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TELLme

Training for Education Learning and Leadership towards a new MEtropolitan Discipline

Inaugural Book

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Contents

Preface

Humanity is facing enormous challenges to our common future, such as climate change, growing inequality, environmental degradation and rapid urbanization. There is an increasing understanding that the answers to these pressing questions can only be reached at the complex space of cities and metropolitan areas. Furthermore, tackling these urgent problems requires enhanced approaches and methodologies at the metropolitan scale. The complexity and diversity of the metropolitan phenomenon demands better policy, practice and theory.

The TELLme (Training for Education, Learning and Leadership towards a new Metropolitan discipline) Project is a response to this demand for improved metropolitan tools and training from multidisciplinary perspectives. In particular, this initiative aims at providing competence to the higher education institutions while building up a community of practice with an integral approach, where the collective intelligence is formed through non-formal and peer-to-peer learning. Universities are the key actors capable of advocating for the methodology and training the future generations. They have the potential to build the core knowledge of the community of practice at the international level, while also promoting its adoption at the local level.

The Metropolitan Discipline is a nascent field of studies. It is a work in progress, an emerging framework to address the imperatives of urban sustainability more effectively. It arises from a collaborative effort among several inter-disciplinary teams from all around the world. Over the last three years, the different partners involved in the project embarked on an iterative process of peer learning aimed at the co-construction of a new discipline. This global network constitutes a valuable effort to bridge the gap between theory and practice in the approach to metropolitan issues from various disciplines.

This book represents a significant milestone of that on-going collaborative process towards the construction of a new discipline. This TELLme Inaugural book, of which CIPPEC had the privilege of being the lead partner, translates the theoretical principles into practice and systematizes the Metropolitan Discipline methodology to shape cities and metropolitan areas. The articles in this book are valuable and insightful contributions that invite and help us to become better prepared for addressing the complexity of metropolitan planning, development and governance.

I believe that, with expanded and continued collaboration from multiple actors around the world, we have an opportunity not just to co-create a new discipline but also to significantly contribute to the construction of healthier, safer and more sustainable human-centred cities. The rise of the metropolitan discipline, brightly showcased in this book, is a significant step forward in that direction.

Sebastián Lew

Cities Programme Director
CIPPEC

Introduction

The metropolitan foundation opening questions

We are in a founding moment of what we call the Metropolitan Discipline. That will provide tools to determine a city that has grown up occupying the most fertile lands, and that has to face today epidemics and natural disasters (even caused by the hubris of man). Where is the Wisdom? Here, today, we are all invited to answer questions about the way of conceiving the metropolitan dimension, which we have been asking ourselves during these three years of studies in the TELLme project[1].

This book wants to be a useful, theoretical tool for the metropolitan city agents finding a shared vision toward a critical Metropolitan Approach to Complexity to bridge the gap between academic knowledge and the cities' practical needs. That is an Inaugural Book for the Metropolitan Discipline. We took that concept from a suggestion of F. Choay in her famous Book La Règle et le Modèle: Sur la théorie de l'architecture et de l'urbanisme, 1980[2], she defined Inaugural a book whose aim is to found a new space, not only arguing about that but trying concretely to build it. In the history, Inaugural Books were the Architectural Treatises which defined the procedures of shaping cities and their buildings through principles and shapes' rules, and the books about Utopia, which aimed to generate built spaces through model's reproduction. The relevant issue is that an Inaugural Book is not a prescriptive one; it does not refer to the established space organisation to definite rules dating back to an unknowable order.

The metropolis is a complex territorial rooting system for a new way of life and a renewed robust civic image

We worked on the idea that the metropolis is a complex system. Control of such complexity only focused on infrastructures and aimed at finding the optimal solution, eventually results in the 'generic city' - as Koolhaas[3] called it (1995). “We are therefore wondering if any alternative to this approach based on Western rationality is available. Understanding metropolitan areas and being able to make their understanding a discipline requires making decisions, generating policies, avoiding reductionism, and anticipating uncertainty (Tapia, 2021[4])”. Planning in uncertainty is part of today's condition that requires definitively sealing a pact between the city, its citizens and nature reaching a respectful territorial rooting for the Metropolitan way of life and a new idea of its common realm’s robust civic image. That is the necessary precondition for achieving the final objective expressed by the TELLme Project: to generate the condition for the improvement of the four principles of Environmental Justice, The Common, Senses of Belonging and Rights: to the city, to the landscape, to inclusiveness, and dignity (Tapia, 2021).

