

AFRICA. FROM SHOULD TO COULD

New model of planning practice required addressing the increase in migrations. How to integrate informal mechanisms into the urban management of the African culture. (The uncontrolled independence of Peter Pan's shadow)

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Metropolitan management methodologies confronting new challenges: shaping rapid growth in a context of informality, scarcity and misgovernment.

Metropolitan architecture methodologies facing the new urban paradigm of the *non optimal city*. The term *post-optimal city* is used to recall a post-functionalist dimension of the unfolding (new) size, scale and technology in the city.

Theme: the research involves the transformation of the settlements, which are at the fringed edge of the metropolis (Dar es Salaam in this case), constantly changing, due to the fact that a huge number of migrants come there from the countryside, and characterized by a variable degree of informality. The area project falls within a new typology of formal-informal interface that we want develop as a gradient of formality. We present a study of a way to regulate the growth: an evolution in scale. We applied the Reticular Matrix Model System that is a development model rather than a formal model. It's a study of a design method that allows us to describe and design urban phenomena related to the change of scale, which determines the mutation of types of morphologies of urban spaces and landscapes.

The research question: We started the Dar Es Salaam New Centralities analysis with a statement: the need for a cultural "jump" should identify a range of new elements and relations among elements in the urban context, rather than simply upgrade the instruments of intervention and investigation. So we are speaking about the need of a methodological indication for the development of a new settlement. Our vision may envisage a sustainable relation between green and grey infrastructure, when green is intended as the hydro-geological system of the territory. A strong economic attractor related to the infrastructure system should therefore foster the reversal of spontaneous settlements back into legality, providing them with services that could improve the sustainable level of the entire city.

Methodological outlines: The project area is a point between different landscapes and represents strong metropolitan dynamics, which re-connect sides through the design of the areas of transition. If we focus on the urban realm we must understand how to integrate, into the urban management of the African culture, the informal/illegal mechanisms of the migrants

to occupy and build the agricultural areas. It is necessary to integrate scales, disciplines and governance in the physical urban management. We promote a substantial change in the urban/rural relation. A formality-gradient type, able to capitalize on its city-centre proximity its advanced services, will be determined especially in relation to new mobility structures. Such strategic device, conceived through the analysis of the anthropological signs found into the informal city fabric rules of construction, should also be able to communicate with the agricultural landscape that not only has the potential to provide products for consumption and sale to local communities (urban agriculture), but also becomes an element of urban regeneration. The informal areas quality of life consists in cultural identity, social solidarity, which are factors of productivity and efficiency of the society as a whole. The approach is no longer to prosecute and illegitimize informality. It is a real change of paradigm. Informal settlements are like 'informal' numbers, as our approach to formality will go. If we follow the analogy, even if they imaginary numbers 'do not exist' they are extremely relevant in mathematics and physics to understand a series of phenomena and to be able to efficiently deal with them. Understanding and incorporating the 'imaginary' informal to the general development theory will help in great manner to economy development, social integration, urban sustainability and governance equilibrium, and to understand and deal with the 'formal' numbers.

Outcomes: Urban informal-formal integration. We present a study of a way to regulate the growth: an evolution in scale. It's a study of a design method that allows us to describe and design urban phenomena related to the change of scale, that determines the mutation of types of morphologies of urban spaces and landscapes. The Green and Grey infrastructures, Housing areas, Social urban centralities and Productive areas can be design as a Pattern Language mechanism of urban growth in a context of an Urban Design Guide. This will provide a framework for the formal-informal dialogue. The challenge, then, is not only for Planning and project Design. It is in the metropolitan architecture management side also. Though Planning and Design must be made with Metropolitan Architecture Management capacities in mind. That would be essential for an effective Planning and Designing. They are part of the same process and coordination is the means for success.

A discussion on relationship between migration, informality and the inability of governance structures to manage the phenomenon

The world will become far more urban in the next 30 to 40 years than it is now: 2 billion people will move to cities. However, this urban growth is only partially explained by rural-urban migration, but increasingly by natural urban population growth. William Cobbett (2008) highlights that the public authority doesn't know how many people live in the slums or illegal settlements, has no idea where they came from, has no knowledge of their needs. Manal El-Batran and Christian Arandel (1998) argued that most visible informal settlement on the periphery of Cairo has developed mostly on private agricultural land and, less frequently, on publicly owned desert land.

So we could say that the spontaneous urbanization occurs because of the fact that vacant formal housing units are not affordable to most urban dwellers, which are new in-urbanized citizens (very poor indeed) from one side. From the other side, nevertheless, the cities of the developing countries are not able to respond adequately to the challenges posed by a new bourgeois population growth, to their need for new infrastructure, to the provision of grossly inadequate housing and to the lack of basic urban services.

This fact leads to the proliferation of slums, a growing number of urban poor and a general deterioration in the quality of life in urban centres, but to the illegal settlements also. For a growing number of these cities, the poor planning has remained the main obstacle for the sustainable growth and the development of healthy living environments, where the prospect of an adequate life and production continues to elude especially the urban poor. According to

Cobbet, we can look at it as social insensitivity; some people look at it as private sector entrepreneurial behaviour. In fact, these are how settlements developed, very often outside of the administrative boundary, so that the local authority might not see these informal developments as its problem. The local government often provide inferior services and very often the authority acts with urgent projects as a short-term solution: urgent but not important projects into a *long duree*. Cobbet argued that the danger becomes because the informal settlement of today becomes the ghetto of tomorrow. The first choice, Cobbet said, is that the informal area will be accepted, upgraded, eventually becoming a suburb and a long-term part of the city. The second choice for the public authority is to ignore the informal settlement, fight it, and let it become a slum or an illegal settlement, very well rooted on the ground and sometimes into a corrupt system of governance, in which the entire city faces a decreasing of energies until the cultural one cause inside it's not possible to take a "social elevator" to change the own social position.

The post-optimal city era.

The coherence between formal settlement and the illegal one: ecologies of the metropolitan forms for the culture of a local identity open to the global integrative or hospitable

In his volume *The ecological thought* (1988), Edgard Morin introduced the concept of Ecology of the form, not only related to parameters of efficiency or effectiveness from the technical or economic point of view, but as a fundamental constituent of the organization of the life processes and structures. This is why, regarding the city and the architecture complex contexts, we prefer to speak about *ecologies of the forms*. Our study, in fact, concerns the foundation of the generative processes of the metropolitan architecture forms, which today are a mixture of legal and illegal elements, to overcome an only technological approach. The first act of the project, then, is the detection of the elements that make up the complex context of the metropolitan city scale, in order to determine the relationship with the generative process that is not only a material device, but a cultural one, tied to the physical forms of the space: is the meaning of the question that sets the result. The process, for us, is morphogenetic and only after the techniques intervene.

The aims, then, are the socio-economic development of the territories, through metropolitan relations into the new metropolitan space system (Ortiz, 2013), the creation of innovative processes of integration, compliance with qualitative / quantitative standards for an infrastructural revival, also through the development of new sources of renewable energy and intermodal transport.

