theory in an environment alien to its original context creates the sort of disconnect reminiscent of the idea of a figure enfeebled without a frame of reference, the notion of reconciliation through improvisation, provides a stage for the convergence of foreign objects and theories in an unfamiliar setting. That is to say, the implementation of western theory on the dynamics of an African site which is completely unfamiliar with its philosophies would, through the fundamentals of collage, begin to create a form of ambiguity and simultaneity of a dual reading, one where the various dynamics fluctuate between old and the new.

Kevin Lynch further describes the ideology of miniature moments surmising the human observation of city in *The Image of the City* where he states “Most often, our perception of the city is not sustained, but rather partial, fragmentary, mixed with other concerns. Nearly every sense is in operation and the image is the composite of them all.”¹⁵ This idea resonates on the theory of the city as a collage of various moments. The constant movement of people within a city of relatively stagnant structures contrives our perception of the whole as a fragmented collage of memory.

Momentarily departing from the influence of collage on the urban scale and returning to the concept of collage in architecture, through the layering and contrasting of the traditional

¹⁵ Kevin, Lynch. The image of the City. Cambridge: MIT press, 1960. Page 2

against the modern, this paper will develop on the idea that within the concepts of collage lays a potential of substantial value to architecture that could be adopted in city organization.

While Collin Rowe theorized the parallel comparison of the traditional with the modern city, Alvar Aalto as earlier stated, practiced this theory through his architecture where elements of modern and distinctive Scandinavian traditional architectural elements are visible through his use layering of materials and abstraction of spaces. For example the Villa Mairea, built between 1938 and 1939 in Noormarkku, Finland showcases the union of the traditional and the modern. His early sketches and studies show the influence of Frank Lloyd Wright's Kaufmann house which envisioned boldly cantilevered balconies and the dialogue between the vertical and horizontal planes, which in itself is a modern architectural characteristic but also could be interpreted as an abstraction of the Finnish landscape.

Figure 3. Early sketches of Villa Mairea 1938 – Alvar Aalto (Alvar Aalto Museum)

However, the rusticated traditional wall of the chimney in the final design contrasts the white modern-looking walls of the main volume, highlighting the unison of vernacular and modern architectural elements.

Figure 4. Villa Mairea 1938 – Alvar Aalto (Alvar Aalto Museum)

The manifestation of collage and layering through this project poses the question of the possibility of its lateral translation on to the urban scale. Would the overlaying of similar buildings and structures that characterize this element of collage- the unison of modern and vernacular- begin to create successive miniature exciting moments in a city? This prompts the investigation into the careful introduction of hybrid interventions on the urban scale, drawing on the characteristics of the traditional and modern while simultaneously improvising on the dynamics created by the preexisting.

CHAPTER 3.

POIESIS AND THE BRICOLEUR

Reflecting on the innate improvisational qualities of man, the origin of architecture has been described as a god-given phenomena revealed to man through the model of the Primitive Hut. However, the idea of the origin of architecture as being god-given is a metaphorical explanation for the primitive man to create shelter through nature. The general consensus of the rustic hut as the origin of architecture is an interpretation of the theory deduced by Marc-Antoine Laugier. Laugier describes the revelation of the Primitive Hut as a result of the primitive mans' necessity to provide shelter from harsh weather conditions. "...soon the scorching heat of the sun forces him to look for shelter. A nearby forest draws him to its cooling shade; he runs to find a refuge in its depth, and there he is content."¹⁶

Similar to the comparison of architectural phenomena in Laugiers Primitive Hut theory is the original depiction of the primitive man in Vitruvius's *Ten Books of Architecture*:

For the same reason they were able to manipulate whatever object they wished, using their hands and other limbs. Some in the group began to make coverings of leaves, others to dig caves under the mountains. Many imitated the nest building of swallows and created places of mud and twigs where they might take cover. Then, observing each other's homes and adding new ideas to their own, they created better types of houses as the days went by.¹⁷

(Vitruvius, 1960)

¹⁶ Marc- Antoine, Laugier. *An Essay on Architecture*. Los Angeles: Hennessey & Ingalls Inc, 1977. Page 11

¹⁷ Pollio, Vitruvius. *Ten books on Architecture: translated by Morris Hicky Morgan*. New York: Dover publications, 1960. Page 34

Both Vitruvius and Laugier acknowledge the natural adaptive qualities of man through the imitation of technologies from nature. His progressive manipulation of objects and materials in nature reflect the idea of improvisation within a limited means. The fact remains that the idea of the Primitive Hut is a conceptual theory; however the symbolic representation of the adaptive nature of man solidifies the argument that though technology has deeply influenced the modern architectural mind, the basis of architecture lies within the improvisational quality of the strategic alteration of materials, objects, space and context.

