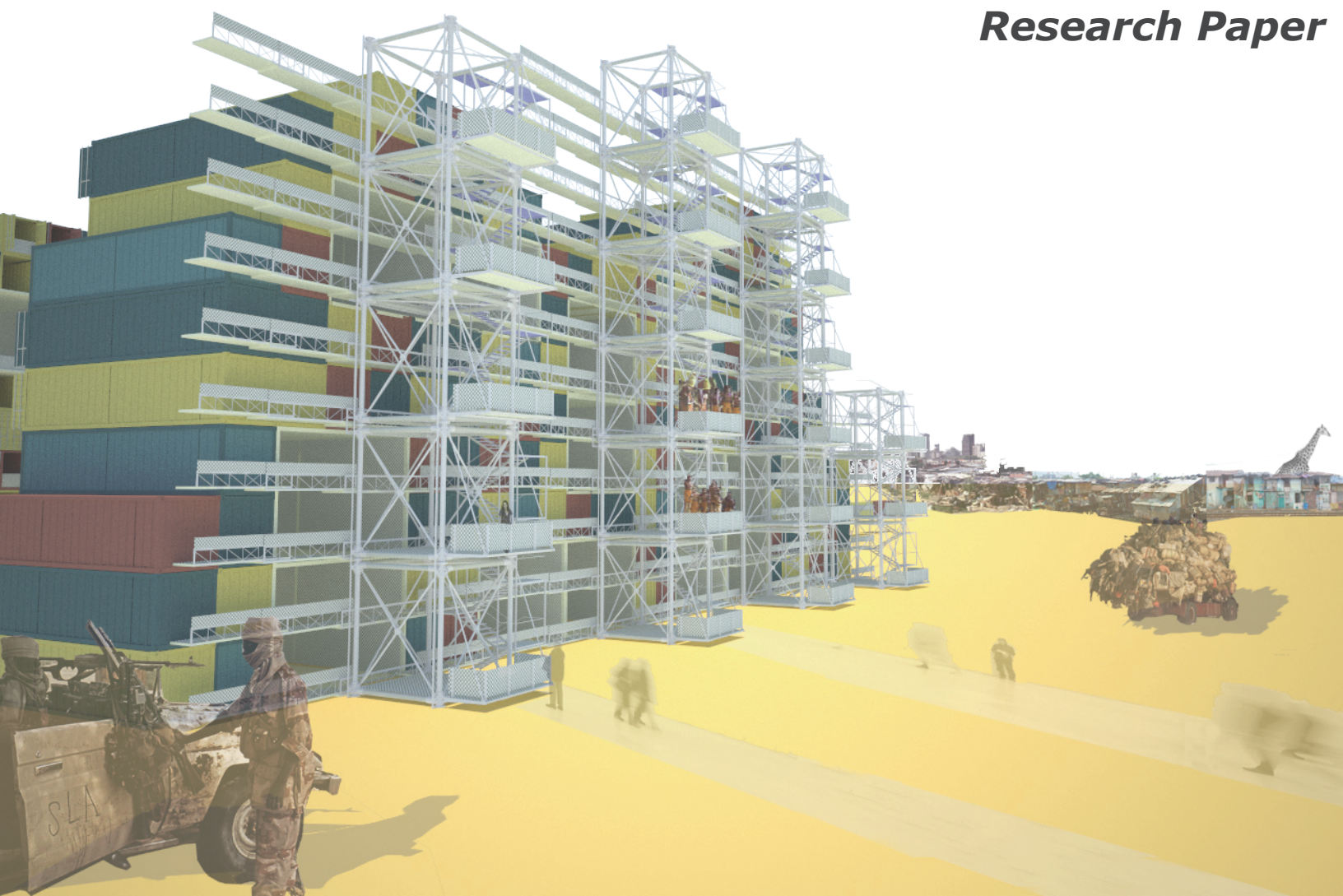




# KIBERA, assembling housing.

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*Research Paper*



## **STATEMENT...**

**“The works of the past always influence us, whether or not we care to admit it, or to structure an understanding of how that influence occurs. The past is not just that which we know, it is that which we use, in a variety of ways, in the making of new work.... The typology argument today asserts that despite the diversity of our culture there are still roots of this kind which allow us to speak of the idea of a library, a museum, a city hall or a house. The continuity of these ideas of type, such as they are, and the esteemed examples which have established their identity and assured their continued cultural resonance, constitute an established line of inquiry in which new work may be effectively grounded.”**

