Crude Urbanism

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CRUDE URBANISM

Thesis by Ahnaf Chowdhury & Anuradha Desai

Syracuse School of Architecture

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INTRODUCTION

CONTEXT
Dharavi, Mumbai
Live, Work, Play, Pray

NODES
Distribution of Matter
Recycling landfill
Toolhouse
Electric meter
Public toilet
Brothel

SIMULATIONS
DATA MINING
PARAMETERS
HYBRID TYPOLOGY
ON-SITE RESEARCH
BIBLIOGRAPHY
Mumbai’s formal and informal components operate in interdependence. Matter from the formal is absorbed by the informal, where it is hacked, recycled and repurposed. The output, now lucrative, is spat back into the formal. For example, the city’s trash is collected, sorted and prepared by the informal as a commodity that is sold back into the formal. This cycle creates crucial nodes, where the formal relies heavily on the informal for its flexible and resilient systems.

Though these systems may be independent and engrained in Mumbai’s economy, the worker’s relation to the system’s matter reveals needs that the informal sector alone cannot meet. These are primarily social needs that derive from the constraints and disparities of informal work including education, security, and sanitation.

This thesis contends for a new, hybrid typology that brings together the layers of programs embedded in the flows of the informal economies. The purpose of a new typology is to mitigate the boundary and systems between the formal and informal. A hybrid typology derives its parameters by extracting information from existing flows at the nodes. It hosts the intersection of multiple systems and is an agent for stimulating the daily activities of informal workers. This new typology is envisioned as a piece of infrastructure that is constantly active, adapting to the nature of the ephemeral flows it contains.

The city is at stake. Without the nodes, Mumbai would drown in its own garbage, the economic flows would be halted globally, safety would be compromised and crime would prevail the streets. The cleansing activities of the informal lead to contaminating themselves—calling for the need to galvanize these communities. This leads to investigating the role of the architect by
“moving sharply away from the figure of the architect as an individual hero, and replaces it with a much more collaborative approach” (Spatial Agency). Overlaying and mapping the operations of informal workers and their awareness of the city allows us to speculate the future implications; and perhaps lends a new lens to understand the dynamics of these economies.
INTENTION

Catalog formal typologies present within the informal

Map movements, patterns and networks of commodities beyond the informal’s extents

Narrate jugaad instances in the everyday lives

Critique the relationship between formal and informal in the context of spatial agency

Rethink the role of the architect in the informal

Parodize how the informal challenges formal

Intervene at the nodes of interdependence between formal and informal
KEYWORDS

Nouns

Network • Entrepreneurship • Density
Equilibrium • Entropy • Agency
Infrastructure • Lifestyle • Necessity
Grassroots • Interface • Adhocism
Waste Economy • Transactions
Regeneration • Circulation

Adjectives

Ephemeral • Resilient • Intelligent
Frugal Elastic • Operative • Ingenuity
Static • Kinetic

Verbs

Hack • Parasitize • Flow
Accommodate • Negotiate • Innovate
Improvise • Intervene • Activate
Augment • Hybridize
PROJECT METHODOLOGY

Fall 2018 | Research: The aim is to raise the key questions that the thesis wishes to address through objective research. The plan is to:

Review the existing literature, cinema and information available on Mumbai, specifically focusing on the lifestyle, backgrounds, mindsets, needs and aspirations of informal workers.
Familiarize ourselves with case studies, precedents and documentation done in the realm of informal economies in Mumbai.
Collect relevant images, create diagrams and supplement them with maps and drawings.
Conduct interviews with contacts in the US to shape research and upcoming field work. Learn techniques of carrying out on-site research with marginalized communities. This includes understanding how to interact in a sensitive manner that is not offensive or intrusive.

Winter 2018 | On-site: This phase is crucial for linking the first research phase to the final design phase. On the site, we will:

Interview local experts in the fields of anthropology, architecture, urban design and history.
Survey the circulation flows in the three selected highlighted in the map below, which we hope to document in terms of material, cost, time, activities and space.
Map various informal workers throughout the day (with their permission) to understand their lifestyle, daily needs, interactions and most importantly, the specifics of their relationship to the node.
Select and study sites of intervention based on field work results and analyze their potentials for each node.
Collect material in an interdisciplinary approach: sketching, videography, photography, cartography, and literature.