In order to flee from the constraints associated with design and fully submerge the mind into the notion of collage and improvisation the architect must adopt the metaphorical ideologies of the noble savage. The term "noble savage" expresses a concept of the universal essential humanity as unaltered by civilization, an Arcadian myth of the late 18th century. The myth of the noble savage provides a clean slate for creative thinking making innovative gestures based on the most basic of factors which leads us to the notion of "bricolage" derived from the French word *bricoleur* which means creation from a diverse range of things which happen to be available. Claude Levi-Strauss says in *The Savage Mind*, "In its old sense the verb *bricoler* applied to ball games and billiards, to hunting, shooting and riding. It was however always used in reference to some extraneous movement: a ball rebounding, a dog straying or a horse swerving from its direct course to avoid an obstacle. And in our time the *bricoler* is still someone who works with his hands and uses devious means compared to those of the craftsman."¹⁸ Colin Rowe argues the *bricoleur* as an artist and the engineer as a scientist and

¹⁸ Levi-Strauss, Claude. The savage mind. London: Redwood Burn limited, 1966. Page 16

maintains the architect in an intermediate position between the *bricoleur* and the engineer. However, this paper proposes that the *bricoleur* is a manifestation of Poiesis- the act of making. In terms of improvisation, the *bricoleur* can be interpreted as the architect or individual partaking in the process, Poiesis the act of improvising and bricolage the materialization of improvisation; hence, bricolage is the manifestation of the *bricoleur* partaking in Poiesis.

The *bricoleur* and the engineer are similar on the basis that they are both problem solvers, however they differ on the grounds that the *bricoleur* is concerned only with what is available to him. Levi-Strauss continues to argue that,

“ The *bricoler* is adept at performing a large number of diverse tasks; but unlike the engineer, he does not subordinate each of them to the availability of raw materials and tools conceived and procured for the purpose of the project, His universe of instruments is closed and the rules of his game are always to make do with ‘whatever is at hand’, that is to say with a set of tools and materials which is always finite and is also heterogeneous because what it contains bears no relation to the current project, or indeed to any particular project, but is the contingent result of all the occasions there have been to renew or enrich the stock or to maintain it with the remains of previous constructions or destruction...It is to be defined only by its potential use or, putting this another way and in the language of the *bricoler* himself, because the elements are collected or retained on the principle that ‘they may come in handy’ . Such elements are specialized up to a point, sufficiently for the *bricoler* not to need the equipment and knowledge of all trades and professions, but not enough for each of them to have only one definite and determinate use.” ¹⁹

(Levi-Strauss, 1966)

The *bricoleurs'* need to continuously gather materials without any special project in mind is a characteristic that is adopted in the practice of improvisation in architecture. The relationships

¹⁹ Levi-Strauss, Claude. The savage mind. London: Redwood Burn limited, 1966. Page 17

of object and materials to the *bricoleur* and the process of bricolage are articulated by Patricio Del Real in his article *Slums Do Stink: Artists, Bricolage, and our need for Doses of "real" Life* where he states "Hidden in every material object, within a generalized system of repression, is a soft emancipation, an "escape without leaving." This is why objects become possible critical players in the world and why bricolage has become a necessary function for all disciplines that claim any critical stance."²⁰ The phrase "escape without leaving" speaks of the notion earlier highlighted about the reconciliation of the object with its surroundings in an alienated context through collage. The merging of the various layers in collage, facilitate the emancipation and reconciliation of the object, material or space drawing on its inner qualities and structure.

Given that the potential use of an object cannot be predetermined, nothing is discarded but reused differently by the *bricoleur*. This theory of renewal is not restricted to tools and materials but also to sustainability, ideas and philosophies. The present movement in design is towards a Greener architecture, one which centers on increasing the efficiency of the resources in use. It is focused especially but not restricted to energy renewal, material and water conservation throughout the building's life during construction and deconstruction. This direction of Green Architecture is closely related to the *bricoleur* and bricolage within the context of reconnecting back to nature and the reevaluation of previously discarded material. The notion of improvisation in reference to the innate inventive quality of the *bricoleur* and the general direction towards architecture and sustainability was born in both instances out of necessity and the lack of alternatives.

²⁰ Del Real, Patricio." Slums do stink: artists, bricolage, and our need for doses of "real" life." Art Journal (2008): 5.

PART II. THE MAKOKO FISHING COMMUNITY PROJECT

CHAPTER 4.

A CASESTUDY OF THE SITE

The Site

“Makoko is one of the communities that sprang up sporadically in contravention of the wider State settlements patterns and development plans (set by the Lagos state government). The area lies in the south east of Mainland Local Government overlooking the Lagos lagoon and the third mainland bridge to the east. Mainland Local Planning Authority puts Makoko population at **85,840** in 2002 from the base Population in the 1991 census. But a conventional population projection based on the 1995 Figure of 51,336 and growth rate of 7.5% put the population of Makoko at **85,168** as at 2002 and **113,740** in 2006. The selected section of Makoko is 72 hectares in size with a population density of **713 per hectare**.”²¹

Figure 5. Aerial Photograph of Makoko, Lagos 2008 – Google maps

²¹ Tunde, Agbola Urbanization, Slum Development and Security of Tenure: The Challenges of Meeting Millennium Development Goal (MDG) 7 in Metropolitan Lagos, Nigeria. Kenya: 2007, Page 9

The Oral History of Makoko

The present day Makoko community was originally located on an area of land covered with *Akoko* trees. The land was uninhabitable due to the fact that the *Akoko* trees grew thickly in water and swampy areas. In Yoruba, the native language of the inhabitants of Lagos, *omi* means water. Therefore, the original description of the present day Makoko was *lomi-akoko* meaning the place where the *Akoko* tree grows on water. Over the years the name has evolved into 'Makoko'.

