

New metropolitan discipline: Foundational significance of Madrid 2016 Plan

NUEVA DISCIPLINA METROPOLITANA: SIGNIFICACIÓN FUNDACIONAL DEL PLAN DE MADRID 2016

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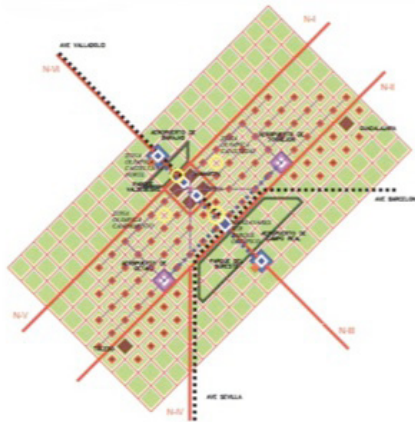


Fig1. *Madrid 1996-2016 Concept Diagram*

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Introduction. 'Madrid 2016' a new concept for a qualitative metropolis

We think that it is possible to speak of the urban quality, as Lynch did in 1976:

“I. Ideological answers to the crisis. The world is in crisis: climate is changing, economy is unable to rise again, many areas of our planet are affected by wars, many local systems are unable to maintain their standard of living. This has happened before in human history, but not with this intensity. In these last years many cities tried to answer this situation with new ideological models: green economy, resilience, smart cities, and urban competitions for global investment. Have these answers helped the cities in which they were applied? Have these failed? Why? In which ways?”

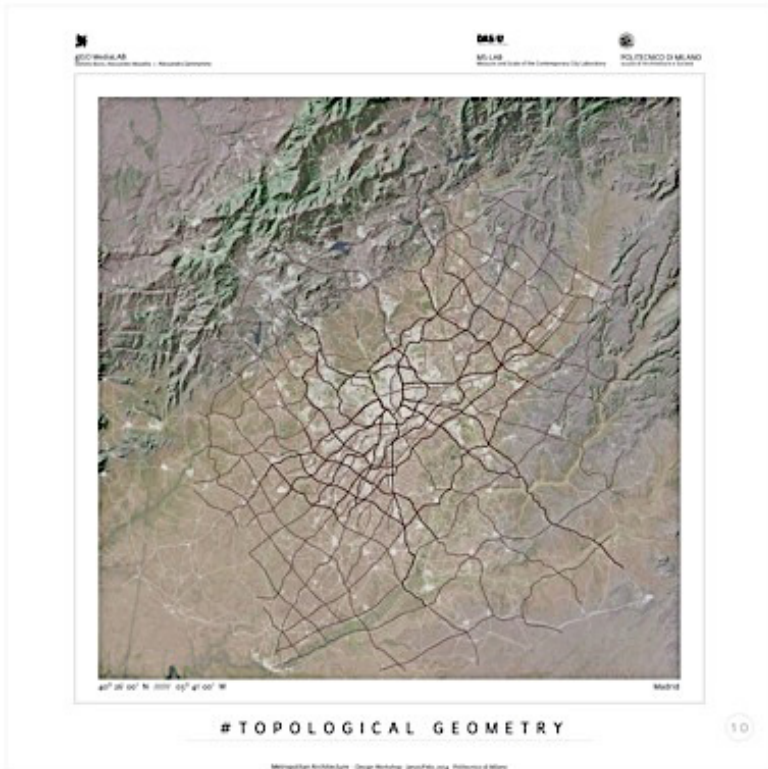


Fig.2 Madrid 1996-2016 Map

II. *Ideology and urban form in the 21st century. We know that design always carries within itself a representation of the designer's identity and beliefs, and many authors advance the idea that there is a big relationship between the Weltanschauung of a population and the form of its cities. In which ways can we see this phenomenon in the classical cities of Christianity, the Islamic World, old China and other recognizable dominant ideologies? In which way has this evolved or changes in the 20th and 21st centuries?"*

Nevertheless, Lynch tried to define again another dimension of the quality of a city when he defined the environmental quality as the *"rich interplay between form and meaning of the city"* or when he said that *"a place is endowed with qualities"* when, in some way, appropriate to the person and its culture, it makes the *'individual aware of belonging to a community, of its history, the unfolding of life, the universe and space-time that encompasses everything'*.

To achieve quality, Lynch proposed the need of a **city model** as *"the representation how the space could be structured and the representation of the shape and process description, which constitutes the prototype to follow"*. And he underlined that *"the model has to take care of the process through which to think about that shape"*. At the same time, the Choay's definition of the model was *"an exemplar value with a reproducible character"*.

Analysing the role of the Wagner's conceptual model for the Großstadt definition in Vienna and the Hilberseimer Chicago's model, we can discuss the role of the Madrid 2016 theoretical model plan for metropolitan qualitative shape definition, and the metropolitan architecture identity, within a demonstrative character to face nowadays metropolitan chaos. In fact, it is not only a model for a Master Plan that it represents: it embodies **a cultural leap to a new identity**. This must be characterized through its regulatory structures, forms and territorial vocations within common strategies and rules. So, through its maps and diagrams, it is possible to communicate, socialize and share the objectives, and not just a set of rules. It's possible to communicate the plan and its intention.

Today's new "needs" - especially suffered by the lower incomes and new migrants - are related to an alteration of traditional emotional city register, far away from its functional cognitive world. These needs are asking mainly for quantitative changes, when increasingly unilateral ideological logos outline urban formal operations, precise and accurate, but distant from the popula-

tion's symbolic realm. It is time to put forward this question as Lynch's message which carries the concept of a "*quality city*" – a message for a qualitative city that not only has not been accomplished, but rather, has been used to legitimize the worst urban protectionism.

Madrid 2016 Plan, by the late '90s, tried to set up the foundation of a new urban practice from a metaphor or a discursive practice, in the line of the Bidagor 1946's Madrid Plan. The history of that Plan shows that if we talk about quality, notwithstanding the big job to be done educating human perceptions and emotions, we are opening the eyes to the capacity and awareness to feel the city. This requires an evaluation, a judgment in the ethic and aesthetic dimension and not just the simple education of senses and intellect. That is, if we want to be "worthy of our time"; a time that has dried out dimensions for reflection, which is reduced to trivial communication. Moreover, it has dried up the gestalt's capture by which you sense, before you even know what is good and what is not.

There are two paths to be followed: alienation through excessive exposure to stimuli beyond capacity's limit to process, or avoiding anxiety, the estrangement of emotional indifference, avoiding reaction to stimuli or emotional resonance. You allow the ideology of profit run the city. In the desert of affective communication, formal gestures take a leading role in urban planning: actions/architectures of minimalist, aphasic or anodyne buildings.

What kind of qualities are we talking about? Are they similar to Lynch's qualitative performances? How do citizens perceive these qualities? Are these qualities impressions or feelings? How is it possible to measure them objectively? We surely remember that in the '70s Lynch did not rely only on statistics, but on **mental maps** as well. He claimed that the value of a theory and a model could only be grasped by imagination or 'sympathy' and then the need to empower imagination to understand the city. This produces a multifaceted pluralistic city in our imagination and generates multiple interpretations. The map, the idea of the proposal, is one of the keys for transforming the image that people have about the city in order to create the 'new' city/metropolis. What is most important is that the map is the foundation through which citizens themselves can conceive the city within its metropolitan dimension.



