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AGRIPUNCTURE COMMUNITY CENTER IN MAPUTO’S INFORMAL SETTLEMENTS

A DISASTER RISK REDUCTION STRATEGY FOR FLOOD PRONE AREAS

The case of Polana Canico

BACKGROUND RESEARCH
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INTRODUCTION

Polana Canico, Maputo
(february 2000)
“Urban poverty and its attendant human cost is perhaps the single greatest challenge of our time. The future of our towns and cities, which is where most humanity will live in the next century, hinges on our tackling it successfully. The centrepiece of urban policy as we enter the 21st Century must therefore be the struggle against poverty, with goals such as the integration of the informal city, the recovery and democratic use of public space, and the reversal of the trend towards the concentration of wealth and opportunities.”

Final declaration at the Recife International Meeting on Urban Poverty, Brasil (1996)

The aim of the current project is to carry on the discussion about the potential impacts that small-scale upgrading interventions may have on the improvement of living conditions in slums and squatters and about the possible benefits that the city may gain in larger urban context, in contrary to large scale relocation projects.

Different architectural and urbanistic strategies will be analysed and compared, focused on increasing the resilience of local communities in informal settlements, through “urban acupuncture” interventions: such an urbanistic strategy aims to
minimize displacement while improving conditions in the most vulnerable areas by focusing on infrastructures, public spaces and community facilities.

The project will in particular deal with the reactivation of one of the weakest parts of the neighborhood of Polana Canico, today among the most densely populated, underserved, and poverty stricken zones of the city of Maputo, severely affected by landslides every year during the rainy season due to the critical sloping morphology of the land in the area.

The pinpointed area was completely destroyed by the flood that hit the neighborhood in February 2000, and is still extremely vulnerable and dangerous for the surrounding settlements: the aim of the intervention will be to transform it from a weak point negatively affecting the neighborhood into a catalyst element for the upgrading of the whole extended area.
THE CONCEPT OF SUBURBAN SPACE  
IN DEVELOPED and DEVELOPING COUNTRIES

“A space that cannot be defined identitary, nor relational, nor historical, will be then a Non-Place. Modernity filled our cities with anthropological non-places. The space of non-place creates neither singular identity nor relations; only solitude, and similitude. Place and non-place are rather like opposed polarities: the first is never completely erased, the second never totally completed.”

M.Augè,  
Non places, Introduction to an Anthropology of Supermodernity (2005)
A place, according to the french anthropologist M.Augè, in order to be defined as such, must be:

**identitary**, that is to say able to assign an identity to those who live;

**relational**, in the sense that it determines the interpersonal relationships on the basis of the belonging;

**historical**, because through it the collectivity has a deep and continuous relation with its roots.

In the past cultural traits and identity of a community were defined by the evolution of the relationship between communities and the natural environment from which depended economy, settlements choices, urban and architectural typologies.

A conception of knowledge, and therefore of living, is quickly taking roots in our modern western cities, that is **no longer local but objective**, that is **not centered**, which denies the multiple centers of the world, valid at any place, at any latitude.

Space lost its uniqueness, its ability to interact with the inhabitants, it is relocated, transformed from an opportunity to live in a **vacuum to be filled**.

The total loss of contact between living and building makes it impossible to prime any process of identification with the place, of belonging to a place, and therefore of deeply perceiving an identity. More, the human capacity to experience otherness has been
mutilated, as well as the capacity to relate to the different, which was crucial in the indigenous cultures.

Comparing and investigating the different approaches toward suburban areas, it is quite evident I think that the living solutions adopted in order to provide the city with low-cost accommodations in the “developed world” are defining and producing spaces that cannot be defined Places, but instead very much resemble to Non-places: they lost completely all their identitary, relational, historical characters, becoming anonymous and alienating places in which a man cannot reflect himself anymore.