According to the oral history, the original founder of Makoko was a woman known as Ramatu Emmanuel. As the name implies, she was both a practicing Muslim and Christian. Oral tradition claims she worshiped both in a mosque and a church. Ramatu Emmanuel migrated to the present day Makoko approximately in 1886 from the Lagos Mainland, known at the time as Eko. She invited the "Igu" community from Ilubrin on the Lagos coast who are known as a fishing people, to come and inhabit part of the land. As the Igu fishermen moved in the area the trees began to disappear and the fishing industry began to grow and multiply. People from all over Lagos Island began moving to Makoko in search of jobs and living space.

As the settlement continued to expand, the government of Lagos (owners of the land) decided to lease and not sell the land to the community leaders. Hence, they were instructed to construct their houses out of wood and not concrete blocks, to ensure that the structures erected were not permanent in nature, though some concrete structures of great historical value had already been established in the Makoko area. The sawmill industry seemingly part of Makoko is owned and has been run by the "Ilaje" community for the past 50 or more years.

They are located in “Okobaba”, an area that shares its border with Makoko. Timber is exported to the sawmill industry from Ondo state in Nigeria by means of Tug-boats. The timber is tied together to make rafts comprising of 12 tree trunks each. They are then tied together and attached to the Tug-boat which delivers the timber to the sawmill industry via the Lagos seaport.

Architecture of Makoko

Because of the growing population of the Igu people, an architectural demarcation was subconsciously setup distinguishing the end of the section of the community run by the other sects of people from the Lagos Island and the beginning of the section of Makoko run by the Igu people. The boundary is not a line, wall or fence, it is a footpath. Along the side run by the other Yoruba sects the houses are built with wooden planks with a distinctive thatch roof. On the side leading to the Lagos lagoon the houses are built with a bamboo façade with aluminum roofing sheets. The houses on the lagoon are built on stilts and since the water of the lagoon is very shallow the stilts are rammed simply into the water bed without the means of extensive technology. The most captivating aesthetic architectural element of the Ilaje community is the view of the spread-out fishing nets seen from afar rising on long wooden poles high above the horizon.

The Community

Introduction

The concept behind the architectural intervention proposed by this thesis lies within the integration of the two communities on site, taking into close consideration the socioeconomic aspects that ground the way of life of these inhabitants. It introduces an alternative design approach to construction that simultaneously takes into consideration the socio-economic qualities of the site and addresses the current urban problems. The project is governed by the results of a case study carried out by the author, drawing an analysis based on the availability of materials and the dynamics of the various factors preexisting on site. Due to the high level of illiteracy in the area, the project is designed to adapt present construction techniques and translated into simple diagrammatic construction procedures that would spark the development of a new industry contributing to the creation of new jobs for the many unemployed youth in the area while simultaneously providing alternative affordable housing.

Figure 6. Aerial Photograph of Makoko, Lagos 1995²²

²² Tunde, Agbola Urbanization, Slum Development and Security of Tenure: The Challenges of Meeting Millennium Development Goal (MDG) 7 in Metropolitan Lagos, Nigeria. Kenya: 2007, Page 9

The Current Conditions

Air pollution

The close proximity of the site to Okobaba, the community beside Makoko where the sawmill industry is located, provides both negative and positive consequences. The sawmill industry provides work for the inhabitants and at the same time provides the majority of their building materials which are otherwise discarded by the industry. However, the waste wood collected at the mill which consists of woodchips and sawdust is burnt every three to four days releasing carbon monoxide and other toxic gases into the atmosphere.

Figure 7. The burning of waste from the sawmill Industry, Makoko Lagos

Water pollution

The Lagos lagoon upon which the site is located has been extremely polluted over the decades and has a distinctive black color. The smell of the water has become synonymous with the site due to the lack of a proper human waste and garbage disposal systems. This has led the occupants to find alternatives for waste management through the disposal of waste into the lagoon. The water does not move and hence they experience epidemics of malaria, cholera and other water borne diseases. The rising and falling of the tide during the different seasons has led to the collection of accumulated garbage along the banks and into the water.

Figure 8. Water Pollution, Makoko Lagos

Congested transportation system

The erratic sprawl of the slum has led the congestion of the waterways. The houses were initially clustered tightly and close to land, but the space between them widens as the slum extends towards the lagoon. The reason for the congestion is a practical one. The fish collected at sea by the fishermen is cooked by the women in the houses and sold on land, therefore individuals approaching Makoko to buy fish are more likely to buy from those closer to shore, hence the struggle for building space along the shoreline. There are however commercial boats, upon which some individuals stock merchandise and paddle through the community selling goods from their canoes. There are approximately two canoes to each household causing traffic congestions during the day.

Figure 9. Traffic congestion along waterways, Makoko Lagos

Over crowding

The community in Makoko is highly communal, as almost every household knows each other and are actively socially conscious. However the houses are relatively small compared to large families that occupy them. The average family consists of 6 individuals and usually shares a 2 bedroom house of approximately 500sqft allowing 84 sqft per person. Whole families sometimes share a one bedroom house where they eat sleep and live. Cooking usually occurs outside the house but in some cases where the house lacks a deck, the cooking takes place indoors. The construction technique coupled with the close proximity of the houses restricts the possibility of expansion as the family grows.