## **MOBILITY**

For an architect, typical housing solutions must be reconsidered and questioned when designing in a place of instability and war. A unique architecture must be created in order to deal with the ever-present threat of conflict and displacement in warzones. Kibera is one such place. Architecture is traditionally understood to be a statically fixed discipline where objects are generally built to last, however the Kibera project stems from impermanence.

Living in an industrial age of consumption, mass production and immediacy, the role of transport is crucial. Goods require movement, and the vessels through which such shipping is made possible need be of the most practical type. Shipping container architecture is born from the need to move, rooted in an ephemeral nature. Constant movement is facilitated through flexibility of assembly and disassembly. Transportation relies on existing and simple modes. Urban and architectural development plans are easily implementable due to a containers natural ease to expand stacking patterns, reactive to required living needs.

## **SITE**

Located on the edges of Nairobi, Kenya, Kibera is one of the largest slums in Africa with an estimated population of one million people, and a population density of nearly 1.5 million per square mile. The riots of 2008, in which large areas of Kibera were burned to the ground, allowed the world to see the impermanence and adversity with which the locals live daily, not knowing if they will have a home when they awake. Basic services are denied, water is scarce.

Nairobi didn't exist before the British came. It was a small Masai settlement at a confluence of several small rivers. The city came into being in 1899 because the British wanted to span East Africa with a RAILROAD. Nairobi was the staging point for the rail system<sup>1</sup>. That rail system, still a major part of Kibera life, acts as the backbone for the project, assisting the transportation of units, as well as creating a moving market through the site, which will be discussed later on.

<sup>1</sup> Neuwirth, Robert. Shadow cities: a billion squatters, a new urban world Routledge, Great Britain, 2005, p.85

## SOCIAL MODEL

DIONISIO GONZALEZ's recycling proposal in Sao Paulo's shantytown architecture consists of partial recycling, starting from the pre-existing reality. He suggests a radical restructuring of the constructability of the site, improving precarious conditions of habitability, creating an architecture that is made expressly to dissolve the gaze for exclusion<sup>2</sup>. His interventions act as replacements to the vertical towers planned by the city, aimed at demolishing the existing materials and homes in the shantytown. Looking to Gonzalez's work as precedence, the Kibera project delves into a similar "recycling of material". Due to the recent riots, a gross majority of the mud huts and existing dwellings were burnt down to the ground. Unable to re-use the material from the site, recycling and re-vamping shipping containers was considered.



*Gonzalez, Sao Paulo intervention*

## SHIPPING CONTAINER TYPOLOGY

Living in an industrial age of mass consumption and production, shipping containers become the objects of our civilization. The notion of a shipping container as a vessel for a home acts as an evolution to the pod lifestyle. Adam Kalkin's Push Button House is a shipping container designed to transform into a house at the push of a button. Motorized walls unfold, revealing a fully functional house. In the Kibera Project, garage style doors are installed to create open spaces for units, while maintaining a simple mechanism as well as preserving the container's form for shipping purposes.

T.O.P Office offers insight into exceptional modes of stacking containers, materializing cantilevered containers, allowing the Kibera project to implement such stacking configurations. Stacking the containers also creates a vertical community, with people's homes adjacent to their neighbours, defining a secure boundary based on one's neighbours trust. As a Kibera resident of twelve years describes, "Kibera is a community...I don't feel as if there is any other place in Nairobi that I could feel so much at home.