Over the years, we studied "things" and their hierarchy, then "relationships" through networks and parametric computation. Many scholars are taking on the study of probabilities, indexes and not codes and their potentials, which sometimes seem to be endless. The TELLme Team felt the need to understand which ontology the Metropolitan Discipline refers to. Consequently, we must also think about how the city subject has changed over time. Today subjects are free and independent agents from the boundaries of their field of action, modifying their surroundings for their interest (the term etymologically meaning is 'in-between', thus indicating a gradient between two implied entities). Moreover, the project has acted in its development trajectory by the different actors and therefore, it

1TELLme Training for Education, Learning and Leadership towards a new MEtropolitan discipline is an EU co-funded ERASMUS+ PROGRAMME 2014-2020 (KA2 – Strategic Partnership for Higher Education).

2 Choay, F., (1980), The Rule and the Model, (1986), Rome: Officina Edizioni.

3 Koolhaas, R. (1995) “Bigness, or the Problem of Large”, S, M, L, XL. New York: The Monacelli Press.

4 Tapia, C., (2021) MGPI TELLme Glossary Software.

is no longer a project conditioning the growth trajectory of a city community. It is not sure, though, that each member of our society's goal is in the interest of all the other organisms: what is the cost in individual energy to achieve a result that we could call Metropolitan Collective Intelligence? What are the areas of metropolitan opportunity? What are the conditions for a Metropolitan Collective Intelligence to develop?

Suppose the metropolitan field is an uncertainty or probability field. In that case, can we bet that even though we passed Hercules' tipping point, we can still correct the shot of the construction activities in the metropolitan region?

Bruno Latour[5] reminds us that Galileo's infinite universe is contracting at Anthropocene's time (2017). Fear determined a return to the closed and limited cosmos. According to Hesiod, Gaia emerges from blood and steam with Chaos and Eros, and her essence seems to have nothing to do with harmony. He wrote about the issue of ecology: “What paths did we follow, and what is the logic behind our decisions? These questions have several answers, and this is what disorients us. More than a "bet", where the loser pays, we would like to think that Pascal's wager could be understood rather as a pact, a commitment; therefore, more than an act of pure utilitarianism, a decision to be taken when the stakes are high because the endeavour is challenging". Therefore, the challenge is to define new approaches capable of innovating the socio-economic sphere and production processes for collaborative urban generation and regeneration between mother cities, medium and small towns in the metropolitan region, leveraging a sustainable heritage and culture. In the past, we have already highlighted the metropolitan paradox of the possible atopic proximity since the Meta-City layer (Shane, 2005[6]). That is determined between places physically distant and connected by new technologies and the necessary discontinuity of the metropolitan city allowing the metropolitan architecture or structure to exist: the green-grey infrastructure continuity.

Metropolitan knowledge. An epistemology interpretation of the optimising metropolitan values process

A discussion has begun on whether the urban system can be compared to a semiological system. Can the metropolitan city be considered a non-verbal system of essential elements? Is it possible to restore the symbolic value of the items that compose it in the full dimension of the current hypothesised city system? Moreover, how to communicate this value? A unique contribution of the TELLme project to the Metropolitan question is the epistemology approach. It focuses on clarifying and strengthening the theoretical part of the Metropolitan Discipline and its practical-theoretical ontology.

According to Patrizia Giordano[7], in the Metropolitan Discipline we are founding, we identify "good" with sustainability. We have begun to clarify what we mean by this concept; however, we also deal with the metropolitan citizenship idea. We investigate "values" effects that transform the city and the territory and the kind of "goodness" they attribute to them. However, what do we mean when we talk about metropolitan "values"? "When we speak of "values", we tend to substantiate what is a "process" - in which there is a variable and a "value" attributed to the variable. This "value" is quantitative, intensive, and contains the modality according to which we pursue, we choose our variable. So, we can show the tendency to maximise or optimise the tracking of the variable we consider good" (Giordano,2018).

The TELLme project founds its knowledge in optimising the values systematising the Practice of Metropolitan Discipline Metro-dology. It shapes the Metropolitan space, translating the Metropolitan General Principles derived from the practical-theoretical texts into the located Issues (MGIP)

5 Latour, B. (2017). Facing Gaia. Eight Lectures on the New Climatic Regime. Cambridge: Press Cambridge UK.

6 Shane, G. D. (2005). Recombinant urbanism. Conceptual Modelling in Architecture, Urban Design, and City Theory. West Sussex: Wiley-Academy.