Fig.3 Bogotá Metro Matrix Diagram (*The Art of Shaping the Metropolis*)

A) 'Metropolitan Architecture', as established by Madrid 1996-2016 Plan

We believe that an apparently 'completed' city mostly requires an adaptive capacity. There are many circumstances in which new urban activities emerge. The city must be able to host and foster them, to help them develop for empowerment, as functions of equity, sustainability or competitiveness. The metropolitan city today has new emerging needs.

Every city has its "character" that is expressed through maps of poten-

tiality, as Lynch wrote. Those maps are not routinely used for design analysis, but as effective synthetic representations... “*You can measure the potential at each point, i.e., what influence certain features, existing in other points of the region, have on a place.*”

Defining the potential of a place, in a qualitative, not quantitative design project, is more than merely referring to the qualities of the identifiable object – we believe every quality is a ‘field’ with its own value which competes with others in synergy. We call this quality field ‘gradient of formality’ and it is related to every metropolitan architecture project.

For that purpose we distinguish three elements:

- Physical urban structure, an underlying urban pattern. The urban **Fabric**;
- Framework structure of the field. Green/Grey infrastructure. The urban **Form**;
- **Characterization**. Namely, the context of the city’s environment given by the green infrastructure and its geo-topographic setting.

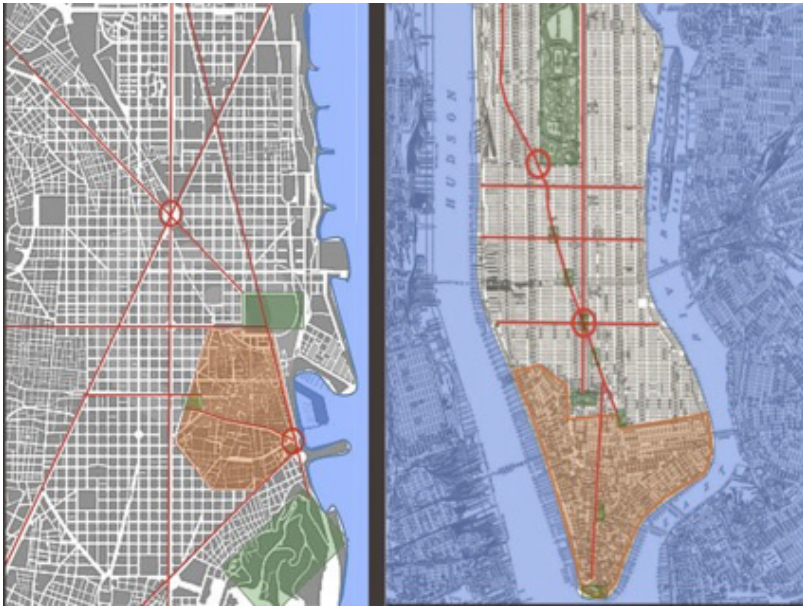


Fig.4 Urban Fabric and Form: Barcelona, New York (*The Art of Shaping the Metropolis*)

A space is determined by what we call ‘**Figural Landscape Unit**’. Ortiz denominates them UDE (Unidad de Desarrollo Equilibrado) or ‘BUD’ in English. Each UDE looks apparently closed and static, but it is, in fact, in motion, since the location framework and access roads (‘surface and volume’ in Lynch’s armature) are the interface of exchange in both directions. The metropolitan city digit-unit is not static because the framework resembles a membrane-matrix characterised by a double exchange. Inside the UDE, the green infrastructure is “tuned” with the grey infrastructure flowing through. Grey should not interfere with Green. That is the role of the Plan/planner. The line-road matrix passes between quality-valued areas and occupies an area “between things”. Grahame Shane calls this “the body of space”, a space in-between. From the Metropolitan-Architecture project’s point of view, if we talk about quality of form, we must talk about new morphological and aesthetic topics to be found in the metropolitan planning structural model of the city – the spinal axes.

The keywords-concepts for discussion presented in 2016 Madrid’s Plan were:

- **Re-foundation** of relationships between society, history and architecture: It presents an anthological reformation of analytical tools, interpretation and projects related to the metropolitan city and not just their upgrading;
- **Social concept** that underlies the topic of sustainability (business, social, territorial), both in urban sprawl and metropolitan scale. Sustainability of the Grey Infrastructure is “sensitive” and allows to keep the new city development within Green parameters;
- **Discursive dialogical formation** as the foundation of a practice, which opens a dialogue between different metropolitan actors. Progress, considering crisis, is caused by a change of paradigm. A necessary moment for change of scale requires a new project phase and a scale leap in Praxis;
- The definition of the metropolitan Fabric **elements**: new digit-units or primary components of the metropolis: the UDE;
- **Aesthetic principles based on diversity**: a combination of sparse city fabric harmonized with the dense one as a compositional practice with stable rules (Environmental values).



Fig.5 UDE/BUD (*The Art of Shaping the Metropolis*)

B) The problem of the different metropolitan scale languages

Concerning the problem of the coordination of languages at different metropolitan scales, these are defined from the new network and the need to preserve the memory of the previous urban heritage through new types of settlements connected to and with the network by the Green and Grey infrastructures. In order to define a model of the city, it is necessary to address the need for a narrative (cfr. the value of the Treaty's tale of origin according to Choay) in the new space of flows.

In this case, it is framed with a matrix net that connects the multi-scale and multifunctional nodes. At this point the issues are:

- How the inclusion of the old city in the new scale is studied;
- How public space is redefined;
- How the qualitative, not only quantitative, “field” of the Metropolitan Architecture project is redefined.

The Madrid 2016 Plan was concerned about the ‘character’ of the city. Which concept does the city embrace, not as an aesthetic icon, but as a social theorem? Does Madrid remain a contained, compact city, not hungry for land, which manages to put different groups of great diversity in its elegant compact shape or does it want to boundlessly sprawl with enormous waste of environmental assets, energy and time? What did Madrid choose?

Madrid 1996-2016 Plan did choose public transport due to its notions of equity and social justice, not only because of pure accessibility and it understood that the important thing is to design **Centralities**, places that have the quality and capacity to attract (Peter Calthorpe’s 1993 Transit Oriented Development-TOD), as early as 1995.



Fig.6 Peter Calthorpe’s 1993 Transit Oriented Development (TOD) as early as 1995. Courtesy of Calthorpe Associates.

What kind of growth does Madrid adopt? What kind of management instruments and governance, has Madrid been given? Does Madrid have a system that guarantees the existence of actors that can provide a cultural direction for its growth an improvement of quality over degradation?

C) Conceptual values. The logic of settlement distribution

We leave this topic to further academic considerations and to Pedro B. Ortiz’s book *The Art of Shaping the Metropolis*. Now, we just want to underline once again the groundbreaking conceptual proposal of the Madrid 2016 plan’s Metro-Matrix.