Figure 10. Family living, Makoko Lagos

Limited access to clean drinking water

Though the site is located on the lagoon, the residents are forced to purchase relatively clean potable water from local vendors. The polluted water is unfit for consumption and appears to be beyond purification. Clean water cost 5 Naira per barrel which is the equivalent of 5 Canadian cents. The average person survives on \$2.00 per day, so the cost of water is relatively expensive. Although it is important to note that the families that own the water pumps make their living through the sale of clean water.

Figure 11. Child purchasing clean water

Figure 12. Child purchasing clean water, Makoko

Poor Drainage on land

The people of Makoko have mastered the fluctuating tides during the dry and wet seasons, and hence those on water rarely experience flooding. However, the houses located on land are surrounded by narrow gutters filled with garbage that overflows during the rainy season exposing the people to harmful bacteria and diseases. The gutters are sparsely located and lead to clogged sewers, which is not a problem specific to the site but a general problem in Lagos.

Figure 13. Poor drainage system, Makoko Lagos

Figure 14. Overflowing gutters, Makoko Lagos

Excessive Garbage and Poor circulation

The absence of a waste disposal system has contributed to Makokos' many urban problems. Litter left on the ground is accumulated over the decades, though some of the discarded material is sometimes cleaned and recycled by some of the residents. Although there are few pedestrians commuting through the site on the lagoon, the pedestrian circulation between the houses on site is impeded by poorly constructed bridges that are dangerous both to the pedestrian and the canoes commuting below them.

Figure 15. Poor waste disposal, Makoko Lagos

Figure 16. Building materials reused from garbage, Makoko Lagos

Figure 17. Inadequate pedestrian circulation Makoko Lagos

Figure 18. Inadequate pedestrian circulation, Makoko Lagos

CHAPTER 5.**THE PROCESS OF DESIGN**

The site exploration began with an evolving composition drawing predetermined to become the frontispiece of the project. The ephemeral nature of the site was reflected through the development and constantly changing qualities of the drawing. Prior to the site visit, the focus of the exploration of the conditions of the site through the drawing drew attention to the space between the water and the floor boards of the houses.

Figure 19. Dark space- compositional drawing

The 'dark space' between the water and the bottom of the floor boards of the houses appeared to offer a potential quality that could evolve into a prospective solution to the urban problem of overcrowding on the site. Since the site appeared to be overcrowded with houses squeezing to fit within a limited horizontal space, the response with the possibility of interpreting the 'dark space' as a habitable space potentially for commerce through its vertical

expansion seemed plausible. This instigated the exploration into the various possibilities of the 'dark space' through a collage painting. The dynamic nature of the site through the constant creation of new buildings and the unvarying substitution of building materials was the starting base of the collage study.

The four canvases sought to denote the limited availability of options and the possible combinations and permutations of prospective solutions. The canvases collectively provided the horizon needed as a starting point to present the general direction of the painting collage.

Upon returning from the site, it was essential to note and document all major building materials available on site. Since the necessity of the allocation of boundaries had been established through the course of the research into improvisation, the material pallet served as the boundary governing the development of an architectural intervention for the site. The product of the experimental models was restricted to the material pallet forcing the improvisation and adaptation to what was available into an architectural alternative.

Figure 20. Drawing documenting available building materials on site

The available building materials on site consist of the following: Concrete blocks, unprocessed wooden planks, processed wooden planks (2x6, 2x8, 2x4), aluminum roofing sheets, bamboo, straw, wire mesh, fishing nets and cloth.

As earlier stated, timber is transported to the saw mill industry via the Lagos sea port on rafts comprising of twelve logs attached to tug-boats. The exploration into the disassembling of the rafts into its constituent parts provoked the idea of attachment and detachment. This theory combined with the assemblage through collage and layering of the material pallet evoked the design of the collapsible wall panel. Because the families in Makoko are constantly growing and changing, the housing unit containing them needed to be adaptable in nature to the needs of the family. The close proximity to the saw mill industry and the abundance of “waste” wood on site made it clear to me that the most successful building solution would be one that adopts some aspects of reusing the waste wood.

The wall panel

The proposed wall panel is 4' x 4', to be mounted one on top of the other to form a 4' x 8' wall panel. The need for a structural, portable and easily assembled panel was important due to fact that some of the walls constructed on site have not proven to be structurally safe and endure the harsh rainy seasons. This thesis proposes the use of Gabion baskets which are wire mesh boxes, containers or baskets filled with rock to prevent soil erosion and to retain/contain soil particles.²³ However, the existing design of the gabion basket has been modified to provide a specific basket to be introduced during the construction of the new wall. The original Gabion baskets are filled with rocks and used as structural elements in foundation construction, as a retaining wall and in some cases as load bearing walls for buildings. However, limitations of space on the site and the weight of the existing baskets focused the design on the strategic manipulation of the basket to meet the practical requirements of its implementation in Makoko.