<sup>2</sup> [http://www.maxestrella.com/artistas/dionisio/expo%2007/texto\\_eng.htm](http://www.maxestrella.com/artistas/dionisio/expo%2007/texto_eng.htm)

When I am here, I feel like I am in my country home, If I have a problem, my neighbours will help. People here create a society"<sup>3</sup>.

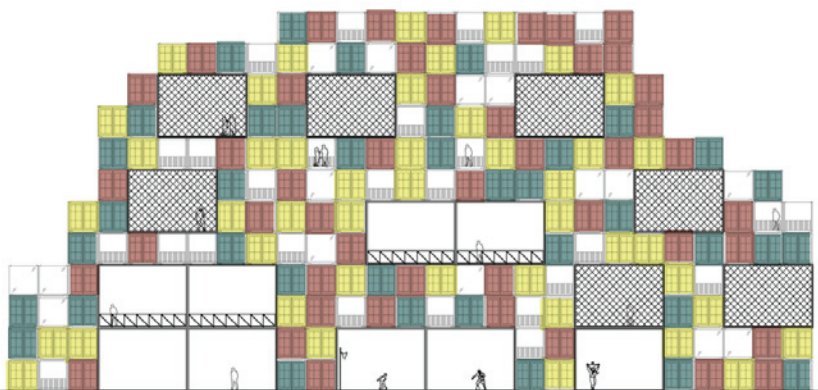
Stemming from Adam Kalkin's work, Lot-ek, a New York based office, created a universal and modular Mobile Dwelling Unit (MDU), describing shipping containers as being "extremely available; they are cheap and sturdy and modular. There is no other wrapper, no other mechanism for moving things"<sup>4</sup>. The mobile dwelling unit (MDU) consists of a variety of interior spaces pulled in and out from the long sides of the shipping containers to increase the occupiable space within, or to create a flush exterior when not in use. The MDU may be transported to various metropolitan locations, utilizing existing transportation infrastructure to form a mutable, collective grid of MDUs. They are "conceived by architects and/or artists alone, without clients, budgets, and predetermined program or site"<sup>5</sup>. Containers minimize the need for new construction and building material, as the worldwide surplus is easily revamped into a viable place of living and working. There, steel construction is highly conducive to adaptation and renewal. The architect is as much industrial designer as maker of space to accommodate a global nomad lifestyle.



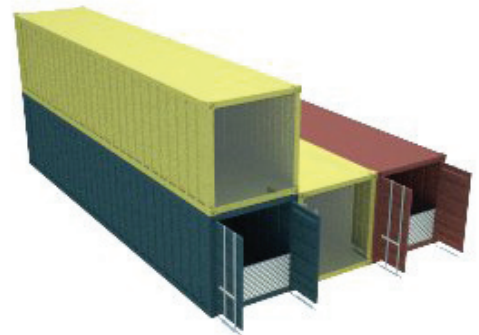
*T.O.P OFFICE, stacking configurations*



*Kalkin, Push Button House*



*Kibera project, stacking configurations & space frames*



*Kibera project, typical stacked unit*

<sup>3</sup> Neuwirth, Robert. *Shadow cities: a billion squatters, a new urban world* Routledge, Great Britain, 2005, p.97

<sup>4</sup> Azure. No.166, Mar.-Apr. "The Shipping News" Mays, Bentley John, p.74

<sup>5</sup> Journal of architectural education. No.4, Vol.57. "LOT-EK: Mobile dwelling unit" Scoates, Christopher, p. 58

