

Tool Box

Add Infrastructure – A defining characteristic of informal areas is the need for more infrastructure. Accessibility solves many problems from lack of services to the introduction of mass transit and other agencies that network the slum into the city. The small alleyways of the favela support a robust street life but are difficult to navigate by bus, taxis, or other means. Infrastructure must also negotiate the intense slopes of the hillsides, adding to the complexity of upgrading.

Bio Resources - Rainwater harvesting: Using runoff water is a cheap, easy solution to cities' water woes. Research shows that enough rain falls in most of the world's cities to supply six times the current needs while still providing security against future droughts. Architects must think about energy-conserving and self-sufficient solutions; they must design to respond positively to the natural environment and to become integrated with the larger ecosystem.

Capture Unused Space - Valuable public space remains unused in many locations such as passageways, rooftops, corners, alleyways and facades. The architect must look carefully at every connection and passageway throughout a favela to discover new spatial possibilities. The task of imbuing these lineal spaces with activity, life and purpose usually requires a new stimulus - linking spaces, introducing amenities or simply rehabilitating surfaces.

Distribute Freely - Knowledge must be open-source. Architecture, despite its reputation as being a product of the creative whim, is a collective and collaborative act. By sharing even the most innocuous of details, an opening is provided for critical insight and improvement of methodology. Platforms for sharing are numerous in the Web 2.0 world, but cheap printing technologies can spread the fruits of research and invite discussion beyond the space of the screen.

Education – Design is often thought of in terms of structures and space, but more profoundly, design initiatives aim to change the consciousness of people. Such understanding leads us to the growing importance of educating a young generation of leaders and developers from around the globe. The next generation must develop autonomous, decentralized solutions to initiate positive transformations in the lives of their fellow community members.

Form - Formal devices can re-imagine the favela fabric. Rather than deriving patterns from the existing slum or attempting to extract a working logic from pre-existing cities, a formal device can come from anywhere. It is crucial to follow through on the urban and spatial implications of applying an “alien” logic to the favela, but such an exercise can produce new hybrids - introducing difference and vigor into the mono-cultural organism of the informal.

Go vertical! - Given no place to expand, Urban-Think Tank re-imagined the program of a typical park as a densely clustered network of uses, including a running track, basketball courts, a soccer field, a weight training facility and a dance studio. The result fosters community as well as fitness - by creating a dense social center instead of a vast tract of empty space. Tellingly, once built and opened, these buildings have brought measurable improvements in communities such as precipitating a drop in crime.

HHealth - Existing “open spaces” in many informal settlements does not offer opportunities for learning or skill building and frequently contains serious health risks making them unsuitable for play space. There is a lack of outdoor programming that could direct the potential energy and enthusiasm of the youth toward healthy community development.

Informal Urbanism- The informal city is becoming the norm throughout the Global South: our research has demonstrated that in Caracas a majority of the city’s inhabitants live in informal zones, and 80% of new housing is self-built. The improvisation that characterizes these zones resembles the “plug-in, tune-up, clip-on” architecture of Archigram. From a theoretical standpoint, the “informal” can serve as a laboratory for the study of adaptation and innovation. From a design point of view, informality is a condition of complex, nonlinear systems in which patterns overlap, intersect, and mutate in unexpected ways.

Juxtaposition- Good design necessitates framework that can be followed in order to combine targeted development sites with small-scale interventions - incubators of sustainable urbanism. These can spread throughout the community as residents identify and adapt future sites. By stimulating a series of points through the injection of accessibility, development can serve as a valuable hybrid, an invitation for the formal city to come into the heart of the informal.

Kit of Parts - Like the ad hoc nature of slum construction, the kit-of-parts is best when modular and flexible. A favela kit-of-parts needs to satisfy a few criteria: they must not be easily removable, materials must be cheap and they must be capable of working on a small footprint. A kit that can be disassembled and sold for scrap will meet an untimely end. Slum construction is subject to intense salvaging; many optimistic projects have been undermined by a resourceful population of scavengers.

Local Growth- Urban agriculture can be dense and social. Unlike the sprawling mono-cultural farms of agribusiness, urban farming is local, small scale and diverse. It can encourage sociability, provides mediating effects on pollution and runoff, and can beautify otherwise neglected surfaces.

Morphology - Informal “morphology,” the shape of buildings and blocks, emerges from a bottom-up process. First and foremost is the hill, which imparts its own ‘grain’ to future building. The construction materials available, usually blocks and scrap metal, modulate all building into square units. Houses are slowly built up, layers accumulating as new family members join existing relations within the favela. Slum morphology is an emergent phenomenon, a result of numerous small, individual decisions, rather than top-down planning.