A sustainable growth, in fact, that provides an increase in demand of space with a low environmental impact, requires new interpretation and planning tools and project. It is necessary, however, to rethink the network of energy-production, distribution and location-self-sustaining for new settlements, such as an integrated system of local identity and global inclusion, between rural and urban economy, the energy expenditure reduction and conversion: food and sustainable energy for the urban metabolism as a project to support the integration between town and its territory, through the redefinition of the physical issue of new urban settlements and their architecture.

Our research concerns the definition of a cosmopolitan globalization, that does not negate the places, rather then strengthens them, elevating them through a leap in scale: enhances ancient positions and creates new ones; leaves the other decaying, making them to be born as symbolic mediators (sustainable heritage). The new metropolitan architectural individuality, thus, are related to their position, but re-read at a different metropolitan scale.

A metropolitan architectural identity, not static and understood as a dynamic process, is determined, then, as a link between the different scales. This process tends to make similar

the people that have the same values. They are represented with the same gestures, which trace into the ground the signs of the work of the man who transform his territory. Only referring to shared values it is possible to integrate or host different migrant nationalities, without determining their marginalization.

Our research, therefore, aims at defining how, in the growing medium and small cities, is possible to balance both the macro / micro-economic factors and the spatial structure of the cities within the cultural ones: the background shape that consists of residential areas, public spaces and landscapes.

We discuss the relationship between the new settlement, activities and physical space and how this relationship is differently formed in different cultures and how different activities determine the needs of movement, the new settlement with its gradients of formalities and co-presence with the existing assets. Finally, we need to determine the way in which the models of integration between infrastructure and physical space influence the location of the various settlements, classes and social groups into the city, to resolve the pathology of the settlements and the public sphere.

Due to the fact that the spatial form must be understood as a key factor that helps to set up models of sustainable urban metabolism, of integration or vice versa of segregation into the city, the starting point of this work arises from the need to define the contemporary city within its territory, through a clarification of a new metropolitan scale of intervention, thereby addressing:

- a. economic and social aspects
- b. institutional aspects
- c. social consensus
- d. local and global sustainability values and their influence on the concept of citizenship

Conclusively, the framework of our research coincides with the formal and structural dimensions of urban scale linked together the metropolitan scale. The need of a cultural "jump", then, should identify a number of new elements and relationships in the metropolitan context, rather than simply update the tools of intervention and investigation. For this reason, we refer our research to the Reticular Matrix methodology (Ortiz, 2013). This means a better definition of the structural model, the backbone of this reality, to show the presence of some gaps in urban development and cultural awareness of such phenomena.

If, as a matter of fact, a strong economic attractor related to the infrastructural system should foster the reversal of spontaneous settlements back into legality, providing them with services that could improve the sustainable level of the entire city, nevertheless as a matter of concern, according to the European tradition related to the studies for the transformation of Frankfurt (1928) and the re-integration of one million of inhabitants in Berlin into self-sufficient Siedlungen (1932) , or the realization of the Italian "Città di Fondazione" (1933) that were inspired by the plan for the Tennessee Valley Authority, we think it is helpful to draw a consistent attempt to exceed the only hygienical and welfare targets that continue to characterize the interventions for the informal neighbourhoods of the cities in the developing world, towards a productive revolution that could be triggered into the heart of the metropolis from a project of true integration between green and grey infrastructure and new urban gradient of formalities: therefore able to integrate the urban agriculture, within the new typological concept.

The development paradigm for a formal / informal integration into the metropolitan city scale

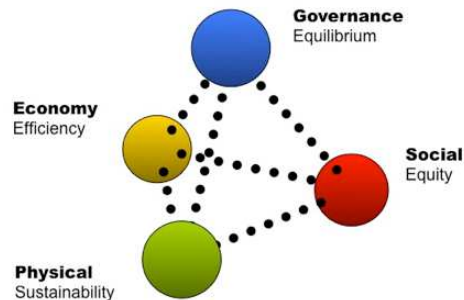


Figure 1: Tripod Development Paradigm. *Components and Objectives*

Development policies have to address three sets of components: Social, Economic and Physical, under the intervention of the fourth one, Governance. Each component has a clear objective: Economics' objective is Efficiency, Social one is Equity, Physical (Environmental) is Sustainability. These components are in conflict. Economic efficiency requires concentration to benefit from the 'economies of scale' phenomena, but Social equity requires dispersion to provide quality of life to the most marginal population. Economic and urban developments require resources and infringe in the limited environmental assets. Many other conflicts as share of consumption goods and access to health or education are as well part of the development formula. All those conflicts have to be solved by Governance. There is not a technical objective formula to solve them. It is Governance that plays that role and the objective of Governance is equilibrium among the objectives to achieve the necessary dynamic balance for development. This is the basic rule applied in developed societies and can take the mnemotechnic analogy of a Carbon Atom or a three legged stool, a tripod. The tripod analogy expresses rather better than the Carbon Atom the fact that it is Governance the component that has to control the equilibrium between the other three. It is the seat that holds together the three legs, as Governance does.

1. The Sub-components of the paradigm

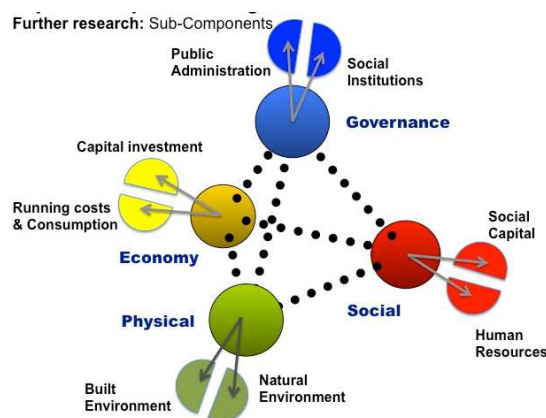


Figure 2: Tripod Development Paradigm. *Further research: sub-components*

Each component is a discipline on its own. It cannot be oversimplified. Nevertheless for the purpose of practical development policies decision-making we can discern among the many subcomponents of each discipline the ones, the dichotomies, especially relevant for Metropolitan Management and Planning. The following subcomponent set is open to debate but as we are going to see in the following discussion of the paper it allows for some analytical approach to the issues concerned and the capacity to arrive to some conclusions and make some proposals. It is this frame of mind, and the knowledge that further research should be undertaken that we present the following scheme.

The Subcomponents are:

a. Social

- Human Resources: The accumulation of knowledge from the population.
- Social Capital: The capacity of that population to have a multiplier effect out of that knowledge. The capacity to work together for a common purpose.