Spring 2019 | Design: The goal in this phase is to synthesize all the findings and knowledge from phase one and two to:

Exhibit the on-site research and preliminary design materials at Slocum Hall for feedback.
Iterate through to produce a new, hybrid typology derived from parameters of the studied nodes.
Create a network of such design concepts that will address our initial research of live, work, play, pray.
APPROACH
Mumbai can be understood in two parts: the kinetic and the static. Architect and theorist Rahul Mehrotra describes “the static as more planned, permanent and constructed while the kinetic is temporary, flexible and always in motion” Informal workers act as a link between these static and kinetic parts—constantly weaving through the city and thus, giving rise to new urban conditions.

Work: Informal workers’ movements in the city are dictated by the city regulations, social hierarchies, and their relationships to the neighborhood. They have to abide to boundaries demarcated by curbsides and pavements that are classified as “no hawker zones” or upscale areas that discriminate against them. The spaces they do inhabit include “road and railway edges, under-bridges and drainage channels” which are reported to be occupied by 60% of Mumbai’s population.

Live: Houses that informal workers occupy are often temporary and made of recycled materials such as bamboo, plastic sheets, asbestos sheets and mud. If not legalized, they are always at the risk of demolition and hence, are made very easy to reassemble. They also have the ability to grow organically and are often combined with work or pray activities.

Play: Children in these communities grow up almost too quickly. They have a very different childhood— from playing on rough, narrow or unhygienic surfaces to extending their play spaces on the chatt or roof, they utilize the available space in their unique ways. It is also common to observe young children take on multiple roles such as distributing chai in the neighborhood after going to school in the morning. They often share workload and responsibilities with adults to increase the household income. Lack of sanitation and access to clean drinking water is another issue
children residing in these areas grapple with.

Pray: Although larger buildings of worship attract more crowds of people, small roadside shrines are built in narrow, leftover spaces for residents living in their proximity. These shrines represent varieties of deities, saints and religions and can be situated on pavements, within building frontages or under trees. It is also observed that prayers can be done individually, kneeling on the sidewalks, or in a group, inhabiting the communal space of the neighborhood. These relatively tiny gestures and urban objects, such as a cross that stands on a plinth or a Hindu temple pavilion, play an integral role in one’s everyday experiences, movements and perceptions.
“The boundary of the space you keep clean is marked at the end of the space you call your own. The flats in my building are spotlessly clean inside; they smelt and chopped everyday. The public spaces--halls, stairs, lobby, the building compound--are stained with betel spit; the ground is littered with congealed wet garbage, plastic bags, and dirt of human and animal origin. It is same all over Bombay, in rich and poor areas alike.” (p.123)

“Another large block of already serviced urban land is owned by the railways: the vast tracts on either side of the railway. As it is, railway land gets converted for de facto public use anyway, when the slums--Sunil’s railway shanties for example--advance upon it.” (p.124)

“Whose city is Bombay? It is the vada-pav eater’s city. It is the lunch of the chawl dwellers, the cart pullers, the street urchins; the cops and the gangsters.” (p.126)

“The colonnaded arcades of the stately Victorian buildings of the Fort area pullulate with the traffic of an illegal, immovable, and necessary oriental bazaar.” (p.120)

“Another large scout of the digestive system is Rasool Mian. He knows where to go. The city is full of people claiming ownership by virtue of having squatted on the property. Tenants claim what’s not theirs. Tenants claim ownership by virtue of having squatted on the property. Mill workers demand that mills be kept open at all loss to provide them with employment. Slum dwellers demand power and supply for illegal constructions on public land. Government employees demand the right to keep working long past when they’re needed., at taxpayer expense. Commuters demand further subsidies for train fares, which are already the lowest in the world. The Indian government has long believed in the unreality of demand and supply; what you pay for an item, for a food or a service, has no relation to what it costs the producer.” (p.118)