Madrid Plan establishes its structural concept through the definition of the logic of settlement distribution. The preconditioned pattern provides localization of interchange nodes in peripheral areas. It takes into account both inhabitants and city-users, based on the concept that the existence of an exchange organization along the space-time networks of commuter trains (Cercanías), main thoroughfares and airports is what matters.

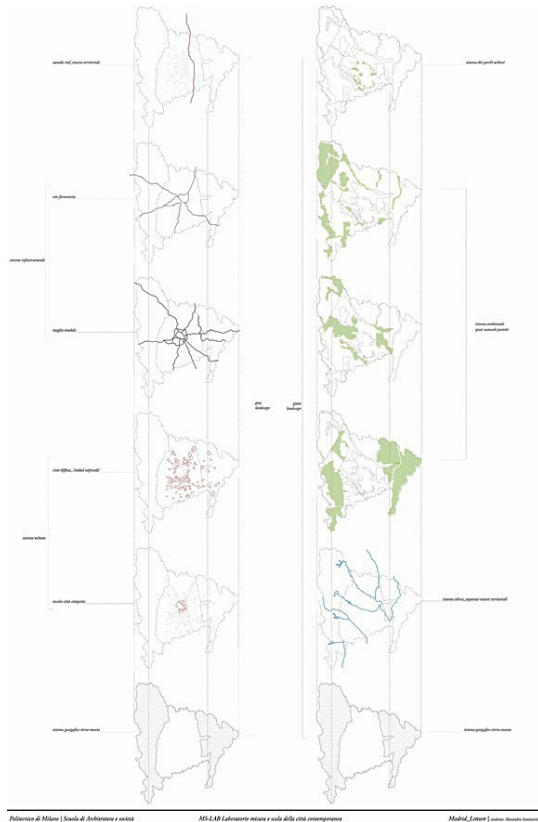


Fig. 7 Madrid Structure Interpretation for the Metro Matrix Diagram (A.Sammartino)

Rather than a ‘formal model’, we can talk about a ‘development model’. A Method. It consists of a series of UDE units, established along the underlying pattern (the Fabric), which indicate a direction for urban settlement distribution and development. A series of metropolitan network diagrams indicate a possible configuration characterization (the Form) of specific locations with a gradient of formality.

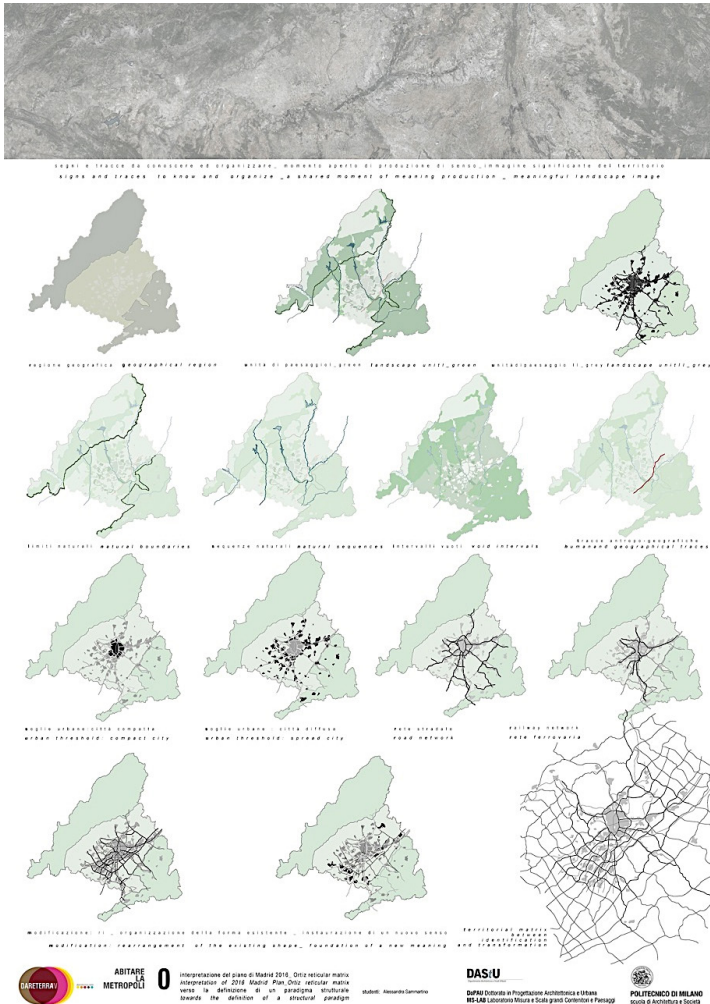


Fig. 8 Madrid Structure Interpretation for the Metro Matrix Diagram (A.Sammartino)

This aspect is in contrast with the relative immobility of the traditional cities order, based on now out-dated horizontal traffic system. It leads to a proposal for an integrated model based on scale integration, down to capillary action. It builds on the speed and the multiplicity of interactions and communications that flow and diffuse freely in space. In other words, dynamic dialogue activities require physical development.