Figure 21. Gabion baskets

Figure 22. Gabion baskets

The basket proposed for the wall panel is a 3" x 16" x 48" steel frame welded together with a continuous wire mesh on five sides. Discarded wood from the sawmill industry along with

²³ <http://www.gabionbaskets.co.za/>

abandoned waste wood amongst other water material are taken out of their original context and then inserted into the basket. The collage of the different materials within the basket begins to suggest an alternative meaning to each of the constituent pieces as they form the basket unit as a whole.

Figure 23. STEEL FRAME

Figure 24. GABION BASKET – WIRE MESH WELDED TO FIVE FACES

Figure 25. GABION BASKET- FILLED WITH DISCARDED WOOD (Exterior façade)

Three of these gabion baskets are inserted into a wooden frame which is securely attached to the deck. The second panel is then mounted on top of it and the exterior façade is covered with a layer of clay or cement, while the interior façade of the wall is covered with layers of fishing net which begins to serve as a protective layer against mosquitoes.

Figure 26. Demonstration of wall panel assembly

The weight of the complete wall panel restricts it from being assembled off-site, however each one of the unit components are light enough to be constructed off-site and transported by canoe to the construction site. The modular nature of the three gabion baskets within the wall panel offers its manipulation into a window panel and a door. The window panel would consist of three gabion baskets as opposed to six in a complete wall panel; two at the bottom and one at the top, while the door frame would have only one gabion basket at the top.

Figure 27. COMPLETE WALL PANEL

Figure 28. WINDOW PANEL

Figure29. DOOR PANEL

The Single Family home

Figure 30. Single Family home

A close analysis of the present housing conditions drew attention to the close knit nature of the houses, both physically and socially. Close quarters due to the limitation of space promotes constant interaction between the dwellers of the household. An initial study documenting the conditions of the average one-bedroom house was important to develop a better understanding of the current conditions before proposing an alternative. A model was built to develop an accurate understanding of the general lay out of the spaces within the unit while addressing possible solutions for water collection and storage. This model addressed the orientation of the spaces, the necessity of the close proximity of the kitchen to the water supply and the need for ventilation between the transitional spaces.

Figure 31. Progression of study model documenting current spatial layout with prospective design solutions

Based on the average family size and limited space, the program for the single family home would consist of two bedrooms, a living room, a kitchen and a washroom. However, the results of this model was the development of a better understanding of the structural qualities of the deck upon which the unit would be built, the need for cross ventilation, the roof orientation to promote water collection, the need for composting toilets and storage, and the essentiality of the close proximity of the kitchen to the lagoon to promote commerce.

Based on these observations and the results of other intermediate experimental models the program, narrative and design were finalized. Its simplicity and relative ease of construction provides a foundation for its initial introduction onto the site.

The program

The finalized design model proposes;

- 2 bedrooms
- 1 common living space
- 1 Toilet
- An Outdoor kitchen
- A storage room (composting material)

The bedrooms and living space are designed to be manipulated depending on the needs of the family. More wall panels can be introduced into the house to carve out space from the existing design; however, it is important to note that the limited area of the deck which serves as the boundary, within which improvisation may occur, hinders excessive expansion. The men, women and children play a specific role in maintaining the smooth operation of the household. The majority of the men are fishermen who go out on the lagoon early in the morning to fish; they return around mid day and deliver what they have caught to their wives before re-embarking. The women cook the fish which is then handed to the children, or independent vendors who then sell the fish in town. The kitchens are always located on the exterior and the stoves are usually made of concrete blocks or improvised oil drums.

Figure 32. Improvised Oil drum stove

Figure33. Concrete block stove

It was important to maintain the element of an exterior kitchen in the design proposal as it promotes communication amongst neighbors and interaction between the women and the people commuting along the waterways. The manifestation of this notion in the design proposal occurs when the concrete stove begins to serve as a structural element. The concrete block is connected to the supporting beams which are connected to another concrete block on the opposite end of the deck supporting the water tank. The overall manipulation of the cooking stove into a supporting post illuminates the idea of improvisation while increasing the overall structural qualities of the deck.

As earlier highlighted, there is a disconnection between the Igu people of the Illaje fishing community and the rest of the Makoko community. The introduction of the concrete block cooking stove, which is presently synonymous with the section of Makoko community residing on land onto the Illaje section of site, is an attempt to present a form of reconciliation between the two communities. Though each community is very independent in nature, they periodically depend on each other for support. The single family home of this design proposal is

a hybrid structure that draws on the different architectural elements of the two communities- through the layering and merging the material pallet of both communities.

Figure 34. Cooking stove penetrating deck to attach to structural elements

Along the side of the deck are collapsible shelves upon which the fish once cooked is presented for sale to individuals commuting through the site. This gesture begins to resolve the problem of children being made to drop out of school to sell fish within the community, as it begins to carve an opportunity for outsiders to venture into the community to purchase goods, as opposed to the children undertaking the task of going onto land as street vendors.