“India has the world’s longest constitution, and probably the least read. People will make of it what they will.” (p.101)

“Water takes its revenge on our buildings; it corrodes the exteriors, makes waterways, makes buildings fall. The sea and the railways: the real estate advertisements to describe such a lift, a modern kitchen. But a different definition applies to what a facility is in the slum. "When you come back from work with the boys and discuss. In the chawl, we can’t go to hospital and they will come down at any time it chooses." (p.123)

“Anmol has marked out the small open space in front of his house there, build a balcony. Pleasure is taken at the beer bar.” (p.86)

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“India has the world’s longest constitution, and probably the least read. People will make of it what they will.” (p.101)
“All facilities” is a term used in urban planning that refers to indoor plumbing, facilities for washing, and other amenities that are not available in most slums. When you say to your neighbors that you have to go to the hospital and they will come instantly. (p.93)

“Half the population does not have a toilet to shit in, so they shit outside. That’s five million people. If they shit half a kilo each, that is two and a half million kilos of shit each day. The real story is what you don’t see (in the film). There are no shots of women shitting. They have to shit between two and five each morning because that is the only time they get privacy.” (p.127)

“Rasool Mian knew where to broadcast pornographic film on his cable network. The requests for porn often come from his female subscribers. When he goes to I.C college, the women tell him, ‘Sunil bhai, you are not taking care of us.’ That is code. Early on the evening that he decides to take care of his subscribers, a little symbol, star for example is displayed on the corner of the screen, or a message scrolls with a time across the bottom all evening. ‘BBC channel is changed’—and the initiates understand that a blue movie will show on a particular channel at a particular time. Such a film is only shown on nights that people of Bombay drink: not on Tuesday because that is the night for the worship of Ganpati; not on Thursday, for that is for Sallaba; not, usually, on Saturday, because many people observe it as Hanuman’s day; and not on Monday, ‘when people don’t drink much because they’ve been drunk all weekend.’ Wednesdays, Fridays and Sundays are drinker’s nights, blue film nights in Sunil’s Bombay.” (p.89)

“Education is hope in Dharavi. On a recent afternoon outside St. Anthony’s, a parochial school in the slum, Hindu mothers in saris waited for their children beside Muslim mothers in burqas. Th parents were not concerned about the crucifix on the wall; they wanted their children to learn English, the language considered to be a ticket out of the slums in India.”

“Another large producer.” (p.118)

“Demands and supply; what you pay for an item, for a food or a service, long believed in the unreality of our world. The Indian government has further subsidies for train fares, expense. Commuters demand when they’re needed., at taxpayer expense. (p.112)

“Severe, pitiless arbiter of basic engineering principles. What the municipali-severely, pitiless arbiter of basic engineering principles. What the municipal-ceilings. Every monsoon is an assault on Bombay. The furious rain is a severe, pitiless arbiter of basic engineering principles. What the municipal-ceiling. Every monsoon is an assault on Bombay. The furious rain is a serious, pitiless arbiter of basic engineering principles. What the municipal-building compound— are stained with betel spit; the ground is littered with serious, pitiless arbiter of basic engineering principles. What the municipal-building compound— are stained with betel spit; the ground is littered with the same all over Bombay, in rich and poor areas alike.” (p.128)

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PLAY
Leather: Hide is collected from rural villages and brought into tanneries in Dharavi by informal workers. The hide is processed with toxic chemicals and then distributed to thousands of workshops in the slum to turned into leather goods to be sold in markets, to tourists, and exported to international markets.

Electricity: The electric meter, provided by the Government, is a node where electricity is hacked into to power the informal economy. Hacking this node brings forth new activities and jobs such as group TV watching, informal electricians, and informal electric safety inspectors.

Street Corner: The street corner is the barometer of the city’s capability to absorb informal workers. Workers loiter on the streets as a first and last resort to be contracted for jobs. Out of desperation women often turn to prostitutions or are tricked into entering brothels. The brothel is also a node that provides services to the formal as well as being an intricate architectural taxonomy that allows for surveillance, caging, and daily activities.