7 Patrizia Giordano’s Lecture during the Guadalajara TELLme Training Lab.

discovered in the Metropolitan Cities Existing Situation Analysis (MESA). The Book' structure must follow the logical succession of choices that the Metropolitan Experts must make to create a sustainable project. Its space organisation like the organisation of the metropolitan city space must refer to a model of knowledge to experience it, and to elaborate the concepts of right to the city, to the landscape and the lifestyle illustrating a method to get the rights ecosystem conditions construction possible.

The metropolitan tools. The MGIP Glossary Software and the Metropolitan Cartography

The TELLme project looked for tools to make the sustainability language adopted globally by 193 countries as 17 SDGs, operative. The TELLme Team articulated the sustainability language to metropolitan reality identifying the dynamics of the metropolitan processes that determine the leap in scale of our cities toward their four dimensions: physical, economy, social and governance. Identifying metropolitan dynamics first requires extracting keywords and related concepts from Architecture and Urban Discipline's literature and the Metropolitan project practical experience. Consequently, the TELLme central pillar is the Metropolitan General Principles and Issues Glossary Software. Recognising the metropolitan issues through keywords, then selecting related concepts, allow to integrate the different discipline's perspectives and to be able to synthesise them toward a new open-source cartographic methodology: The Metropolitan Cartography.

The Metropolitan Discipline uses the map as a figurative collective thought. Maps are tools to detect unfinished projects in the territory and express vocational scenarios in which real data - or simulations if the data are not accessible - are used to break down the city and its territory into its constitutive parts. The region and the metropolitan city need an integrated approach since suburbanisation creates the conditions for population fragmentation and marginalisation.

New technologies are intended as a tool for knowledge exchange or competition between cities; instead, today in the open-source data era, they are a tool that implies the acceptance of open collaboration and project sharing. Technology allows us to recognise the contribution already made by others in the social field, multiplying its effects, to identify and promote Territorial Intelligence.[8]

The metropolitan genome

In defining what a metropolis is, we started from the Genome model (Ortiz, 2017[9]) which we interpret as a synthesis model whose objective is the determination of the relationships between the elements that make up the four metropolitan dimensions: physical, economic, social, and governance dimensions, the latter determining the ethical axis of every metropolitan operation. Thus, each investment is obliged to agree with the social project. Where the two projects do not meet, conflicts arise, and the political class loses consensus. These dimensions are crossed by a series of questions, which inspired the dialogues that animated our pages.

8 Territorial Intelligence is a concept developed within the Sixth Framework Programme of the European Community between 2002 and 2006. In post-industrial societies, Territorial Intelligence is the science that has as its object the sustainable development of territories, and that has as its subject the territorial community. In particular, this concept links the multidisciplinary knowledge of territories with their dynamics. It strengthens the capacity of territorial communities to participate in their development fairly and sustainably; it improves the sharing of territorial information and disseminates its methods and tools of analysis using new technologies; it promotes governance, decision-making processes and practices that enhance participation and partnership and research-action that contribute to the fair and sustainable development of the territorial community.
This concept underlines the contribution of intangible resources to general development, allowing differences not to become an obstacle to these needs' affirmation, but underlining the value of the territory's heritage. Territorial Intelligence reconciles post-material values with those of the culture of industrial society, supporting the development of territorial resources, and recognises the latter implicit qualities and uniqueness and makes their use attractive to heterogeneous glocal societies.

9 For more information see: www.pedrobortiz.com.

We would read the Genome model as a matrix to understand what relations between the territorial components allow those who govern to get out of their disciplinary dimension to have access, as agents of transformation, to metropolitan areas of opportunity. The question that we would like to discuss is the ontological assumption of the discipline, the relations between practitioners and the academy, and, on the other hand, the types of knowledge the Metropolitan Approach to Complexity needs and produces. Besides, we would like to present an approach and a methodology that identifies the "political" and "aesthetic" as our transdisciplinary field of action. Aesthetics is the domain of choice and judgment, activated by the forms and vision of the metropolitan project; in this sense, it is linked to politics, to the public realm in which decisions relevant to the community are taken. We are interested in developing a type of knowledge that we call knowledge-to-action, restoring its role as "central political activity"[10]. It is a method conceived as an epistemological thought on Metropolitan Architecture to move from a functionalist vision of the city and its architecture, to a vision that starts from the meaning of design choices related to metropolitan physical space and its urbanity (Choay, 2004[11]). For us, the physical space project is a vital instrument of knowledge and action, aimed at supporting those who make choices and reject a "mechanical" development of metropolitan complexity, focused only on infrastructure and the "strong" texts that mark the territory.