These two subcomponents of Social have been used and applied by the European Union to evaluate development proposals for more than ten years already.

b. Physical

- Natural Environment: The natural assets that require not only to be protected but also to be enhanced and augmented by compensatory and investment policies.
- Built Environment: the Urban or interurban capital is a physical asset that has to be adequately invested and maintained. It is as well a Cultural asset that feeds the Social Capital subcomponent increasing the strength and resilience of a society.

c. Governance

- Public Administration: The most obviously relevant aspect of Governance is Government: Public Administration. As the Dichotomy between Social equity and economic efficiency cannot be technically solved and only equilibrium might be reached through political decisions.
- Social Institutions: Social institutions are essential to complement government policies and to control, if necessary government doings. They are essential for a strong and dialoguing society, but have to be equilibrated to avoid the weight of any in lobbying the Government in policies that do not pursue the General Interest.

d. Economic

- Capitalization: There might be numerous ways of analyzing the basic components of an economic system.
- Consumption: Running costs both for a firm or for a population (consumption) is essential as it reduces the investment accumulation and thus the development speed.

2. The 'developing' actual context

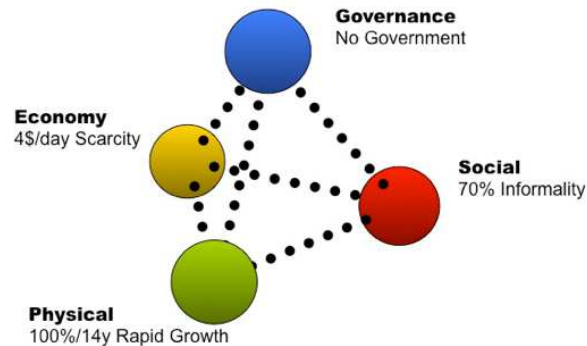


Figure 3: Tripod Development Paradigm. *Developing Challenge*

We have analyzed the paradigm of development for developed societies. Developed planning systems do have full-fledged instruments to act on these components and achieve (or approximate) the desired objectives: Economic efficiency, Social equity, and Physical sustainability in a framework of a Governance policy for equilibrium.

Such is not the case in developing societies. In developing societies the context is different:

- Social: The context of the Social structure is mainly informality: Sometimes as much as 70% or 80%
- Economic: The context of Economic activity is scarcity both in the private but mainly in the public sector: Municipal budgets for infrastructures investments might be 60 times smaller in medium income economies and 3.600 times smaller in low income economies (1 day investment equivalent to 10 years)
- Physical: The context of Physical challenge is an explosive growth with no respect to natural assets: Often they are under pressure of an annual 5% growth. That means 100% every 14 years. Twofold growth every 14 years
- Government is more of a formal figure with little capacity (or willingness) to implement policies that will improve the situation if it is not their own situation: You can Plan and manage when Government is deficient (as we might agree for many developed societies), but it is rather difficult when the Government is practically inexistent and mostly works for its perpetuation rather than to service the population is meant to.

What should be done

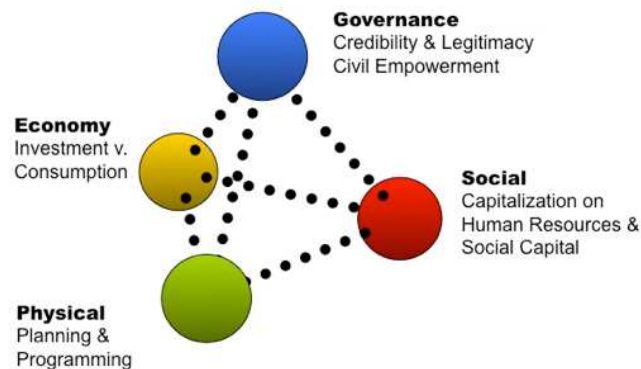


Figure 4: Tripod Development Paradigm. *What should be done*

The objectives of a policy for development should be bridging the gap between the actual situation and the development paradigm. En terms of each component that is:

- a. In Economic policies: To control the share of investment and consumption. To increase at most the proportion fixed capital investment as a base to promote and sustain a competitive economy. Sometimes in low-income countries the level of sacrifice required to achieve a fair share between investment and consumption might not be acceptable.
- b. In Social polices: Investing in human resources. Providing the population with knowledge needed for development on specific strategic sectors with country's economic future in view. Foster a system of social values based on attitudes of work ethics, collaboration, fair behavior, win-win approach, respect, dialogue, etc.: the set of values that make possible developed societies to be efficient against societies of opportunism, abuse and privileges. To move from societies were cheating is praised to societies were retribution for efforts admired values of societies with strong social capital. Values of 'to Do' and not 'to Be'; meritocracy instead of clienteles; deserved benefits instead of inherited privileges.
- c. In Physical policies: A clear definition by plans and programs of protection and enhancement of natural assets. A definition of urban public spatial components, with a set of regulations controlling negative externalities from the private sector and fostering positive ones. Defining components of a sustainable urban environment and instruments capable to enforce them.

- d. In Governance: To build up an Administration based in credibility (achievements corresponding to promises) and legitimacy (objectives according to ethics and procedures according to law). An administration that fosters and collaborates with semi-public Social Institutions. Achieving involvement and participation of the private sector in institutions that will collaborate with the administration in the definition of policies and the joint effort of implementing them. At the same time institutions that will be elements of stability and social resilience when confronted with and administration that needs to be addressed and possibly reminded it is departing from correct policies. A strong social institutional network with social participation and public involvement is the best guarantee for a long lasting stable and strategic vision.

3. Why it cannot be done

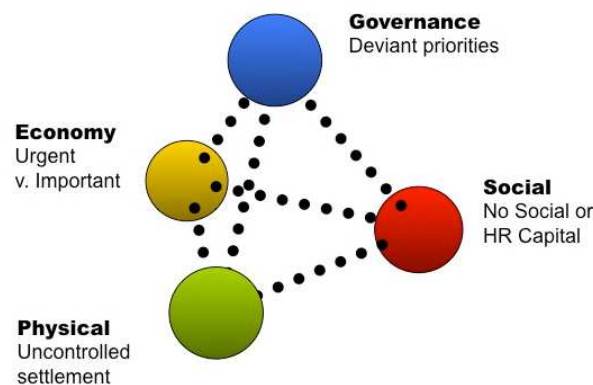


Figure 5: Tripod Development Paradigm. *Why cannot be done*

These objectives however are not possible to achieve in the actual circumstances. That was what should be done. But it will not be done, because:

- Economic policies are not based in a long-term vision of capitalization of the urban structures.
- Human resources take a long time to grow and accumulate. Education is costly. Results are seen in timespans longer than the expectancy life of the politician that has to take the decision and commit his budget to it.