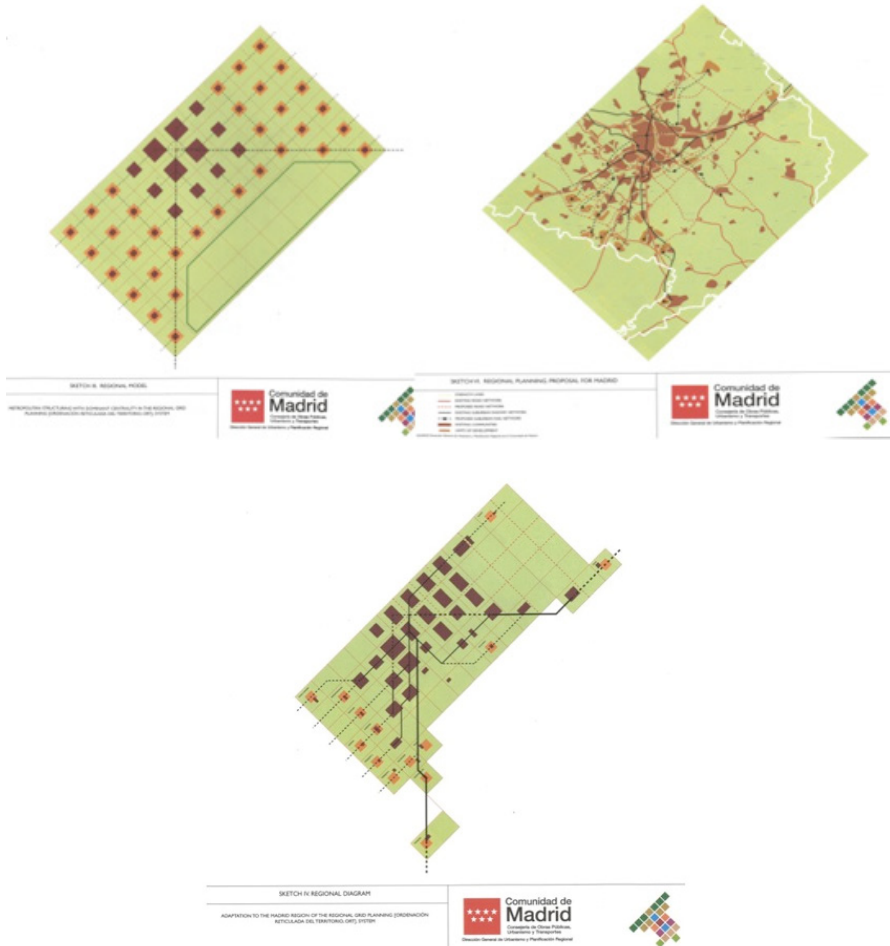


Fig. 9 From Form to Praxis: Scheme, Diagram and Map

A system of axes: only a few structural geographical axes related to regional and supra-regional scales define both the development of the center and hinge points of densification. City-Metropolitan structure, citizens, physical and temporal relations are altered due to the change of scale. Time-scale change is particularly relevant. Because of it, mental territories and the way of place-marking have to change as well. Today, the design and the representation of the architectural elements that contain and express development are limited and distorted due to the lack of understanding of their metropolitan role and their territorial, spatial, economic and social impacts. Architectural design is still linked to a purely functionalist and quantitative small-scale vision of the architectural object as a built place / icon / landmark. Metropolitan Architecture is meant to provide a new dimension for a more complete role and understanding of the new metropolitan age.

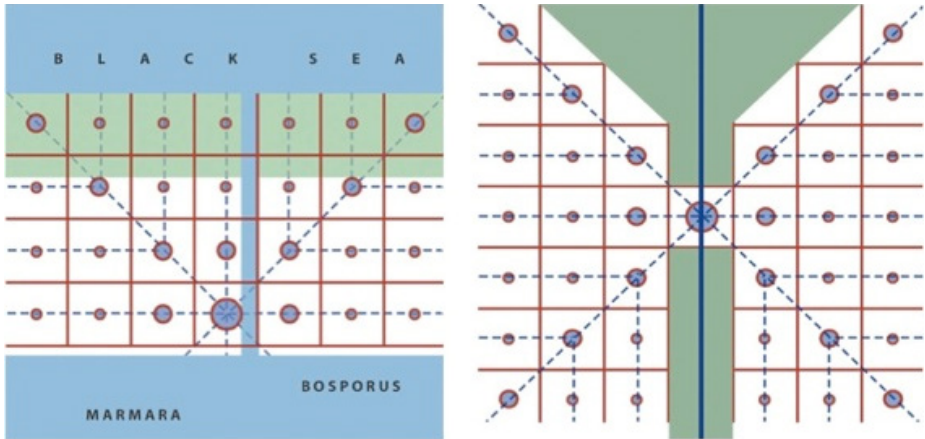


Fig. 10 *The 'Form': Istanbul and Cairo*

D) The Metro-Matrix Mental Map as Social asset

The built space, as a collective expression, should be a subject of participatory decision-making. This means that citizen's need a mental map to be able to operate with concepts. In the absence of professional metropolitan planners' skills, that mental map is often subverted by the underground/subway/metro Map. We are still deeply in debt with Harry Beck and his 1931's Tube Map. A Metropolis is more complex than a spaghetti dish of tube lines. Large scale (1:50.000) professional skills are required.

The mental map at the metropolitan scale is the transformation of the topographical space and space-time dimensions into the idea of the structure of the Metropolis. It is the idea that reflects the economy, sociology, environment urban and governance system of a metropolis. It is not a mere reproduction - a photograph. It is more than a representation-a drawing. It is the synthesis of the idea, the concept and the *logos* into an image – the diagram.

We want to develop Madrid 1996-2016 Plan as a model for the projects that are related to the metropolitan cities and their contemporary explosive growth. We need a kind of renewed Humanism in the study of the metropolitan organism. We need to consider Metropolitan Architecture as an integrated space-time system. We need to claim back all public spaces as public goods, especially those that Portugali defines as pervaded by a sense of placelessness. The anonymous spaces of the “usual repeated gestures”, the abandoned and neglected ones, the space in between the infrastructures for which we have to re-conceptualize a meaning and a name (now we only define them: green spaces, etc.). It is now undeniable that a more systemic perspective constitutes the basis for such definition: the metropolitan landscape, the built environment and the cultural heritage as a true Green Infrastructure available to be used in various times.

According to Piervittorio Aureli, the object of Architecture should define a singularity of place as an essence of a city. For public spaces, the project’s aim is the moulding of a shared space that defines a form of political coexistence among individuals. We must face the break between geography, urban structure, its projects and functions. We are suffering from the deconstruction of city territories.

Management of both built cultural heritage and landscape is the core of Architectural projects and Metropolitan development, but at different scales. The coordination of scales and the shift from one to the other scale have to occur without alienating the socio-economic and the physical structure of the city. Private interest groups launch activities that can be integrated into the public realm. The connection of the new metropolitan unit (Fabric) with the infrastructure networks (Form), altogether with medium and small cities grounded in the territory, is particularly relevant if we consider it as a deeply significant approach against purely economically or ecologically bound urban development.

E) A methodology for the new metropolitan settlement structure.

Whenever the Measure and Scale Laboratory of the Department of Architecture and Urban Studies at the Politecnico di Milano starts a new project, we address some specific issues:

- What time is most favourable for each development model;
- What size is optimal for each developing model;
- How to support local people and their economies.

In some of our projects, especially the ones related to the transformation of a territory, such as the new energy deposit in Mozambique, new infrastructure or settlement construction in Dar es Salaam, the conversion of obsolete airfields in Teheran or informal sprawl control in Cairo, our main concern is to preserve a kind of sustainability that local citizens have reached. We look for the elements we have to reinforce so that we can empower the population to drive their development. We have to find the strategic points in the new scale of interaction where development can be stimulated.

Our goals are to search for the evolution pattern of their local urbanity models and, if possible, propose a sensible development based on the transformation of the regional and local models.

Our tools are a new hybrid-mapping project created through open-source maps and the use of specific computational tools. This helps us to build a series of topological models that describe and connect main mechanisms that generate the physical space. We simulate an ongoing reality from which, through a critical reading of the pre-configured scenarios, is possible to obtain forecasts and models of sustainable development. Models are characterized by a close relation to the physical and cultural context.

Sustainability criteria linked to “scientific” ratios of quality must be respected. The metro-matrix metropolitan urban model provides us with the rules for possible presence of a new metropolitan dimension for urban or architectural non-standardized projects. We have to think about a time-viable framework for development, both in short and long term. Our aim is to achieve compatibility between time frameworks without having to renounce any of them. Finally, physical and cultural dimensions are the only real guarantee for a participatory development which is not imposed upon the citizens.