The node taxonomy depicts the plethora of formal and informal interdependencies that exist in Mumbai. The diagram establishes formal entities that create the need for informal workers. These formal entities are apartments, hospitals, religious buildings, streets and sidewalks, railway stations, infrastructure, bodies of water, markets and prisons.
80% of Mumbai's plastic waste is recycled

15,000 single-room factories

Paint reconditioned 3-4 times before metal weakens

15,000 single-room factories

10,000 tonnes/day of solid waste comes in

120,000 ragpickers

Rs. 5/bag of plastic

4.6m USD annual turnover

2000kg of cardboard repaired/day

Sold at Rs. 7/kg

RECYCLING LANDFILL
ELECTRICMETER
Naka (Street Corners) are first and last resorts for securing work. They are the barometer for the city’s ability to absorb unskilled workers. 300,000 people gather in Nakas every morning in Mumbai. 25 customers per day. 100 Rs. per session. Women are often kidnapped to the red light district or falsely promised economic stability. Taxis help clients connect with women in red light districts. 100 Rs. per session.
SIMULATIONS

In the process of understanding the systems of distribution and nodes, a series of study models were created. The models were constructed to perform and in a way simulate the systems of distributions for us to observe the behavior of matter. Another important objective was to introduce a facet to this thesis where audiences unfamiliar to the topic of Mumbai’s informal can see, smell, hear, and touch matter to better understand its topic. The following are specific descriptions of each of the models produced.

Sewage: “...water is everywhere but my taps” is a quote from Maximum City that begins to illustrate the problem of the informal sewerage system. The model allows us to study water flows and clogs in excrement management. It reveals the crude reality of the system and its effect on Mumbai’s informal.

Plumbing: Similar to the sewage model, this model is a study of water flows and clogs in pipes. It derives from a specific interest vertical slums where pipes are haphazardly added to hack into water supply in a dense setting.

Air-filter: This model is to illustrate and study the relationship of the human and post urban matter, specifically the performance of materials as a filter between human and toxic matter. The model performs the simulation by collecting smoke from a cigarette and pushing it through different material to test filtration. For example, a sari sample is used to illustrate how effect wrapping clothing around one’s face really is in toxic environments such as landfills.

Electricity: This model attempts to highlight a specific phenomena that results from the hacking of the electric meter. Short circuits are common and open ended hanging wires are a common sight within the interstitial spaces of Mumbai. This becomes a hazard, especially to children who use these spaces for play so tarpaulin is often draped over wires to protect dwellers. This model purposefully creates a short circuit to represent electricity hazards and test the insulation of materials like tarp.
AIR FILTERING
WATER TAKES ITS REVENGE. THE SEA AND RAIN ARE JOINED BY WASTE AND SEWAGE. THERE IS WATER EVERYWHERE, BUT IN MY TAPS.
CLOGGING AND SEWAGE
LEATHER TANNERS
POLICE RAID IN BROTHEL
Mumbai’s formal and informal components operate in interdependence. Matter from the formal is absorbed by the informal, where it is hacked, recycled and repurposed. The output, now lucrative, is spat back into the formal. For example, the city’s trash is collected, sorted and prepared by the informal as a commodity that is sold back into the formal. This cycle creates crucial nodes, where the formal relies heavily on the informal for its flexible and resilient systems.

Though these systems may be independent and engrained in Mumbai’s economy, the worker’s relation to the system’s matter reveals needs that the informal sector alone cannot meet. These are primarily social needs that derive from the constraints and disparities of informal work including education, security, and sanitation.

This thesis contends for a new, hybrid typology that brings together the layers of programs embedded in the flows of the informal economies. The purpose of a new typology is to mitigate the boundary and systems between the formal and informal. A hybrid typology derives its parameters by extracting information from existing flows at the nodes. It hosts the intersection of multiple systems and is an agent for stimulating the daily activities of informal workers. This new typology is envisioned as a piece of infrastructure that is constantly active, adapting to the nature of the ephemeral flows it contains.