Social capital is even more difficult to build. Society values are resilient and have long inertia. Often entangled with local culture and social patterns that are identified as cultural values. Not only there is a natural inertia and resistance to improvement, there is as well an ideological excuse to resist. (i.e.: Gender)

- Physical models require a consensus (Pattern) and an explicit proposal (Plan) that everyone formally or informally follows and implements. The Administration is unable to implement and make effective anything on a context with 70% informal sector. On top of that cultural patterns have been destroyed by an unresolved hybridization between the modern and the traditional cultures. Processes seem to be following the worst of both worlds.
- Administration-Governance is an empty shell. Posts are filled with people with social merits (tribal network) but no managerial capacity. Many Administrations are residual

colonial structures where jobs are filled up as political or social reward. No specific performance required. Public budget is either meager as there is no fiscal base to build a taxing system. Sometimes though it becomes substantial when fed by the income from extracting industries (Oil, Gas, Minerals, etc.). When meager it provides just for the self-sustainment of the Administration salaries and expenses with no effect on real world or civil society. When fed by extractive incomes it is used to secure electoral loyalty, often ethnically related, in unstable tribal compromises. No fixed capital (i.e.: infrastructures) accumulation is achieved; just income is spread around for consumption.

- If the country has relevant resources the economic groups and multinational firms that benefit from these resources will take active part in ensuring that the flow resources goes on.
- If the country has no relevant resources the multilateral agencies will intervene only when violence explodes and can affect donors domestic politics.

4. What could be done

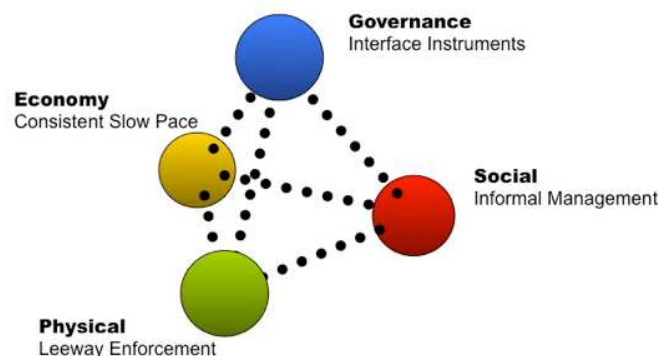


Figure 6: Tripod Development Paradigm. *What could be done*

What can be done has to be adapted to the very limited scope of action the circumstances allow. It has to be achieved with a long-term vision, but with a short-term attitude of patience: in the mood of the waiting for improvement of conditions rather than a mood of purposeful policy implementation to produce development. A policy avoiding bottle-necks that will definitively prevent development rather than a full fledge policy that will attain the forecasted development in a time frame as a result of adequate policies. **Preventive rather than proactive.**

Action policies might focus in four adaptation of the Development Paradigm:

- Incrementalist investment approach,
 - Adequate intermediate action scale,
 - Time-preventive policies, and
 - Social interface mechanisms.
- a. Urban fixed **Capital investment** is not possible. The public capital to make investments in indivisible public goods is just not there. The private capital for divisible goods lacks potential demand to respond to those services. (i.e.: Transport) In best of cases some

flow of public capital can be detected. Should rather be described as 'dripping' than 'flow'. Dripping can be directed to priorities, but the dichotomy among economic and social priorities is difficult and painful to resolve. Investment efforts are very difficult to prioritize when subsistence levels require social **consumption** to avoid, non-metaphorical, death. We can only wait. Wait for conditions to change. Meanwhile keep public spaces consistent and prepared to house those investments whenever they will occur in the future. When the dripping occurs the approach should incorporate an incrementalist method. Benchmark models should not be applied. If generalized the capital will be unreliable and the project will remain incomplete and ineffective. If specific they will not be replicated and will remain exogenous to the system. The approach has to be incrementalist. In a domestic analogy, instead of aiming for 'indoor closets', ideal and unattainable, the approach has to be '**hangers in the wall**' with an accumulative mechanism.

- b. **Social** Informality is the norm. We have to learn to interact with it. Impossible to 'control' from the formal sector (Administration). That might be for the best if we account for the proceedings and performance of the Administration.

Informality is an asset. It is 70% of economy activity, urban development or social governance. No country can underuse 70% of its assets for development; **we will have to learn how to interact with it for the best of both worlds.** Formal and informal are oil and water. Formal structures cannot accept informal ones as they put at risk the formal structure reducing its credibility for implementation and reducing its legitimacy. The Police-Justice system cannot accept petty crime, even if it cannot control it, because it will delegitimize the rest of its proceedings. Interaction takes place in denied obscure proceedings.

Interface has to be resolved in a more efficient way that will understand the needs of the informal sector and requirements of the formal one. Civil Society Institutions can be the interface. NGO's are a good example. They can relate formally to the Administration, they can adapt to the informal sector. NGO's are often seen as enemies by the Governance formal sector, the Administration, as they reach and succeed where the Administration doesn't. The administrators and managers of the formal sector see NGO's as proof of their own inability. They often antagonize, as the NGO's become platforms of expression of the unresolved needs of the informal sector by the formal one. The formal sector, the Administration, should understand that it is within the DNA of the formal sector system the incapacity to address informal sector. They should understand that the NGO's are instruments at their service to improve their performance. Final distribution of utilities and goods (water, electricity, sewage, waste, etc) can be managed by these interface mechanisms between the formal and informal sectors. Police knows very well how to deal with informal Governance mechanisms to keep the petty crime at bay, in the knowledge that it cannot be eradicated. Similar example can be shown for the Economic, Social and Physical sector as the one used for Governance.

We have given the NGO's example. It is not the sole one. In Nigeria it is traditional tribal patterns of social interaction (Kings, chiefs and tribal settings) that semi-formally interact (legally accepted and accounted for) with the formal democratic institutions. Research in these field exploring alternatives as to be undertaken.

- c. **Physical:** Administration has little capacity for implementation of any proactive urban-physical policy: No budget, no governance, and no instruments. The attitude can only be the one of minimizing damages rather than maximizing unachievable benefits. In absence of infrastructures we can only wait for them. And in the waiting prepare the space to house them when they will be possible to build. **We can define the basic urban structure and prevent the encroaching of the public spaces required for a full development by protecting leeway.** If the urban structure is right, the infrastructures and urban services will come sooner or later and they will be adequately laid out. It the

urban structure is not in place the development will have a slum pattern and the cost of upgrading it will be threefold in the future. If the definition of public space is complemented with some sort of private lot pattern the result will be optimum. But even though this proves impossible plot standardization in the future will come, with time and effort, as a requirement of the private sector for its own economic improvement. Building regulations will be impossible to implement. No attempt should be made, as it would be effort consuming with inappreciable results. The time will come for substitution of the informal construction and the regulations will then be enforceable. Time to be measured in decades, or even centuries, but cities are there to stay, as slums would, if we are unable to prevent them. **Public space definition and protection becomes the main focus of what can be done.** Requires definition and divulgation by simple standards and policing with simple mechanisms. It is within the scope of the limited Administration capacities.