Tehran Metropolitan Matrix Structure

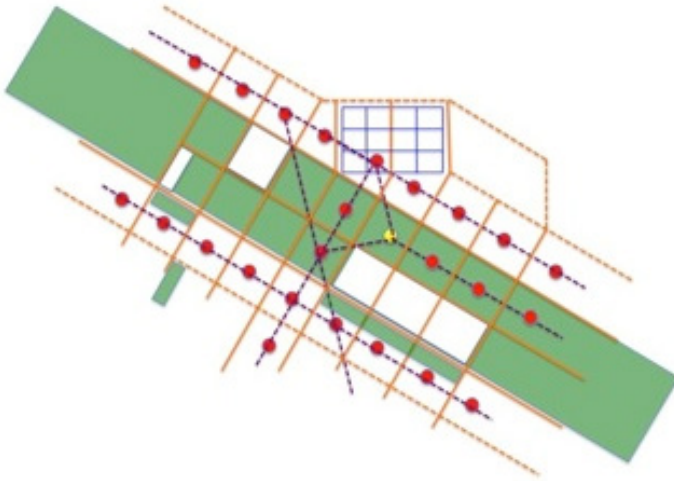


Fig. 11 *The 'Form': Teheran*

The complexity we confront is due to the fact that this is no longer a problem of instruments but of new meanings. We have to deal with dialogical complexity. We deal with systems that are in a need for the continuous dialogue between scales and solutions that use new methods to make historical identity present, which cannot be found, as Saverio Muratori taught us, in the formal historical layers.

We need a methodological indication for the development of the new metropolitan settlement. This is the Metro-Matrix Methodology System's concern. The Metro-Matrix, in fact, is a study of ways to regulate the growth evolution at the metropolitan scale. It is a methodology for territorial interventions, a logically structured system of choices and the organization of a vision inside a discipline. It is based on a method that allows us to describe and design urban phenomena related to the change of scale, which determines the mutation of types of morphologies, urban spaces and landscapes. Consequently, it is an investigation on the relations among the languages of previous scales within a new metropolitan scale of intervention. Lastly, this research uses a conventional language that deals with qualitative relations and not only with figures and data.

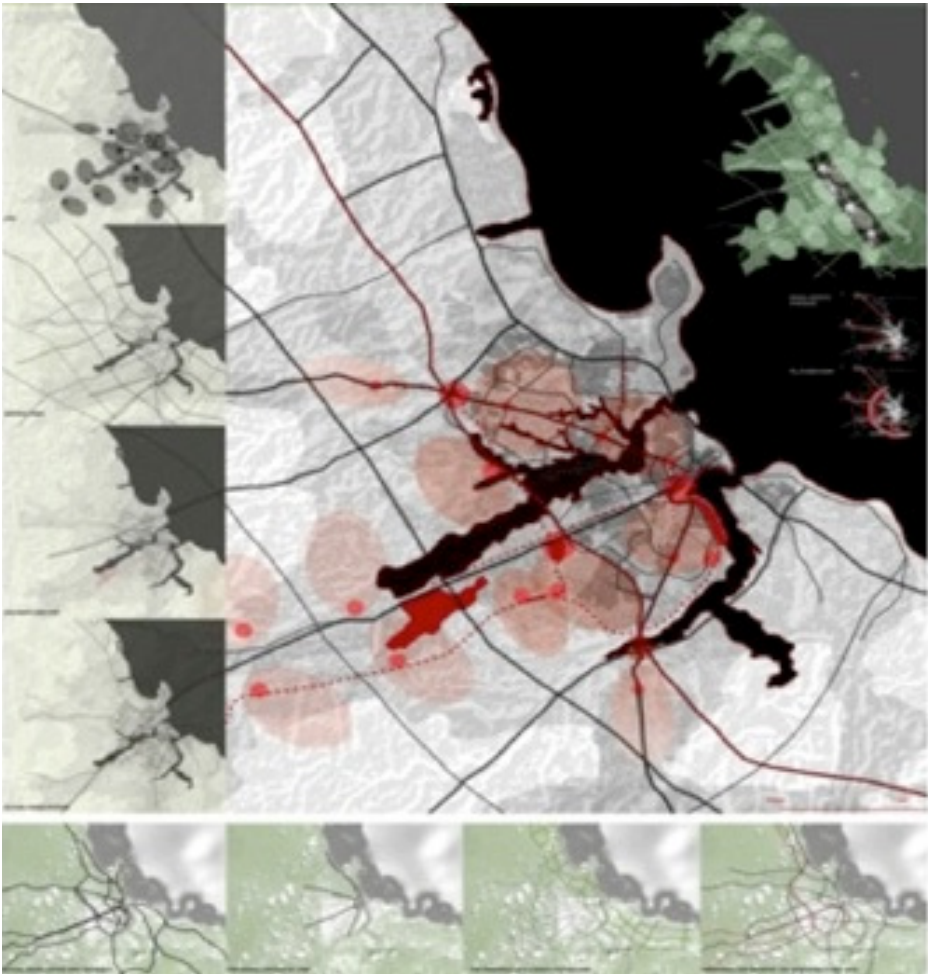


Fig. 12 *Metro-Matrix to locate Dar es Salaam metropolitan transport intermodal Centralities (M.Motta)*

At the Politecnico Lab we foster the idea that Metropolitan Architecture is an integrated space-time system. We try to reconsider neglected urban spaces as a cultural deposit of public good. We give them a meaning and an identity in our projects again. We work on developing a new definition for metropolitan landscape. It is an element that defines the singularity of a place, according to its geography, history, potential and new objectives. The built

and the natural heritage are both considered vital components of a true Green infrastructure, ready to be available. The framework of our architectural and urban design projects fits within the formal and structural dimensions of the city, which are related in terms of dimensions and scales. Anthropomorphia is the essence of both architectural and urban dimensions, as well as the result of movement in time through the Metropolis.

There are many new phenomena we have to comprehend: XXL size, as the incommensurable perception of extra large size; endless contact potential for people, work, leisure, etc. on the networks; a new sensitivity about nature; new styles of behaviour introduced by virtual communications in real time. All these new phenomena need new concepts we have the urge and the duty to create: new logos, new words to understand the cultural leap. Discontinuity occurring in the urban development and cultural awareness of the metropolitan phenomenon demands new relations: legal versus illegal, formal versus informal, for instance. This calls for a strong morphological and syntactic reform of the city. We need different ways of relating to the historical heritage, different from Paris, Barcelona, Vienna and London models. Can Madrid bring a new perspective into the equation?

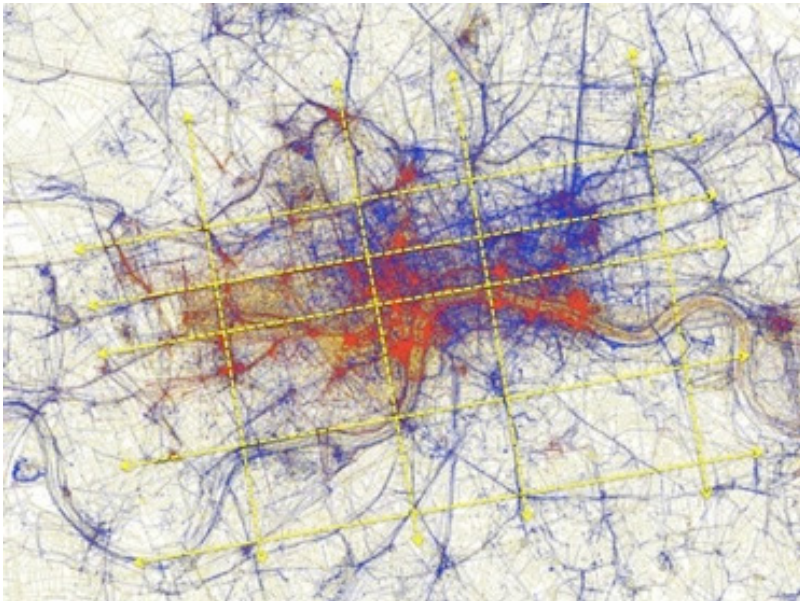


Fig. 13 *London Metro-Matrix, versus Archipelago, Central Place or Orbital theories*

F) Madrid 1996-2016's 'Rules of the Game'

The Madrid 2016 Plan matrix is a model for a metropolis, which becomes a prototype for memory and imagination. It can be mentally decoded. From the Plan approach, it is possible to obtain a mental footprint prototype model.