Paradoxically, the informal settlements in underdeveloped countries, although having many other critical dynamics and issues, have a strong identity and relation with the site, establishing deep interpersonal relations among the members of local communities, they are alive, entirely based on the cooperation between individuals, and the relation between dwelling and living is still very deep.
"Organic planning does not begin with a preconceived goal: it moves from need to need, from opportunity to opportunity, in a series of adaptations that themselves become increasingly coherent and purposeful, so that they generate a complex, final design, hardly less unified than a preformed geometric pattern."

Lewis Mumford, The City in History (1961)
In the second half of the twentieth century, Africa’s newly independent governments did not approach urban growth as a development issue but rather as a problem to be contained. Unauthorized settlements were either ignored or demolished, and informal income generation was considered to be a passing phenomenon, linked to rural-urban migration.

It has been assumed for a long time that “good governance” is based on discourses embedded with values of late capitalist modernity such as individualism, citizenship and utilitarian rationality in social, political and economic realms—which is far from the case in much of this reality. In the developing world, colonialists often regarded with misgivings the informality that was rooted in the cultures and ways of local populations, with the colonisers introducing order, or formality, through rigid city grids, schooling, religion, capitalism and so forth. The elites in Southern cities are often aligned with the Northern development elites in their view of what a city should be, favoring investment in private over public goods.

The solutions offered by global institutions often resulted in consequences that communities were not able to truly accept because they did not have a true choice. The ability to dissent requires institutional capacity, and most informal communities do not have the type of institutions that allow them to make their views known.
1. Electronic microscope image of a leaf

2. A.Burri’s kaolin “cretto”: the organic phenomenology of matter is at the center of the research of the artist
There are several aspects that function paradoxically better in the informal settlements than in the formal city, analysed by Prof. Akhtar Chauhan in the book “minimal space – minimal housing”:

- Slums have multi-functional living spaces, with overlapping functions.

- They show optimal utilization of urban land: slums use up to 80% of the land as ground-coverage for their housing. This enables them to have much higher densities without going higher than ground plus one or half storey.

- Slums imply and reinforce the sense of community: they are the constructive result of collective efforts of a group or community.

- The slum-dwellers use fewer resources and minimum building materials to create their living space.

- They work organically: the minimum shelters of slum dwellers are not static houses, they grow as the needs of the resident increase with growth of the family.

- They are entirely walkable.

- Informal settlements promote city inclusiveness: to some extent the slums are born in response to the rigid and exclusive formal city model, in order to enlarge the space of inclusiveness of the city, accommodating differences.
It’s not unlikely that in a few years' time slums communities will be perceived as best equipped to face the challenges that confront us because they have built-in resilience and genuinely durable ways of living.

However, identifying the positive aspects of poverty risks glorifying it or rationalizing it. Moreover, some of the qualities extolled by analysts are direct results of deprivation. Low resource consumption may be good for the earth, but it is not the residents' choice.

“Given the reality that poverty exists and seems unlikely to disappear soon, squatter cities can also be seen as a remarkably successful response to adversity - more successful, in fact, than the alternatives governments have tried to devise over the years. They also represent the future. An estimated 1 billion people now live in them, a number that is projected to double by 2030. The global urban population recently exceeded the rural for the first time, and the majority of that growth has occurred in slums.”

Rebecca Tuhus-Dubrow,
Learning from Slum (2009)
Along with efforts of finance organizations and other governmental institutions regarding this issue, since 1960 there has been many debates on the role that design disciplines may play in addressing the development of informal settlements in developing countries. Within 1969s and 1970s these strategies were mainly on favor of top to bottom methods: these approaches were supposed to improve the life through financial aid of individual people in needs. Similar attempts were extended to the field of architecture and design.

In the same period, many designers tried to address the issue of slums and squatters through mass housing, slum elimination and modernist urban planning. They believed that these ideas “would promote development and shape social relations”.

Modernists saw informal settlements as a set of unplanned chaotic urban elements the problems of which could be only solved by the application of modernist order.