- d. **Governance provision: Scale** of interaction is mostly **1:500**. Large scales have to be formal. You cannot build up a national or metropolitan energy network in an informal way. You cannot build informal train services or informal highways systems. It has to be formal. The **1:500.000** or **50.000** scales are formal. **The informal is small scale.** It is the single individual or the small community that act informally. Accumulation of those small units can have enormous effects but the grain of performance remains small. The scale of the informal is 1:50. The household. We have the urban (**1:5.000**) or the neighbor (**1:500**) scales for the formal/informal interaction. The development objective should be to formalize the urban scale as much as possible. **To structure the urban informal expansion patterns into an upper grade biological system.** Provide elements, features and structures of upper grade biological systems to that primitive and resilient expansion. **The interface between the formal and informal should then take place at the neighborhood scale, 1:500.** The neighborhood community either using traditional management patterns like traditional tribe structures in Nigeria or interface instruments like NGO's in many places. Both can produce the interface dialogue between the upper formal scales and the informal one.

5. The *post-optimal city* Era. A methodology to describe and interpret the territorial basic matrix: reaching the rules of the informal settlement

According with Manal El-Batran and Christian Arandel "Among the most visible manifestations of the challenges posed by rapid urbanization are the informal settlements on the periphery and the first of these paradoxes is explained by the fact that vacant formal housing units are not affordable to most urban dwellers. The second is explained by the efficiency of the informal housing sector: those owning or developing private agricultural land have been better able to respond to market demand than the government authorities which controlled the desert land".

We are speaking about a city that is beyond the optimistic idea of an "optimal city": **formal and informal/illegal settlement of the city, as the shadow for Peter Pan, have to be considered to work together: we have to understand the slum economy and its linkages with the spatial issues;** so, the possible integration, from the spatial point of view, of the two parts of the same city. **Both the affordances of the formal and informal settlement have to be considerate as fundamental for the metropolitan scale operation,** that is:

*production of space

*situated practices

*everyday life

*time

*communication / networking

From the Pedro Ortiz point of view the urban (1:5.000) or the neighbor (1:500) scales are the dimensions for the formal/informal interaction, and indeed the development objective should be to formalize the urban scale as much as possible. So the Urban Design and Architectural fault is to structure the informal expansion patterns into an upper grade biological system, and in particular to provide elements, features and structures of upper grade biological systems to that primitive and resilient illegal expansion.

For that, our project is dealing mostly with the interface between the formal and informal matter that should then take place at the neighborhood scale, 1:500. For the project of the city related to the development paradigm outlined by Pedro Ortiz, there is a problem of governance and economic, but also the question deals with the location and the shape of the new settlements with respect to the role that they have to fulfill within the metropolitan body.

The object of our study concerns the way of the mutual adaptation of the formal and informal spatial and practices **to give shape to the area of contact or buffer zone that determines an architecture of boundary objects**. That paper wants to report a methodological approach to describe and interpret the territorial basic matrix, to shape a conceptual/physical terminology specified by definitions for reaching the rules of the informal settlement. All that, to be able to upgrading and to blend it with the formal one.

From the point of view of architectural and urban design, in order to deal with the theme of what does it means the “right development paradigm for the integration of the formal and informal settlements in the metropolitan cities”, we must consider three basic elements: the time, the scales of intervention and the models.

a. The Time

The right development paradigm is the one in which the development is feasible in the short and long term, and in which, therefore, the development between the two times is compatible, without having to delete one of these.

b. The Urban Scales

They are mainly two, the one related to a metropolitan scale model and the one that connotes a model of urban scale.

c. The Models

There are two models: a model of sustainability, which determines the indexes of quality to be respected, and a model of metropolitan city (Ortiz), which determines the rules for the possible presence of new metropolitan quantities.

The Issues

From these three basic data the issues we face are diverse and include:

- * the time which is peculiar to each model of development
- * the size that is optimal for each model of development
- * the sustenance of the residents and local economies
- * the local elements which in the transformation NOT to break not to destroy a sustainability that they have attained in any case
- * the local elements which in the transformation must be strengthened so that the inhabitants can participate and share their growth movement

- * the places of interchange and of densification within which to introduce the development

The Aim

The main objectives that we set deal with the possibility to explore an evolution of the local model of urbanity, but also, where it's possible, the opportunity for a growth of the local model through a transformation that we can define possible because it's realistic to consider that for the regional and local models.

The tools

The description and the interpretation of the new phenomena of metropolitan urbanization need the setting of a new mapping-project: that is going to be an hybrid mapping, a new mechanism of *re-territorialization* and care of the land, which can determine the processes of an identity formation. The projects carried out in the Laboratory of Measure and Scale of the Contemporary City of the Politecnico di Milano come from the study of the geography (geographic point of support, Febvre), interpreted as a layer of the earth that determines the characters able to structure the process of regionalization along history (psychological landscape of art / urban biography, Focillon): hence, the changes of territorial hierarchies, the structure of poles and networks, which are considered as the basis for the contemporary patterns of landscape (land + landscape).

These are transmitted to people through maps, which today are more properly hypertexts and are routed through the new technologies; we interpret them as deposits of information. In order to realize them, we use some methods of representation that are based on processes of narration and deal with topics like the testimony, history, data, diagrams, traditional or interactive maps. These may also be processed by users, which can increase, by themselves, the power of data. **These maps show a *landscape DATA*** (Bottazzi).

For the project, then, thanks to specific computational tools, it's possible to build a series of topological models, which describe and connect the main mechanisms able to generate the built space, by simulating the changing-reality from which it is possible to obtain, through a critical reading of the pre-configured scenarios, both previsions and models of sustainable development, which are strongly linked to the specific physical and cultural context.

The Premises

According to Chiara Brambilla, although places are often seen as physically and temporally stable data - in this way giving the time a spatial fixity - their meanings are continuously constructed, de-constructed and re-constructed in the present. Places, therefore, are not only constantly interpreted, but are also inhabited by both structures of meaning that belong to the past, and by physical presences that are linked to different times and origins. Because of that, according to Durand Lasserre: "Despite numerous initiatives during the last decade in sub-Saharan Africa to set up new land information systems or to modernize existing ones, have been limited results achieved." It is essential to understand the regimes of local properties as well as the logic of the regularities of relations, in order to define which is the model of the market, accessibility and of institutions, and, finally, understand the rules that different colonization processes have carried and determined over a territory.