The roof is designed to channel rain water to a water trough that leads to a water tank at the rear of the building. The window panels consist of four fractions of fishing net layered to provide a membrane which begins to serve as a mosquito net. The toilet is a composting toilet with a homemade composting bin located in a storage compartment within close proximity. The ideal situation of the self-composting toilet design is one where composting occurs on site and the methane gas produced is used to power gas lamps at night, while the compost material is returned to land where it is used as fertilizer to grow more trees. However the practical

implementation of this ideal situation is beyond the scope of this thesis. (See Appendix A for diagram of homemade composting toilet)

Figure 35. Close proximity of kitchen to water-way promoting commerce

Figure 36. Roof orientation to enhance water collection

Figure 37. Spatial orientation to enhance cross-ventilation within unit

Figure 38. Composting toilet beside storage room

Figure 39. Water trough transporting rain water to storage tank

The Multiple Family Plots

The Makoko community is very tightly knit, evidenced by the constant interaction between the residents. As opposed to the common misconception, there are very few criminals residing in the community and the area is relatively safer than the other slums of Lagos. The promotion of community gathering encouraged the pursuit of a separate design engaging two separate families residing on one plot. This particular system is already a common feature amongst the houses on site; having occurrences of two or three homes on one plot.

Close analysis of the experiential qualities of the spaces between the current residences was translated in the final proposal of the multiple family plots. Between residences, there is usually a separation of no more than 5 feet, probably due to the limitation of space. However, as earlier stated, the close proximity of the quarters encourages constant interaction between neighbors. Although the majority, not all residents of the community are fishermen; others engage in businesses such as retail or work outside of the community in the greater Lagos region. The design of the multiple family plots adopts manipulations of the single family home design to cater to the different necessities presented with the complexity of multiple families residing on one plot. The limited availability of space sparked the idea of vertical circulation to reduce the stress on the horizontal plane.

Figure 40. Ladder used to access elevated spaces

Figure 41. Space between residential quarters

The elevation of one of the bedrooms provides an alternative space where cooking and trade can occur. The design adapts the same water collection and storage strategy as the single family home; however the water from the second level is guided to the water trough by the use of metal chains attached to the aluminum roofing sheets. This design also offers the alternative of the conversion of the space serving as the kitchen with the addition of more wall panels into a bedroom. The elevated room is accessed with a ladder which is the most common mode of vertical circulation on site.

Figure 42. Spatial qualities of current conditions adapted in new design promoting interaction between residents

Figure 43. Model of the multiple family residence showing elevated bedroom to provide kitchen space.

Figure 44. Model of the multiple family residences showing roof orientation for water collection and storage

The Primary school

The modular quality of the wall panels creates a setting for easy spatial manipulation. The school was designed with the idea of the amalgamation of various units to create an environment that serves the fundamental purposes of a school. The Igu community (the houses on the water) of Makoko presently lacks the availability of a school to cater to their children.

The closest school is deep within the Makoko community on land and has proven difficult for children within the Igu community to access. Just as the multiple family plot draws on the design of the single family home, the proposed design on the school draws on the elements of a multiple family plot. The initial design of the Primary school highlighted the need for easy circulation within and through the school, the importance of a play space and the demarcation between the office spaces for administration and the classrooms.

However, the resulting proposal emerged out of scale in relationship to the rest of the program. Nevertheless, it posits possible solutions to external circulation problems between the school as an object and the rest of the site. Adopting the theories highlighted in this thesis, the process of collage and layering was implemented to procure possible alternative solutions to the internal circulation problems of the initial design of the school. Drawing on the notion that the artist hopes to arrive at the inner structure and reality of the object they paint (or draw) through collage, the school was treated as an object, and through various layers of drawing and the superimposition of images on top of each other, an alternative circulation system within the school was realized. Though the resulting design does not make a provision for a specific space for play and recess, it adapts the idea of modifying the classroom to cater to this condition, through collapsible desks and benches.

Figure 45. Initial model of the school showing alternative external circulation through the school

Figure 46. Elevated mass serving as a transitional space within the school providing space for play

Figure 47. Excessive space allocated for internal circulation

Drawing on the idea of assemblage which is closely related to collage, the final design for the primary school treats each element of the program as an individual module congregating to form the overall design on the school.

The Program

The finalized model for the school proposes:

- 8 classrooms
- 2 alternative rooms which could be used as workshops
- 2 office spaces
- 4 Toilets

The eight classrooms which are ideally designed to cater to fifteen pupils consist of 4 x 3 wall panels an expansion of bedroom proportions of 3 x 3 wall panels of the single family home. The public spaces, such as the classrooms and the alternative rooms are elevated four feet above the horizontal plane which was dictated by the height of half a wall panel consisting of three gabion baskets. The constituent units of the school are linked by a six foot wide deck, which provides internal circulation within the school. The gabion baskets of the wall panel are further improvised to serve as the staircases leading to the elevated masses by being laid horizontally and reinforced with wooden planks. The final design makes provision for both an alternative circulation system and reduces the stress on the limited space on the site's horizontal plane by emphasizing the vertical elevation of the masses. This was the final resolution of the "dark space" highlighted in the frontispiece. Though not converted into habitable space, it generates an alternative use from its original role as a lifeless space.

Figure 48. Layered composite drawing redesigning school to resolve excessive space allocation

Figure 49. Revised school design highlighting alternative transportation system; internal and external circulation

Figure 50. Elevations showing vertically elevated volumes to draw attention to external circulation through the school

CHAPTER 6.