The most common strategy governments in developing countries adopted till now to deal with the informal parts of the cities has been based as well on their systematic eradication and relocation at the outskirt of the cities, keeping on undermining the delicate urban ecosystems created during the last
decades, not realizing how this approach is weakening instead of reinforcing the city.

As a result of past practices, today, the policies in favored of such approaches realized that many slums and squatter settlements cannot be simply demolished and a complex system such as a city can only absorb a certain amount of changes at once.

Therefore, during the last years, predominant strategies addressing slums, have shifted away from large-scale intervention, to on-site upgrading methods called “urban acupuncture”.
“Definition: Cross-over architectural manipulation of the collective intellect of a city. City is viewed as multi-dimensional sensitive energy-organism, a living environment. Architecture is in the position to produce the acupuncture needles for the urban city and a weed will root into the smallest crack in the asphalt and eventually break the city. Urban acupuncture is the weed and the acupuncture point is the crack.”

Marco Casagrande – Adam Parsons, Urban Acupuncture (2010)
Urban acupuncture is an approach toward development of underprivileged communities, developed as a reaction to large-scale relocation projects that proved to cause exacerbated poverty and social disruptions. Opposing to large scale interventions, the term urban retrofitting would refer to small scale interventions or insertions of new services into the areas where these features do not exist at first.

Urban acupuncture focuses on local resources rather than capital-intensive municipal programs and promotes the idea of citizens installing and caring for interventions. These small changes will boost community morale and catalyze revitalization, focusing on small bottom-up interventions that harness and direct community energy in positive ways to heal urban blight and improve the cityscape. It is meant as an alternative to large, top-down, mega-interventions that typically require heavy investments of municipal funds (which many cities at the moment simply don’t have).

Such an urbanistic strategy aims to minimize displacement while improving conditions in the most vulnerable areas by focusing on infrastructure, public spaces, community facilities.

- **Fostering inclusion**

The working poors (the group of people who work but is unable to meet its basic needs) are addressed through income generation activities, such as integration of local market into the urban fabric,
provision of education, transportation and creation of active public spaces within these settlements, in order to foster physical and social inclusion.

- **Promotion of economic development and improvement of the quality of life**

  Upgrading projects release vast untapped resources of dwellers that have skills and desire to be more productive part of the economy, but are held back by their status and marginality. Therefore, giving an economic opportunity to the poor not only elevates the quality of life in upgraded communities, but also, provides an increased safety and security, more citizenship, political voice and representation for all citizens.

- **Creation of places of social identity and urban image**

  Deprived sections of the society usually have no political voice in planning and construction of infrastructure, public facilities and their community in general. Consequently this groups are usually concentrated on the most undesirable places without easy access to public services, cultural and other spaces available for the rest of the citizens.

  Therefore, provision of community capacity development would not only activate this part of the city but also the space creates a sense of pride for these people. This approach is based on the idea that the participation of residents is essential as the
process promotes identification and sense of community.

- **Affordability**

  Infrastructural upgradation costs considerably less than the total demolition of existing settlements and the subsequent delivery of social housing; resources are channeled towards a network of catalytic interventions, affecting a broader part of the local community.
“What if the principles of Urban Acupuncture would be used to bring Agriculture to the fore of urban planning? What if pinpointed, productive landscapes would be used to revitalize abandoned communities and help them access healthy foods? What if we design our cities as points of Urban “Agripuncture”? ”

Vanessa Quirk,
“Towards an urban agripuncture” (2012)
Urban agriculture can be defined as a "farming activity occurring in built-up intra-urban areas and peri-urban fringes of cities. It should not be considered as an isolated phenomenon but deeply interconnected with various urban, periurban and rural activities." (Thornton, 2008)

Africa's urban population is projected to increase from 39% in 2005 to 53% in 2030: such growth is expected to significantly increase household food demand in urban areas, at the same time as rural-urban migration is contributing to a declining rural agricultural productivity due to the loss of farm labour: it is within this context that urban agriculture stands to play a crucial role enhancing urban food and livelihood security.