As a result, the analysis able to localize the two models should be "functional" for two different types of reality:

- * the existing reality, which would not stand the changes set by the time
- * the reality of metropolitan growth, which has to be precisely located

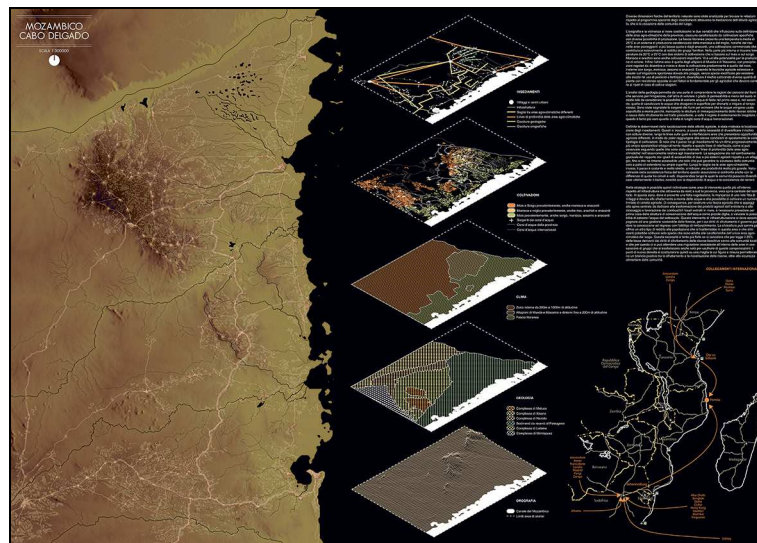


Figure 7: *Mozambique. Orography, landscape, land use* (Bovio, Musetta, Zammataro)

The Experimental Project

The sustainable design for an Urban Region finally will answer the questions of new metropolitan functions:

- _ Tourism (the desire to find again time dimensions of the past which are inconsistent today)
- _ Industry
- _ Agriculture

These will push into new migrations both the rural citizens and the ones coming from small and medium-sized cities, who will tend to settle down following the typical settlement-principles of their original cultures.

6. An hypothesis for the reading and the interpretation of the African sub-Saharan settlements

The projects that we have realized insist in areas both of transition between formal and informal and between informal settlements and countryside. The goal related to the proposed settlement-principle, is to generate between the two cities, both legal and illegal, a spread molecular system of services: in other words, to build a reinforcement of welfare through the construction of a demand (which is a cultural action) able to solicit a widespread offer of services for the citizen, signalized by a strong image of the institution and the public space. The administration who owns a Vision, must, to one side, accept (negotiate, be complicit with?) a temporary illegality which is able to provide collective services to citizens, but, on the other side, always, and firmly, reject an illegality exclusively for private purposes.

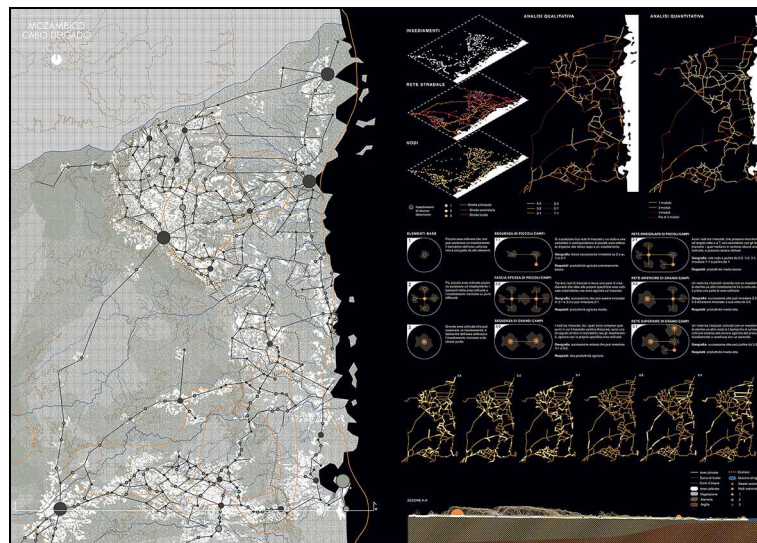


Figure 8: Mozambique. Settlements – villages/fields – parametric studies (Zammataro)

The Method

In order to design inside the “informal” tissue of sub-Saharan countries and, as a consequence, to develop services within its perimeter and, especially, in the buffer areas close to the legal city, we are experimenting a method of analysis, which is taking inspiration from the work of some Italian authors who codified the method for performing operations of morpho-typological interpretations; these are firstly the result of a “spontaneous consciousness” within a population, and later allow the construction of a typical figure of the territory through a robust and resilient image.

The first step deals with the identification of the primary territorial type -defined as “concept of territory” by Caniggia-, which every human-being, according to a specific Place and Time, assumes. This is a concept related to a consciousness of the territory, which is spontaneous and framed by:

- 1) a way to cross the territory
- 2) a way to choose the place for settle down
- 3) a way to locate the production activities
- 4) a way to locate a node-system, suitable for setting a trade/exchange area: the relation and meeting area

The importance of this issue is evident, yet is a concept that includes a dimensional entity (amount of territory) where the human-being carries his life, no matter the historical period. The primary Territorial Type is determined by the relations between the *podere* (*fundus*) and the pasture, so it is not exclusively related to a set of relations, but rather invests inter-somatic relations between human-being and environment.

The concept of the robust-Image is directly connected to the act of seeing, which is typically something related to the Landscape, here interpreted -from his Latin meaning- as a Total-built-Landscape/Total-Landscape-made-Visible. In this case, Caniggia finds essential the

presence of a *Promontory*, i.e. a high point where is possible to look at the new physical territorial dimension of the Primary Territorial Type after its leap in scale. As a consequence, only if we look at it in its totality we could understand landscape through a mental image – originated therefore from consciousness-, and only after this it's later possible to conceptualize and design it. When both the territory and the relations we'll be grown, we'll then need a *Promontory of the Promontories*, urgency of territory, from which be able to understand in a unity the bunch of relations between the *podere (fundus)* and the pasture. This is a trade/exchange area, where the local characters, languages and behavioral codes meet the global ones, where the primary Type faces a leap in scale. There's no need to underline the importance of these "hinge points", above all if we consider their possible value within informal settlements, which are generally considered self-reflected and not-opened to external influences. The exchange process should indeed be coming from both directions, from informal to formal and vice versa: it's therefore important to set up the reasons why that should happen.

Because of the fact that the act of settle down in the Valley (*Geddes*, 1919) is for the human-being constant in time, according to the morpho-typological theory we can say that starting from the idea of Territory-Matrix (primary Territorial Type), we come then to the concept of typological process of the territory: human-being's experience within it dilates itself till understanding the consciousness of a system of sizes, which perform as metropolitan and invest the so-called agriculture-urban area. By dealing with this idea of territory, which is elastic and not-stable, but part of a process, we are then able to identify a "cultural area", which includes all the ways the historical overlapping of events conceptualized, identified and designed the territory, above all the trade/exchange area (psychological places of the art – Focillon).

According to the classic morpho-typological studies, the interpretation of the territorial typological process is possible through a system of signs, tangible clues, which are related to a concept of Territory and show its structural changes in case of a leap in its scale. These signs are necessary for getting to this "morphological crash", they appear complementary and inclusive of the previous ones, and are all values left by past generations and obviously link to each other, from different scales. These may be signs related to both essential or marginal structures.