When we started a project for a Metropolitan Centrality we could begin from the idea of the possibility of a city to be scaled, mentally grasped in its size, form and shape. We comprehended its new size through the new Metropolitan Architecture centrality project. The crosslink between Madrid 2016 model and another city implies an element of imagination, which concerns a mental operation for a total syntax of space, through a scaling procedure.

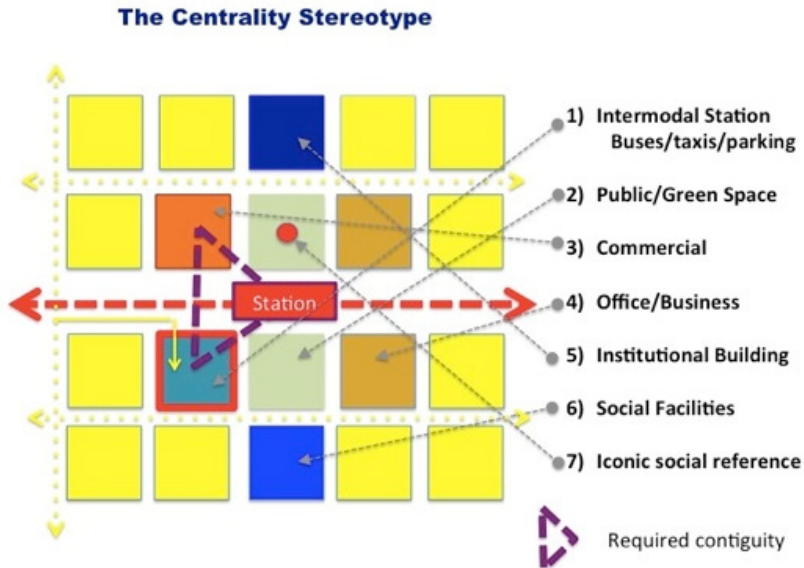


Fig. 14 7 components of a Centrality

The Plan was presented on full digital maps, starting from 1995, which were complemented by diagrams. Abstract diagrams define syntax of space – relations among the different elements of the city-metropolis. They are operational through topographical drawings that help us to define physical relations between different metropolitan scales: large (1:50.000), medium

(1:5.000), and small (1:500). A mental operation shapes diagram's geometry. It measures and mathematically ascertains the actual territory. We move from a mental method to actual knowledge and we establish a procedure to operate on real ground.

This intellectual operation is much more important than a simple design guide. Plans and programs are unable to grasp how all those places, subconsciously present in a metropolitan life, can stay together in our mental map. A program never gives the syntax of space-time organization that the metropolitan architecture needs. Our assertion is that the dispositive distribution of functions is not an issue of the Program but of the Form.



Fig. 15 Chess Metro-Matrix analogy: *Each piece specific role in specific position.*

In contrast, the chess play analogy used in Madrid's Plan represents a not-combinatorial setup of game rules. To set the game rules for the syntax of space means to offer different players in the metropolis the possibility to play the game. The origin of the Metropolis is considered to be a product of formal rules not based on an economic model. These are rules for orientation and placement of territorial units (UDE) which replace the map-related dispositive scheme and move towards the concept of field of forces inside the territory. The morphology of actual territory becomes visible through signs written on

a figurative map, signs that we have to understand, interpret, and internalize. Due to the complexity of the metropolis, we must look at signifying components “as flying bodies”. Leonardo was already aware of it. This approach is in Leonardo’s frame of mind.

Through this mental perspective, the relational diagrams of territorial forces, plus the figurative maps, give us land’s total vision. Land is harmonized and modulated across points and made visible and interpretable. The metro-matrix reticular pattern can be manipulated and tamed against reality. It is able to assume the needed shape whose characteristics are suitable to take in the adequate facility.

It is a driver for the architectural project that needs to reflect metro-matrix geographical concepts, or *vice versa*. The ‘concept’ will take shape by the architectural project. The ‘logos’ becomes shape. Metropolitan Architecture projects are not just related to the memory of the former state of the city; they are tied to day-to-day experience as well, constantly changing as the setting is related to different territorial vocations. Projects locate the “geographical skin” of two continuous systems, Green and Grey: two fundamental systems necessary to synthesize the construction of a specific Metropolitan Form.

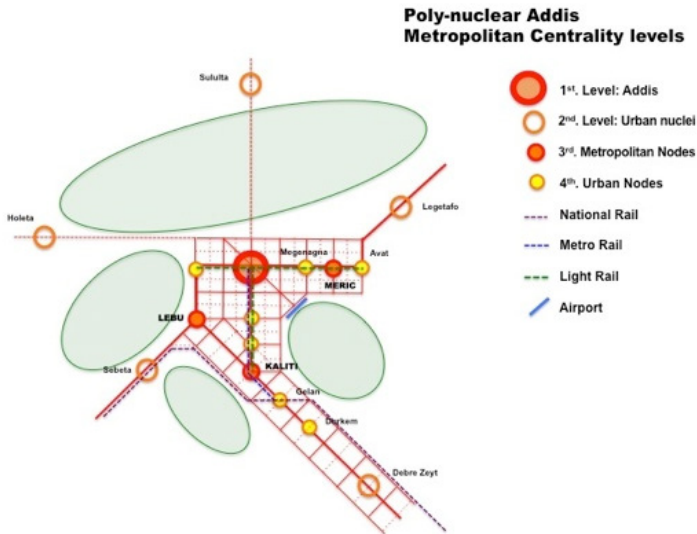


Fig. 16. *Green and Grey in Addis Ababa*

Conclusion

We can derive some essential methodological principles from the Madrid Plan. For instance, it provides a new scale for settlement typologies. Their central area's dimension is about 1.5 x 1.5 km, enough for a dense transit-served urban unit. This urban centre is the 9th UDE in the case of Madrid (4.5 x 4.5 km). In each Metropolis, the size will be related to the urban location pattern inherited from topographical, geological, climate and historical context.

Nairobi Strategy



Fig. 17. Nairobi Strategy

At larger scale, it defines a balance between urban and rural connections through new mobility structures, commuter trains mostly, allowing for integration between Grey and Green infrastructure and implementing the green hydro-geological system of the territory protection. The Metropolitan Architecture based on the figural/structural indexing of the territory, not only on the land use, solves the issue of nowadays confusing conceptual image for the land. The approach rewrites the landscape interpretation at a higher scale and reactivates old urban historical cores relating them to the Grey-Green

infrastructural system.