In recent decades demographic and economic growth have challenged the limits of economic, social and ecological sustainability, giving rise to questions about food security at a global level: far from disappearing, hunger and malnutrition are dramatically increasing.

Globalization over the last 30 years has been pressing national economies to become more and more interdependent. Today, most developing countries are net-food importers and their dependence results in food insecurity for large sectors of the population.

Urban farmers generate employment and earn additional income for other basic needs, link up with the food trade, produce food otherwise unavailable or unaffordable, reduce dependance on purchased food. Urban agriculture doesn't compete with but complements rural agriculture because it reduces
seasonal price fluctuations and diversifies the food supplied to cities.

Food insecurity has become more and more invisible in contemporary African cities: to urban managers it is obscured by far more urgent urban problems—unemployment, burgeoning of the informal sector, decaying infrastructure and declining services—although food insecurity is clearly directly linked to these other problems. Urban planners and policymakers seek practical, feasible solutions to infrastructure problems and environmental degradation while trying to address the social and economic ills of the cities, rarely taking in consideration the huge potential of urban agriculture.

The traditional view of urban dwellers as consumers and rural dwellers as producers of food need to be dismantled, especially in developing countries.

**Tipically, urban economies import labor and export goods and services: urban ecological systems import natural resources and export waste and pollution (import-export model).**

**Urban agriculture suggests some ways to reorganize urban food systems transforming them in more closed loops, reducing both the importation of natural resources and goods and the exportation of waste and pollution.**
urban close loop models
1. pre-industrial revolution model
2. post-industrial revolution model
3. post-“organic” revolution model
Like rural agriculture, the urban production process requires inputs (land/labor/natural resources/know-how) and produces waste; in an urban environment, however, some of these inputs are provided by recycling resources that have already been used in the urban environment, thus avoiding or delaying disposal (e.g., vacant land, unemployed labor, household gray water, composted yard waste, animal manure).

Urban agriculture provides several important advantages to the city:

- proximity to the market: reduction of production costs, post-harvest waste and greenhouse gas emissions, helpful in situations where supply chains from rural areas are often interrupted because of the floods and cities are unable to receive food imports.

- empowering women and building communities: the community gardens act as a forum where community members can meet and discuss community issues.

- improving urban environment: faced with limited resources, urban farmers can use urban waste to strengthen the soil, garbage as compost or for community kitchens and waste-water for irrigation.
Maputo, fields along the border with the bairro of Polana Canico
THE CITY OF MAPUTO
CONSIDERATIONS ON THE URBAN DEVELOPMENT

Maputo is the capital of Mozambique and is a separate politically autonomous municipality since 1998 when decentralisation was implemented by the national government.

The Greater Maputo area—which does not formally exist as a territorial unit—had 2.5 million inhabitants in 2001, projected by the UN to grow to over 4 million by 2025 (a 65% growth), around 40 per cent of Mozambique’s urban population (density 3,220 persons per square kilometer).

Physical urban development in Maputo has been closely tied up with political, economic and social changes through the centuries. From its initial establishment as a temporary southern outpost for Indian Ocean trade in the 16th century, through to the late 19th century there was limited physical development, despite substantial political developments in the region.

In the late 19th century the settlement moved rapidly from small town to city to capital of the new country. Maputo became the main port, railway junction, service center and labor migration point.
Ultimately unsuccessful, the ensuing rapid and unmanaged decolonization process opened up a new era in Mozambique – in political, economic and social aspects. During this whole period the city continuously expanded beyond the capacity of the state to plan, regulate or service the urban area – resulting in substantial historic ‘informal’ development around the core central ‘cement city’.

The post-colonial government focused on national agricultural and industrial development as a priority and tended to ignore physical urban development, and as such the majority of the city continued to develop with minimal state intervention. This situation was exacerbated by the civil war from the mid 1980s, and only after the turn of the millennium did the newly decentralised form of local government turn its attention to physical urban development.