A so-called mature-Territory appears organized into scalar sizes. Even informal areas (Ard al Aliwa in Cairo or Istanbul Gecekondu, for example) may already be characterized by a cycle of consolidation (from temporary homes, to medium-rise-buildings, up to towers), which is full of artificiality and consequent artificiality (as Caniggia was forecasting) due to rapid land/settlement-changes, like in the case of artificial structures that are designed against the territory and therefore difficult to be assimilated by it. The recent phenomenon of climate change accelerates and multiplies the risks associated with these uncontrolled structures. If a renovation cycle from consolidation isn't yet the condition of the informal areas that we are here discussing (in particular the case studied in Dar es Salaam in Tanzania), it is quite certain that this territory will face a crisis of adjustment, which, according to Caniggia, often drives to a phenomenon of neo-Middle Ages or *Favelism*. This later implies that the city could structure itself only from small scale procedures, blocked into minimum existence-values

The Procedure

According to Massimo Della Rosa, in order to describe the basic territorial matrix, which determines the typical figure of the territory through figurative landscape unities, it's fundamental to map all the main topographical elements of the territory; these constitute the fundamental tenets under which determine the coordinates of the relations between the *podere (fundus)* and the pasture. These basic element, in fact, have been matched into a matrix able to describe the Scenarios of the figurative landscape unities, which compose the different Sets / Tones of the Landscape. (Fig. 9)

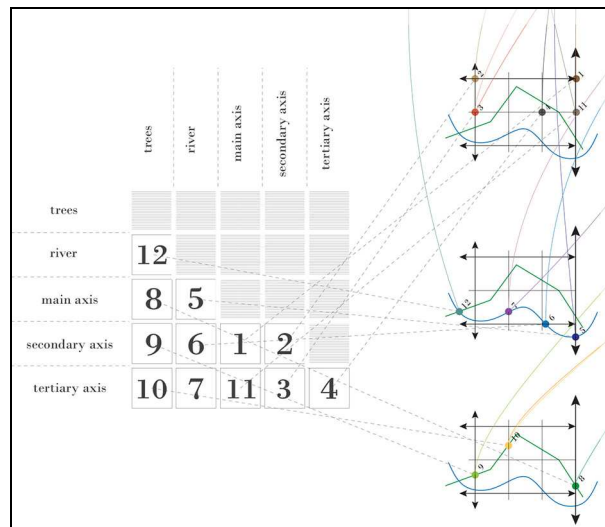


Figure 9: *Territorial Matrix*

The following step deals with the identification of the real, physical position -on the territory- of the previous elements (Fig. 10), so as to determine their anthropological meaning through their symbolic, or not, use-value.

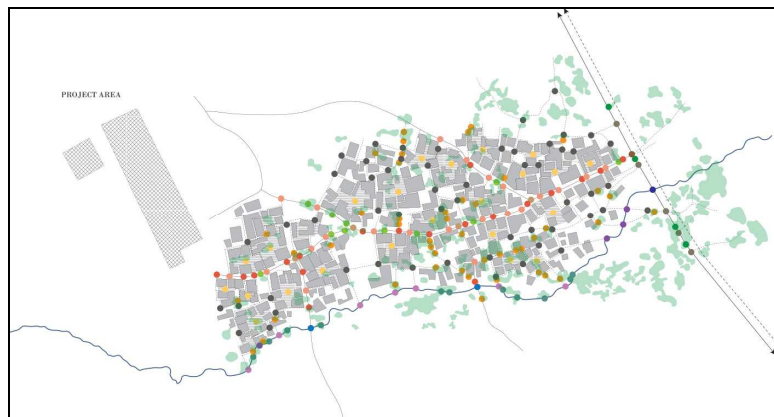


Figure 10: *Dar es Salaam, Tanzania: identification of the position of the topographical elements*

It's possible then (Fig. 11) to start with the analysis of the complexity produced by the leap in scale, determined by the transition from the relation between residential unity and its closest context, to the settlement to the environment, which brings to an upgrading of the anthropological meaning of the elementary Signs.

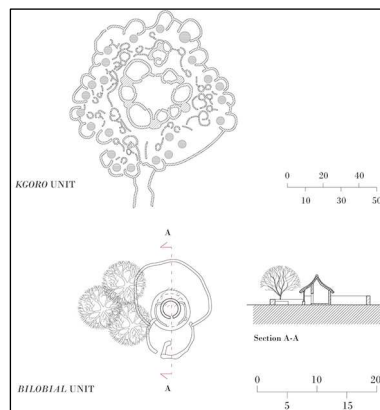


Figure 11: Molokwane, plan of house-type and settlement

The study of the elementary structure of the settlement, both of its image and its use, allows to clarify the conscious-process that determines a self-composition of the essential and complementary signs, which, in every scale reached by a settlement, define the use of a territory by a population (Fig. 12). It's thus possible to understand the quality of relations between the different elements; in fact, through the analysis of the hierarchies between the signs: structural, linked to the driving-areas and therefore consistent and durable, essential and complementary or marginal and fragile, we can identify the elements that set the weak images of the settlements, characterized by inconsistent dimensions that cannot survive the leap in scale.

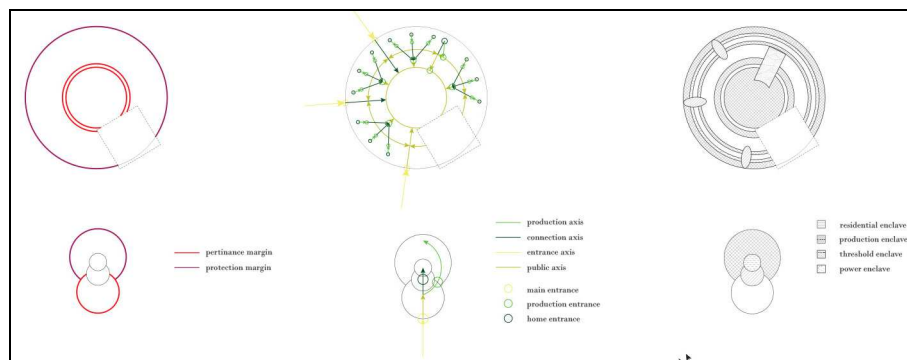


Figure 12: analysis of the use of the territory by local population

The settlement is then analyzed (Fig. 13) as:

- 1) quality of the perimeter (*finitio*)
- 2) internal relations: itinerary relations, spatial relations, land uses
- 3) enclave

Which are later specified as:

- 1) protection margin
pertinance margins
- 2) entrance axis
public axis
connection axis
production axis

The composition of these elements determines later the different areas of the settlement:

- 3) threshold enclave (limited entrance area, useful as protection spot of the settlement)
power enclave (area of the *Parade*)
residential enclave
production enclave (generally located in the central area of the settlement: *Central Cattle Pattern* type)