Madrid 2016 Plan deals with the physical consistency of the territory and city space. In fact, the construction of the urban space is the foundation of “the mutation of the self” as personal and social growth. It can be based on the common sense and the outcome of a participation process. Large intermodal facilities: stations, terminals, docks, industrial systems, fairgrounds, productive facilities in sum, are architectural objects capable of allowing physical regulations and providing new forms of public space (Gregotti). The legal concept for these new spaces and the relationships among them can be described and regulated at the metropolitan scale through the Plan’s maps and diagrams. All this produces a regulatory tool that can facilitate the overcoming of conflicts and antagonisms between different levels of decision-making.

Evaluating local issues is the first level thematic analysis needed to achieve interaction between communication codes and languages. It promotes connection among citizens based on the perception of their own city. ‘Sense of place’, promoted by the understanding of your city (ungraspable large size metropolises in this case), sense of appurtenance to where you live, is the beginning of a sense of appurtenance to larger modern contexts, such as national and supranational: i.e. Europe. How can each community recognize itself in its own history and at the same time open up new routes in Europe? In this perspective, the demand for knowledge about the possibility to provide a new equilibrium between the State, the Region, the local governments and the multinationals is beget.

The Plan generates **social intelligence**. It fosters consensus: common understanding of common issues – a first step to make common decisions. Social intelligence is a preamble to make decisions in any specific infrastructure investment. Benefits are visible in social dialogue dynamics and consensus build-up. Social partners, opinion leaders, academics, politicians, entrepreneurs, managers, etc. are integrated in the concept building. Governance processes are fostered by the Metropolitan Diagram conceptual idea. Social Intelligence is the result of intangible benefits generated by the theoretical model.

There is a risk that this model could be more conceptual than physical. The framework for the practical results is based on a set of techniques set in place by the Plan, such as Indicative Approach, Synchronic and Diachronic Consensus, Wide sectorial approach, Long-term vision and finally, Variable

Geometry and Sliding Horizons.

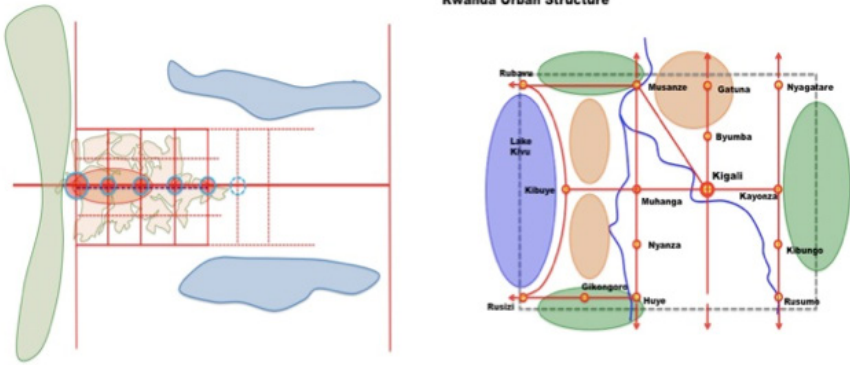


Fig. 18 Kigali concept Diagram (Jul 2011) subsumed in the new Master Plan (Oct 2013)

A Metropolitan model is necessary to address the rapid growth challenges that most emerging metropolises are facing – exploding 5% annual rate growth and twofold size development every 14 years. Madrid Plan and the Metro-Matrix approach is being used in World Bank projects as the metropolitan concept reference for decision-making: Nairobi, Addis Ababa, Kigali or Monrovia. Governments are approaching it for discussion, as is the case for Abuja, Santo Domingo or Manila. Others, such as Kolkata, Shanghai or Arequipa are showing acute interest to approach Madrid’s conceptual method.

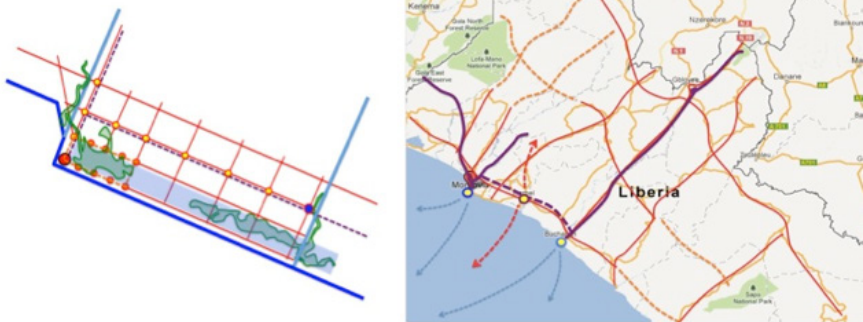


Fig. 19 Monrovia’s macrostructure, backbone of Liberia’s skeleton

The conceptual framework is aimed at politicians, economists, sociologists and engineers involved in decision-making in metropolitan management, some of them with a scarce vision of the physical dimension. I am afraid architects are not involved in these processes. That is because they do not have the tools to understand them and deal with them. It is a new scale, a new discipline architects had never before tackled. The Madrid Plan, as well as the derived metro-matrix structural diagrams for other mentioned metropolises, provide them with this necessary tool.

‘Visualization’ can be difficult for those who are supposed to do it. Architects used to 1:50 and 1:500 urban design scales can hardly grasp the 1:5.000 urban scale and are often lost in the 1:50.000 scale.

The physical dimension is essential. We see its importance in Ortiz’s equilibrium tetrahedron. Maps reflect physical dimension. The strategic points in the structure of the territory are to be detected and located in accordance with the intrinsic personality and needs of that territory. A new discipline of metropolitan architecture needs to evolve from the need to articulate and act in this new dimension.

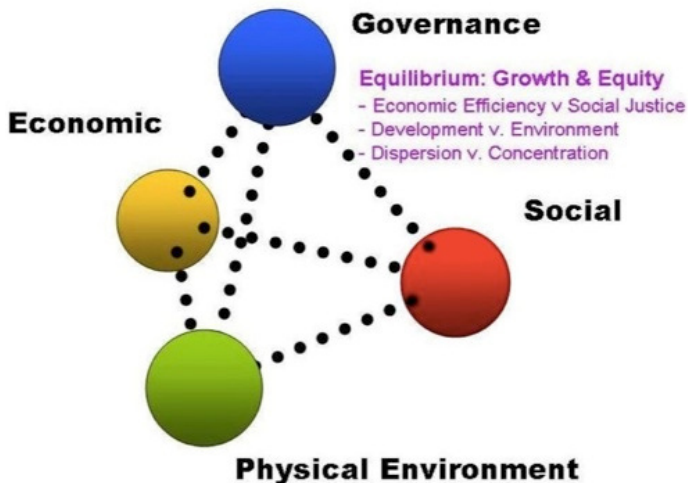


Fig. 20 Development requires Governance equilibrium between the antagonistic goals of Economic efficiency, Social equity and Environmental (natural and urban) sustainability.