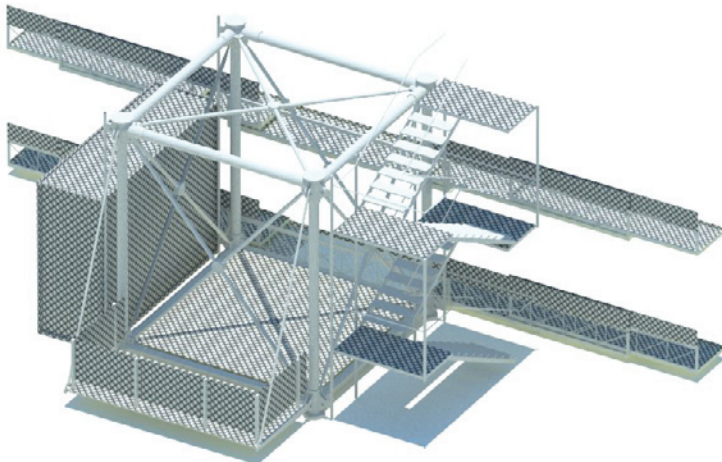
## STRUCTURE as circulation

An element of permanence must be in place to provide the assurance of basic services that such a population would need, such as water wells. The concept of the shipping container reveals the dark side of a site-less architecture, however, in the Kibera project, the space frames, and circulation towers can act as permanent landmarks.

The Kibera Project aims to mimic the Pompidou Center's implication of lightweight and effective structure for circulation. Prefabricated members are designed for easy installation, sliding into place with bolts, simplifying erection, and making it quick and effective. The Pompidou Center is inside out, facilitating technical adaptations. Components can be clipped on or removed, allowing a flexibility of movement<sup>6</sup>, an approach mirrored in the Kibera Project.

Modular steel towers, each unit equipped with circulation, programmatic, and service elements, allow for the vertical growth of these developments, rising in response to the stacked containers. Horizontal circulation is achieved through armatures that extend out of the tower unit. Steel is the ideal material for such a construction. Lightweight and easily prefabricated, it allows for the assembly, disassembly, and movement of these towers in an affordable and prompt manner. An optimized structure, using standard components, creates an appealing place of movement and activity, while performing its duties to the residents.

Programmatic elements also grow in response to demand. Large steel space frames provide platforms for communal activity, be it dining, work, water wells, or play, these spaces remain as flexible as the building in which they function.



*Kibera project, circulation tower details*



*Pompidou Center, exterior view*

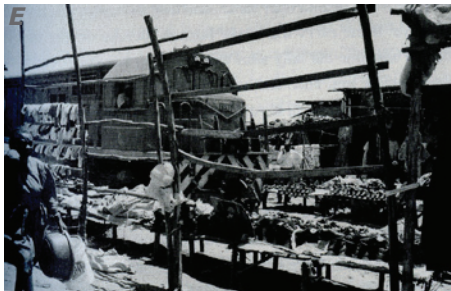


*Pompidou Center, joint detail*

<sup>6</sup> Picon, Antoine. *Du Plateau Beaubourg au Centre Georges Pompidou* Editions du Centre Pompidou, Paris, 1987

## Beyond architecture

Precedence does not end in the realm of architecture. Sequential processions and mappings of ones path through the site and building can be inspired by other modes of art. In the Kibera Project, inspiration was drawn from film. The existing train infrastructure was a major factor in the site, and incorporating this condition was a vital part of the project, not only in terms of unit transportation. Wes Anderson's film, "The Darjeeling Limited", portrays a refreshed forgotten perspective of the train as a mode of human exchange. In the Kibera Project, the train is used as a moving market, able to move in and out of the sites dependant on resident needs. Train cars can be removed from the moving train to sit on the site as permanent market vendors.



*train & surrounding kiosks at Midday*



*overflowing train running through Kibera*

## conclusion

Designing in a vat is impossible, precedence and inspiration stems from the world in which we live, whether we consciously wish to admit it or not. Dependant on that reality, of which today's is based on global movement and constant change; the notion of home takes on new connotations. It is inevitable for war to rage or poverty to continue to loom, but it is with the manipulation of standard housing typologies that new and appropriate modes of living rise, giving birth to suitable constructs in such zones.



*project render, market view as crane installs new units*

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