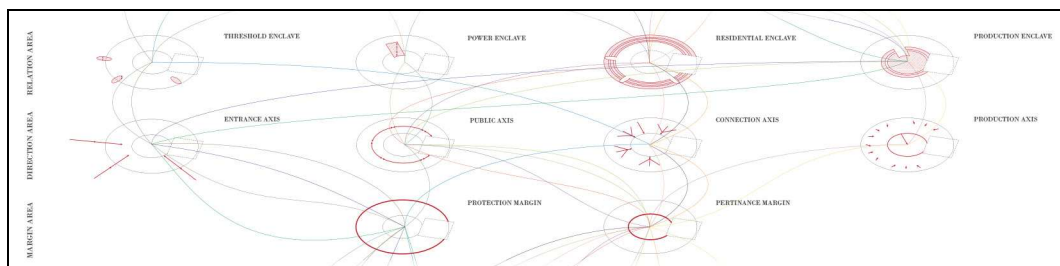


Figure 13: *structural signs that rule both the house-type and the settlement*

Each settlement, as the scale changes, modifies its range of influence towards the territory, that can be interpreted as an elastic entity (Fig. 14) and it's determined by:

- 1) a dynamic: it describes the way of crossing the land
- 2) a tonality: it's the meaningful feature of the act of living.
- 3) a frequency: it's the time-unit according to which an event occurs periodically; the described phenomena it's characterized by the same factors. The study of the frequency allows to identify the recurrent distances/measures between the axis of penetration, according to a typical rural settlement-type, which has a radius of 800m

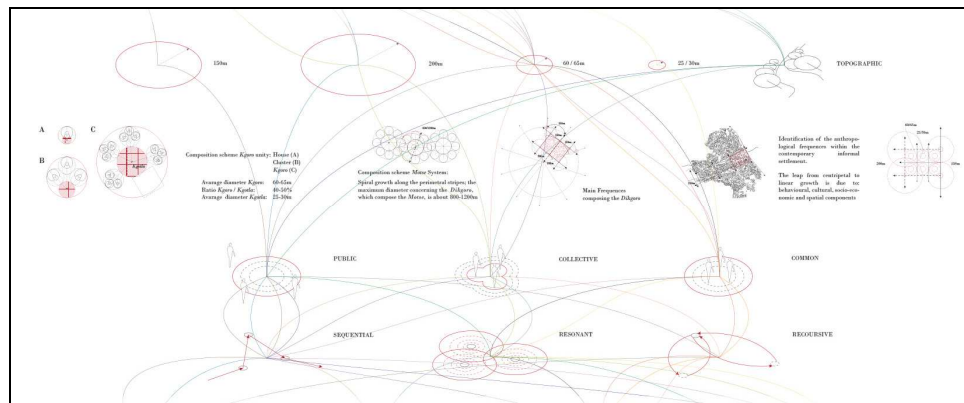


Figure 14: range of influences within the territory

Inside the new dimensional definition of the territory we should then determine the trade/exchange nodes (*Promontory of the Promontories*), which specify the areas of leap in scale where the different scales are simultaneous and include each other. According to Caniggia, this step is much more than dilate the metric dimension of the studied structures, as it implies also the simultaneous expansion of the qualities of the relations among the different observed objects. Each dimensional scale, asserts Caniggia, becomes a moment of understanding which is increased in scale; yet is possible to describe each scale through the identification of a singular point (the trade/exchange node), due to the fact that they are part of a continuous process of scale expansion, this moment, which is represented by the point itself, becomes an important phase of evolution of the informal settlement (Fig.15).

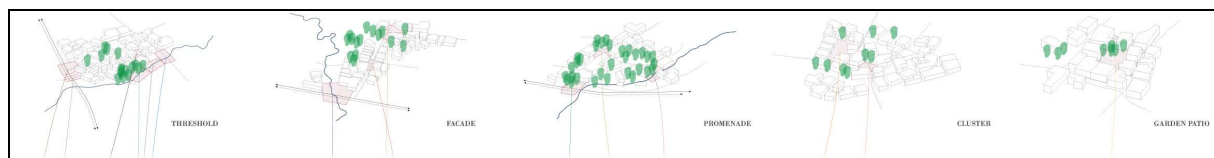


Figure 15: identification of the points

Conclusions

Within the context of rapid growing urban areas, one of the main phenomena turns out to be Informality, as a result of the processes of transmigration that produce a peripheral urbanization often solved without continuity with the existing fabric.

As a direct consequence, we assist to the birth of a line of discontinuity (threshold that brings a leap in scale), which separates the system of Palimpsest (urban center) from the one of Hypertext (periphery), physically bordering but not resonant.

The suburbs may then turn into urban belts of imbalance, places of informality, in which there's a lack of strategic planning useful for enriching of basic services and infrastructure the new urban spatiality. In many cases, in such areas, illegality transforms the area into a

loser and dried system, characterized by a need of profit -often alien to law- based on a pure exploitation of the environment.

The phenomenon of Informality appears therefore as a consequence of human/economical migration flows -from rural to the urban contexts-, something difficult to stop but in need of control.

Besides practical necessities, there's also a need to understand what informality is also in terms of its structural-features and rules, in order to operate in it respecting the Image of the Settlement, as a tool to contribute to the recognition of the environment and, as a consequence, to the resilience of the system.

Recommendation for planners particularly in regard to migration and its impact on informality

Metropolitan issues, as the ones we have addressed in this research, are of a new kind. The dimension, the scale, they have to be addressed are of a nature that never before the professionals and scholars have dealt with. It requires new disciplines and new approaches to confront them. Normal urban analysis, research or planning cannot address the issues. The structure and nature are different, either in economic, social, environmental or institutional terms. The metropolitan phenomena in Institutional terms does not involve, as in urban, mostly a single local authority (the municipality). It involves a multitude of municipalities and agencies. The process of governance is thus of a different nature. In Economic terms that large metropolies have for the first time a global network of economic relations and a productive capacity that overruns most of the time the majority of sovereign states with international recognition. In Environmental terms the footprint is unprecedented if compared with the urban impact and has to deal with completely different legal and technical tools. The dimension of inequity, persistent thought-out historical evolution, might find in size a new dimension.

All those elements make metropolitan issues a new phenomenon, which requires a new discipline, probably a new academic field of research away from traditional urbanism approaches and methodologies. This is what this paper pursues. In such way, from traditional urban values and attitudes as prevention of migration and formalizing of the informal sector, this paper presents an approach of accepting migration and metropolitan growths a phenomenon that is here to stay, and we have to deal with instead of turning a blind eye of denial. From turning a blind eye as well to an informal sector that is often 80% of the economy, sociology, institutional or urban components of those societies and as such most of its assets, to an attitude of collaboration and complementarity trying to find the ways to produce that dialogue. Formal/Informal interface research for a dialogue that has to be produced between very different procedural frameworks incompatible in principle. Interface in Physical-Environmental terms between the larger scales of national or metropolitan dimensions and the smaller ones of urban, local and domestic. Interface in Governance between the formalized institutions and the informality of local social networks.

This is the line of work this paper wants to follow/initiate and invites other professionals and scholars to pursue.

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