In the most recent period there has been a resurgence of physical planning – albeit not based on detailed social and economic analyses, but principally stressing forms of physical order with political and economic aims. Nevertheless the state, as represented by the municipality, remains weak in many ways and unplanned development continues by far the main form of urban expansion and consolidation – with the city now expanding far beyond its metropolitan area.
Different urban patterns of Maputo’s bairros
In general, the characteristics of Maputo’s urban life include weak urban infrastructures, densely populated poor urban communities, low levels of capacity and resources within Municipalities for both the planning and implementation of urban services.

Rates of urban poverty in Mozambique are extremely high, with 62 per cent of the urban population falling below the poverty line.

The result of this physical planning process is an ‘inward-oriented’ structure plan (approved in 2010) which focuses on densification of ‘formal’ urban areas and slum removal in ‘informal’ areas, and thus comprehensive re-development, ignoring actual city-region trends of expansion.

**The city structure is a very dualist one with a fully developed urban core termed “Cidade de Cimento” and a surrounding area generally termed “bairros”.**
1. canico house
2. madeira e zinco house
3. concrete block house
CLIMATE AND DISASTER RISK PROFILE

Polana Canico, Maputo
(February 2014)
The impact of Global climate change is dramatically evident in developing countries, provoking extensive destructions, contamination of water and quick spread of diseases.

Mozambique is very vulnerable to the effects of climate change due to the low lying areas on its 2,700 km of coasts: in the last 25 years the country has suffered from an uninterrupted sequence of droughts and floods which very much negatively affected the country’s social and economic development. The country is today one of the least developed countries in the world, currently ranked 172nd out of 182 countries in the Human Development Index (HDI) ranking (2007).

The city of Maputo is particularly affected due to its geographical location and its reliance on resources from other parts of the country, above all concerning food security.

Vulnerability to floods has been worsened by the quick proliferation in the last decades of unplanned human settlements, which has gradually expanded to topographically depressed areas; the extremely low quality and reduced durability of constructions in the urban informal settlements, combined with serious structural deficiencies, represented an obstacle to the improvement of the adaptive capacities of local communities.
“A simple transfer of culture and technology from developed countries to the developing ones would create deep distortions by imposing a spatial discipline completely out of contest. I believe that our role as architects should have a deep understanding of the underlying economic, social, cultural features of the countries.”

Josè Forjaz, contemporary mozambican architect
Traditions of sharing labour, resources, and knowledge change due to infiltration of Western concepts of social structure. During colonialism the policy in Mozambique was to undermine traditional values and encouraging Western ones.

Adopting sustainable solutions is often seen in underdeveloped countries as a step back, and not as an alternative to the industrialisation plans governments have in mind.

Choice of technology can often been seen as part of a complete ‘technology package’ transferred from more advanced countries. This usually causes management problems and difficulties, to understand, operate, maintain, and repair the technology concerned.

In Mozambique, much of the technology used is imported from more industrially advanced countries that is often inappropriate, since it will cost too much per workplace, generates few jobs, and involves normally a large-scale size of production. While the imported technology increases output, many people are left unemployed and impoverished.

Since application of top-down models to fasten up development usually failed another approach should be considered, in which local people are to take the development of their communities into their own hands.

African societal traditions tend to emphasise collective ownership of resources, common security, and co-operative forms of production. That is different from the Western ideas of emphasising individual initiative, ownership, economic gain, and self-interest. For
example, land and other key resources in East- Africa used to be owned by the community, and had to be protected for use of future generations.

Traditional building knowledge filters down through society via inherited patterns of behavior: the built structures in many local communities are related naturally to the climatic, cultural, economic, and environmental context.

The study of local architecture is essential, in order to understand skills, knowledge, settlement types, and relationship to the environment.

The emerging architectural development has to consider more appropriate architecture techniques in order to contribute to the sustainable use of the available natural resources.

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