Networks - Networks are crucial to overcome fragmentation. The informal settlement is fragmented by many forces; actual physical separation, topographic extremes, continuously changing population and poor political organization. Networks, both physical and social, can reinforce positive aspects of the community, bring in much needed resources and magnify the voice of the barrio resident.

Operate – New interventions must integrate with existing infrastructure to reinforce and re-direct. Increasing roadways and removing bottlenecks is often the first order of business in slum upgrading, given that future construction requires proper access. This comes at a high cost, due to necessary re-location and demolition of buildings that encroach on the right-of-way. By plugging into existing infrastructure, social functions, public facilities, new circulation and new forms of housing can be added - improvements that go beyond the scope of simple traffic remediation.

Pre-Fabricate - From factory to favela, pre-fab can bring small-scale development while dramatically raising building quality. The typical favela home is built of crude masonry and reflects the realities of the site and materials. This does little to modulate privacy, encourage ventilation or provide for future additions. By building components in the factory, future upgrading can bring with it a measurable increase in the performance of building.

Quality – Architects need to rethink, redesign and rebuild their architectural design capacities and urban toolbox in order to respond quickly with top-quality and lasting urban infrastructure as opposed to emergency and temporary solutions. We are not trying to do architecture for humanity, but rather our effort is based in developing sophisticated design.

Reverse Engineer - Developing models of informal growth means understanding how agents work together. By gathering knowledge of this coordinated behavior and surveys of initial conditions (a difficult task in the always-changing favela) it is possible to project how the slum will develop. In order to build a working model, or a sliver of slum DNA, we must reverse-engineer the slum. How does it grow? When does it grow upwards rather than outwards? What conditions are prohibitive for building? What pressures determine the extents and shapes of building?

Social Density - We have carefully mapped out neighborhoods that have intense social activity and have shown that they are a result of an integrated network of cultural diversity. A connected and dense social infrastructure spans scales and diverse actors to create opportunities, conversations, and investment in mutual wellbeing. Social density can be fostered as a spatial phenomenon through identification, analysis, and activation of sites with catalytic potential for community building. In this way it is a form of social infill that closes gaps in isolated, destitute, or atomized communities.

Transportation - The naturally pedestrian-oriented communities that live in slums are usually disconnected from the main transportation system and limited from the reach of main services and jobs sources. These represent a potential to develop flexible systems in a wide range of scales, which allows accessibility within the slum area and the formal city. Cable cars are small on footprint but big on mobility. Urban Think Tank's cable car system for Caracas integrates the hillside with the formal city, and perhaps more importantly, it connects the hillside internally.

Utopian Real- Inspired by Magical Realism, it's possible to work towards the utopian and the real simultaneously, developing a new urban field that is an alternative to the gated, traffic-clogged formal city of Latin America. The idea is to make radical proposals without concessions to practicality and convention demanded by the real world of practice. Then, when we build, we rigorously bring these ideas down to earth without losing the grander vision.

Visualize social factor - Visualizing data makes it accessible. Anecdotal descriptions of the slum condition will not suffice - clearly the slum is a complex condition of overlapping needs, capacities and risks. The favela fabric is unique in the degree to which this physical infrastructure is a built map of social relations. The typical home in the favela is in a constant state of construction, expanding to accommodate distant relatives and friends that are drawn to the city. Families can span multiple buildings, but one may also find multiple families in a single dwelling.

Waste - In India, people waste nothing. As developed by ARTI (Appropriate Rural Technology Institute), compact bio-gas plants convert kitchen waste and other organic materials into usable energy. Small enough to fit into the tight spaces of the favela, these refrigerator-sized units could be distributed throughout the fabric.

Xandu - An exotic, luxurious place. It is traditionally conceived of as a utopian retreat, though we hope to meld Xanadu with public space to create a region of comfort within the commons.

Youth Culture - Architects can lead a process of urban and social transformation in the cities of developing countries. This transformation is an ongoing and value-adding movement based on education and skill-building. A network of permanent youth centers, open to all young people, will give youth the skills and opportunities to be leaders and to nurture and develop their community. The aim is to encourage youth to participate in athletics, while also bringing them into the global conversation about the major practical, intellectual, cultural, and ecological questions facing our increasingly urban world.

Z-axis - In extreme slopes, housing must be as flexible as the informal fabric itself. A slum lab researcher demonstrated a possible multi-family housing strategy inspired by the opportunistic patterns of favela development in extrusion. The proposal includes creating density, utilizing in-between spaces and bridging across units to create small communities. In essence, the plan builds on the existing logic of the informal. The building typology consists of four floors above and below the intermediate access level. Each building is adapted to the extreme topography of the site, cascading down the hillside.