THE URBAN SCHEME

“The United Nations Habitat Group projects that at its present growth rate, Lagos State will be the 3rd largest Megacity in the world by the year 2015 after Tokyo and Bombay.”²⁴ This projection has sparked the government to readdress the urban, infrastructural and socioeconomic issues currently plaguing the city of Lagos. Plans have been set in motion foregoing a long term process of intense urban renewal and revitalization projects to address the uncontrolled urban sprawl. The course of slum eradication has already begun in Lagos and the results have been both negative and positive. Though the eradication of slums and shantytowns aesthetically beautify the view of the city, it may form a façade masking other problems derived from the process of urban renewal. (See Appendix B for urban renewal case study of Maroko slum, Lagos)

The similarities between the now destroyed slum of Maroko and the Makoko community are overwhelming. The complete demolition of precedent slums in Lagos state played an important role in the design process of the urban implementation of this design proposal. By incorporating the culture and present construction methods of the residents, while taking into consideration the limited access to advanced technology, the project seeks to actively involve the community as a whole in the participation towards its success.

The gradual integration of this alternative approach to design is targeted to spark the interest of the residents by adopting the ideologies of the *bricoleur*, to reconsider what they

²⁴ Detail commercial solicitors. "Public Private Partnership:." News Letter August edition (2008): 1.

presently define as garbage, given that a potentially discarded material could serve as constituent of a gabion-basket module the key component of the proposed wall panel. This act of material recognition is also similar to the artist who takes a fresh look on otherwise mundane objects when constructing a collage.

The gradual transition of the current buildings on site into the proposed building intervention will require the residents to work in groups concurrently demolishing the current houses deemed structurally unsafe and the construction of the new homes for the residents out of the demolished material. This process would be a manifestation of the diminutive exciting moments produced through the overlapping and layering of the traditional against the modern, through the interaction of the design proposal with the existing structures.

The projected orientation and interaction between the single family unit and the multiple family plots presents the separation of public and private spaces, the creation of commercial zones and wider circulation space. Privacy is enhanced within the realm of the dwelling spaces inside the units and the internal commercial zones from the external circulation spaces of strangers and visitors navigating through the site. The planned orientation of the single family and multiple family plots creates the condition of wider water ways in the public zone catering to larger boats with water tanks navigating through the site to deliver purified water to the residents during the dry season. The primary circulation space created through this orientation generates a commercial zone between the constituent houses. This design draws on the present conditions of the circulation system at play on the site. Though maintaining the communal effect created by the close proximity of the dwelling spaces, it

modifies this space into an alternative zone for commerce through the orientation of the sale platforms.

Figure 51. Wider water-way catering to larger boats navigating through the site to deliver water in the dry season.

Figure 52. Narrower water-way catering to the commercial zone promoting commerce

The spatial orientation of the single family unit to enhance ventilation through the spaces is adopted through this urban design proposal. The zone is stretched on the horizontal plane which simultaneously creates a visual connection between the units and provides cross ventilation through the site.

Figure 53. Visual connection between spaces simultaneously enhancing ventilation

Figure 54. Community model

As earlier stated, because of the dense nature of the site, outsiders are skeptical of venturing into the community. However, this design project proposes the orientation of public structures, similar to the design of the school with elevated volumes, to carve a path through the site. The alignment of the elevated spaces of each of the structures would facilitate an alternative express waterway through which the secondary commercial zones created by the orientation of the single family home and multiple family plots can extend. Though this project does not specify a particular point of intervention for the single family home and the multiple family plots, it showcases a potential that could be created with the alignment of public buildings with elevated volumes drawing outsiders from the outskirts of the site deeper into the community.

The design of this project presents an adaptable template: a framework upon which the residents can develop new alternative strategies to building construction. The modular nature of the wall presents the opportunity for structural manipulation, and economic adaptation. For example, given that the cost of cement becomes too expensive for the residents they can use alternative finishes for the exterior façade. This possibility provokes the idea of improvisation and embodies the ephemeral nature of the site through the variation of the structures and the collage of various façades that would emerge over time. The architecture in itself becomes a manifestation of the improvisation; a platform through which the fundamental elements of collage, poesis and improvisation emerge.

Conclusion

Improvisation is a phenomenon already existing in architecture. However, its manifestation is limited to theoretical discourse. Through the abstraction of the primary characteristics of collage and assemblage, the practical application of improvisation can be reintroduced into architectural practice and urban planning. It is evident that the allocation of boundaries in the practice of improvisation separates the resulting product from a random assembly of a variety of materials, objects or space. Through the cross-contextualization of objects in collage and the strategic alteration of the visual perception through layering, objects begin to transform and reconcile, drawing on qualities of their inner structure. The treatment of the wall panel and the various constituent programs of the design proposal metaphorically as objects in reference to collage produces a paradigm through which an understanding of the existing can be established before the proposition a design alternative.

Though the methodology of assembly of the single family home was adopted in the design of multiple family plots, the translation of the 'dark space', which was explored initially through the multiple family plots, was developed through the school proposal. The school proposal is not a definitive design but an illustration of prospective public buildings on the site whose alignment would begin to carve a path through the site.