From a structural paradigm perspective of the city-metropolis, the one required for the scale leap, the theoretical content of Madrid 2016 Metro-Matrix methodology appears as a strong proposal on syntactic (constructive) and communicative values of Architectural Form. The Metropolis is to be interpreted as a new map of hinge points that persist implicitly within the inherited DNA of the city. Architecture must interpret the character of the city (*L'âme de la cité*) through the image/concept and the layout structure according to its geographical context.

This is a very relevant element. It gives us the chance to deal with actual issues concerning landmark definition in relation to new metropolitan types. These landmarks define the new urban constructs meant to be constituent to regional and urban areas. They become the linking elements across different scales and different functions of the chess roles. The image shapes metropolitan identity, pointing out the relations between infrastructural networks, land and environment. They define the new spatial canon and the relationship between the natural landscape and its new urban dimensions.

A new disciplinary dimension of Architecture has to be defined: Metropolitan Architecture. We recognize the new cognitive function of the architecture-image, related to land and environment. It serves as an instrument for the construction and symbolic interpretation of the urban environment. New metropolitan nodes determine a new operating model for new time-space metropolitan scales. Those nodes bring the duality of time and space into the existing urban environment and provide character both to regional and district scales. The architectural project provides the 'hinge' element emerging from the existing interaction between various urban layers. 'Resilience areas' are the results of those 'hinge points'. They directly affect the emergence of upcoming urban developments. The 'hinge points' provide opportunities for urban structuring by focusing on density development. A Metropolitan Architecture project might be conceived as a turntable between previous capabilities, current demands and forthcoming possibilities. It has to be able to embody and express city's evolving needs. As E. Nathan Rogers states: 'Architecture is 'making the past present', and 'manifesting the future in the present.'



Fig. 21. Major Current Projects resulting from Madrid 1016

Physical transformation of the city is the only way to define and articulate planning and design, programs and projects. The way we design and implement metropolitan scale projects should not be just through spectacular urban transformations but through projects that can configure new scales while accounting for existing strata. Polysemic discourses form part of the historical construction of the city and Metropolitan Architectures are able to

create character, a sense of place and social identity. The consensual feeling of adequacy (Lynch) is the only way for participation of the citizens in metropolitan construction.

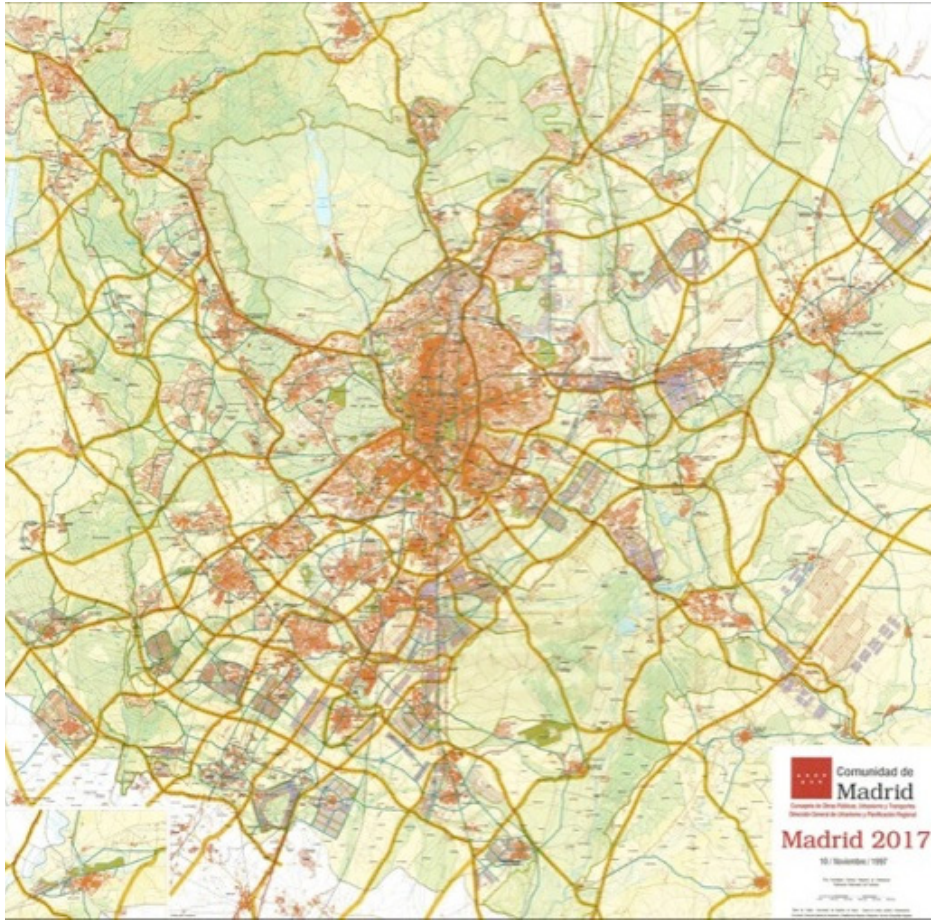


Fig. 22 Madrid 1996-2016... *From Logos to Praxis*

References

- AA.VV., ed. CONTIN, Antonella (2006) *Bari studi per la Metropoli*. Firenze: Alinea.
- AURELI, Pier V. (winter 2008) “Toward the archipelago”, *Anyone*, no. 11, pp. 91-120
- CHOAY, Françoise (1983) *La città. Utopie e realtà*. Torino: Einaudi.
- (1986) *La Regola e il Modello*. Roma: Officina Edizioni.
- CONTIN, Antonella; PAOLINI Paolo; SALERNO Rossella., (2014) *Innovative Technologies un Urban Mapping. Built Space and Mental Space*. Switzerland: Springer International Publishing.
- GANDELSONAS, Mario (1998) “From Structure to Subject: the Formation of an Architectural Language”, in K. Michael Hays (ed.), *The Oppositions Reader: Selected Readings from A Journal for Ideas and Criticism in Architecture 1973-1984*. Cambridge Massachusetts – London England: MIT Press.
- GREGOTTI, Vittorio (2011) *Architettura e postmetropoli*. Torino: Einaudi.
- LYNCH, Kevin, (1976) *Managing the sense of the region*. Cambridge, Massachusetts: MIT Press.
- (1981) *Good City Form*. MA and London: MIT Press Cambridge.
- MURATORI, Saverio (1963) *Architettura e civiltà in crisi*, Roma: Centro studi di storia urbanistica.
- ORTIZ, Pedro B. (2014) *The art of Shaping the Metropolis*. New York: Mc Graw Hill.
- PORTUGALL, Juval (1999) *Self Organization and the city*. Berlin Heidelberg-New York: Springer-Verlag ,
- ROGERS, Ernesto N. (1997) “Le preesistenze ambientali e i temi pratici contemporanei”. In MOLINARI, Luca, *Esperienza dell’Architettura*. Milano: Skira.
- SHANE, David G. (2005) *Recombinant Urbanism*. London: John Wiley & Sons Ltd.
- ORTIZ, Pedro B. [personal website]. Available from: www.pedrobortiz.com/ [Last access: December 2015]