The city is at stake. Without the nodes, Mumbai would drown in its own garbage, the economic flows would be halted globally, safety would be compromised and crime would prevail the streets. The cleansing activities of the informal lead to contaminating themselves—calling for the need to galvanize these communities. This leads to investigating the role of the architect in the context of the informal.
A quantitative analysis of the nodes extracts spaces and objects of the nodes studied in an objective manner. The purpose of the quantitative analysis was to create parameters that would eventually inform design decisions. These parameters were created by studying specific movements, tasks and objects in each node and dimensioning their spatial significance.

The result is a matrix of parameters that focuses on various scales of spaces. From an urban scale, the sewer system of Dharavi is mapped out to compare its relationship with tool houses, public toilets and bodies of water. In the smallest scale, the dimensions of a standard water barrel reveals requirements of pipe diameters.

The ambition of the parameter matrix drawing is to become a code book for the informal. In order to accomplish this, there needs to be a further development in both the representation and methodology. Once on site and with the help of local aides, a more accurate on contextual quantitative analysis can be conducted. The representation of the parameters must also evolve to depict motion and scale as the informal is constantly shifting with activities occurring on a multitude of scales.
HYBRID TYPOLOGY

The series of drawings were created in an attempt to achieve new spatial possibilities. Hybrid typologies were derived through an amalgamation of nodes, parameters and models. These typologies maintain familiarity while advancing the use of space in Dharavi.

The first hybrid typology combines a temple and landfill processing plant. The ideology of a sacred space gives the landfill an empowered status and character. The hybrid typology processes leachate into water that is used in the temple for workers to clean themselves. Incense produced from rituals are amplified and carried out through large smoke stacks to mask odor from the landfill.

The second hybrid typology activates the space inside and outside toilets, enabling it to be a safer space for slum dwellers at night. The infrastructure of the toilet is exposed and utilized for playspaces around the form. In some cases the sewage pipe is scaled up to retain sewage caused by frequent clogs. These elements take up forms such as observatories.

In further iterations, we will keep in mind concepts of scale, especially that of the informal worker. The next set will also focus more on the agency of the architect, not just to create space but to truly stimulate and engage by addressing critical issues.
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ON-SITE RESEARCH

Mumbai’s informal context cannot truly be fathomed unless observed. On-site research will enable us to observe, test our research, and take new directions based on our discoveries. Over the course of this semester, we have been using data mining as an approach to acquire imagery from the informal worker’s perspective to understand their daily activities within the spaces.

We plan to continue this bottom-up research strategy on the field where we will interview informal workers, map their movements, and document their relationship to the nodes. Being in Mumbai gives us the opportunity to interview experts on topics related to our thesis. The attached calendar indicates specific dates we have made appointments to interview the experts. They come from various disciplines and are authors of some of our primary sources. This series of interviews will strengthen our thesis by obtaining feedback through multiple perspectives.

We also plan to collect useful site documentation that includes dimensioned plans from surveys and 3D models from drone photogrammetry. The combination of our on-site research approaches allows a spatial and mobile ethnographic understanding of the site.

Ultimately, our field work will reveal opportunities for an architectural intervention and provide the thesis with in-depth groundwork of the context, systems, site and people involved.
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<td>Site 3: Local interviews &amp; video</td>
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<td>Site 3: Ground photography &amp; sketching</td>
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<td>Site 3: Drone aerial imagery</td>
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<td>Site 3: Ground photography &amp; sketching (continued)</td>
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<td>Site 3: Local interviews &amp; video (continued)</td>
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<td>Internal Review* &amp; any remaining site visits</td>
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<td>Interview: Ira Gosalia &amp; Sebastian Zachariah</td>
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<td>Interview: Aniket Bhagwat</td>
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**On Theory**


**On Activism**


**On Representation**

INTERVIEWS

Rahul Mehrotra  
Professor of Urban Design and Planning, Harvard GSD

Aniket Bhagwat  
Architect, Landscape India, Ahmedabad

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Ping Zhang  
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Joseph Godlewski  
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Kyle Miller  
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Writing instructor, Rhetoric and Composition, SU