The ideologies theorized by Colin Rowe such as the collage and layering of miniature "utopian" moments throughout the city are manifested through the design proposal of this thesis. The proposal anchors on the theoretical opposition to 'total planning' and 'total design' by creating prospective instances where spontaneous improvisation may occur through spatial,

material or textural manipulation. However, the practical applications of such theories are realized through the recognition of the improviser as the *bricoleur*, the act of improvising as Poiesis and the improvised product as bricolage. Though the implementation of the proposed design introduces the idea of layering diminutive 'utopian' moments within the city through the gradual construction of the new programs highlighted, it sets the stage for the realization of this thesis as a paradigm and adaptable tool that could be employed when tackling urban problems in developing countries. Based on the availability of materials and space, architects and urban planners alike sub-consciously adopt the practice of improvisation drawing from the socioeconomic and cultural qualities of the inhabitants of a given site before generating constructive resolutions to urban problems.

Implementing the design alternatives illustrated in this thesis which were based on the preexisting dynamic systems of the site reflects the idea of superimposing the old against the new. Just as Alvar Aalto and Le Corbusier developed constructive design alternatives through experimental explorations with collage, this thesis realized prospective urban and individual architectural solutions by contrasting vernacular and traditional qualities with modern interventions. The act of collage is not definitive enough to produce an explicit architecture, however combined with the notion of improvisation within an allocated set of boundaries; it begins to inform a gesture that can evolve into architecture. In this thesis, a non-specific program was carried out with a specific methodology to extract architectural space from the mundane and docile. Fundamentally through collage, assemblage and layering, this thesis illustrates that improvisation can be adopted as a dynamic tool when addressing architectural and urban renewal issues in developing areas within our modern society.

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Appendix A

Self-contained composting toilet

Figure 52. Diagram of self contained composting toilet ²⁵

The basic materials are:

- 1 - large (approx. 96 gal.) trash can with wheels
- 1 - medium sized (approx. 32 gal.) round trash can
- 1 - threaded 24 inch section of 1/2" steel pipe
- 2 - threaded 6 inch sections of 1/2" steel pipe
- 2 - 1/2" steel pipe flanges
- 1 - 3 foot section of 1/4" rebar
- 2 - 12 inch sections of 1" steel tubing
- 2 - 3 inch steel hinges
- 2 - Steel chest hasps
- 6' - 1/4" steel mesh screen
- 14' - 1/2"

²⁵ Crumley Family. "01 compost bin diagram." 2 August 2006. [Flickr](https://www.flickr.com/photos/crumleydotorg/204776628/). 3 April 2009 <www.flickr.com/photos/crumleydotorg/204776628/>.

Appendix B

The Maroko Urban renewal Case study

The former town of Maroko was located east of Lagos between Victoria Island and Ikoyi (both Suburban communities). It was formed as a result of part of a “slum clearance” scheme that was in effect in central Lagos in 1955. The thousands residents of 23 villages had been displaced and relocated to three small towns that later combined to form the collective area that was to be known as Maroko. By 1982 the government decided to start carrying out urban renewal projects in parts of Maroko, which involved the demolition of certain areas; however the residents of the demolished area were promised relocation settlements in 1987 which never happened. As a result, only 300 of the original 10,000 evictees were finally resettled into unfinished government buildings, where living conditions were worse than their original situation, meanwhile those that were unable to get a room in the government building resided to living on the streets and under the bridges located all over the city. On the former Maroko area that was demolished, sits Lagos states most beautiful residential housing complexes which is beyond the reach of any of the evictees and houses of the elite of Lagos Island.

In order to bring better understanding to the cause of the demolition of Maroko and the proposal to revitalize the area it is necessary to fully understand the intolerable living conditions the people were living in for decades were very similar to the present conditions of the Makoko residents. The former Maroko community lacked basic infrastructures and utilities, such as electricity, proper drainage systems and running water. Maroko was not connected to the national power Grid and its people had to rely on paraffin lanterns, candled and torches

instead. Since Maroko was surrounded by the Lagos lagoon, residents of the area could only use the polluted water as a means of transportation and had to resort to the digging of wells to gain access to pure water.

Community pit latrines were located in the area and those desperate dumped their feces in the lagoon, in buckets or on undeveloped land this created an unbearable stench in the area. This along with other factors such as the visual comparison of Maroko to Victoria Island which was located directly across from it, hinted the Government to carry out a revitalization of the area in order to save the people from the horrendous environment.

A seven day eviction notice was announced over the radio to the residents of the community on July 7th 1990, telling them that the area was going to be demolished in a week due to the fact that the area had been bought by a private investor and they would be required to move out all their belongings within the time frame. Nine schools, 1500 residential houses along with many religious centers were demolished in a matter of hours. Of the 300,000 evictees of 1990 only 2000 could prove the owned property in Maroko and were moved into the neighboring slum of Illasan. The remaining 298,000 evictees who could not prove that they had property have spread all over Lagos over the past 16 years contributing to the increase in the crime rate in the economy of Lagos. Because Maroko was in such close proximity to the suburbs of Ikoyi and Victoria Island property values were drastically reducing over the years with the growing crime rate and disease epidemics in Maroko.