Faced with the difficulty of describing this evolving structure through traditional statistics and indicators, we began to conceive the metropolitan project starting from a definition of the dimension of physical space capable of generating innovative social, historical and economic changes in society. However, we still must integrate the landscape (which is part of the physical dimension) into the other metropolitan dimensions. Today, it must be transversal to all other dimensions. Arguing about the metropolis, we can no longer only talk about the architecture of the governance in general, as a relationship between institutions. Nevertheless, we have to introduce ecosystem services, environmental governance, and water management today concerning traditional land use planning at the local and municipal scale only.

The metropolitan public good

However, how is it possible to uniform the disciplines in different languages? We think it is essential to find a shared answer to the question related to what it means Public and Common Good at the metropolitan scale, and how the different agents who act in the metropolitan region and arenas could find common aims and ways to act: intentions and motivations. However, it must also be a response to modernity and the value given to the Institution concept (if Institution is not just an automaton replicating a function).

What is Metropolitan Public Good? The one for which we are training policymakers, administrators and professionals through Metropolitan Discipline? What is the agency that decides on the city? These question about the meaning of the words "Institution", "Public", and "Municipality". It is a matter of understanding how the Metropolitan Discipline intends to interpret the Institution's function. In his Book on borders Luca Gaeta (2018)[12] introduced the concept of 'control': the counter-roll of the Romans, as a way of the norm, as a cast, the practices that citizens already carry out on a territory. The Institution must first understand how citizens practice their territories and then regulate those practices. The rules are the exact cast of the practices from which they arise (and not vice versa), because they have understood them, and this is how the meaning of the word control is interpreted even today. Does the Institution have to implement an unchanged rule, or does it require a strategic adaptation to the situation to be addressed? Luca Gaeta wrote: “The taking of political and administrative power over everyday practices presupposes the sharing of a horizon. In this sense, Certeau's appeal is useful not to neglect this subversive aspect of everyday practices and

10 Arendt, H., (1958), The Human condition, Chicago: The University of Chicago Press.

11 Choay, F., (2004), Espacements. Figure di spazi urbani nel tempo, Milano: Skirà.

12 Gaeta, L., (2018) La civiltà dei confine Pratiche quotidiane e forme di cittadinanza, Roma: Carocci, Roma.

their inexhaustible inventive way of uses not foreseen by the authorities". What is the Metropolitan "Common Good" over which the Institution is exercising its control? The possibility of giving a shared answer to this question considering a Public Institution within a metropolitan city that returns to be a Polis, because it still has the places where people can participate in public decisions, is fundamental.

Metropolitan time and identity

The style of behaviours has changed, it is metropolitan, and no longer just rural or urban. In these new spaces, it is necessary to address the phenomenology of the social behaviour of citizen-actors, inhabitants or users of the city or commuters or tourists. Today, these people practice the city's spaces and experience their novelty as an effect, as a solicitation of the attitude to assume active roles, that is, to play new roles and appear in new spaces of relationship with new responsibilities. How can different identities coexist within modern urban societies?

Metropolitan economy

Each metropolitan project starts from a question about the type of urbanisation and use of resources as a basis for determining the rule for the presence of new quantities, morphologies and functions. The question then shifts to what kind of analysis to conduct locating sustainable projects. Functionalising the analysis means thinking about two different types of reality: one is the existing reality, which usually will not resist the change, the other is the new reality to be located. As a premise, we need to understand local ownership regimes, the logic of regularity of relations: what is the model of the market, accessibility, institutions regarding the culture of living in a metropolitan region? The aim is to understand where there can be the local model's evolutionary social innovation, real growth and transformation. They can start from the economic system, and local lifestyles, but above all, from the definition of a transformation able to recognise what "must not be broken" not to destroy sustainability that locally the places have achieved.

An integral metropolitan project can attract investments (in the social, economic and energy spheres) on the local material and immaterial culture's heritage, to counteract the economic stagnation. It could reduce the speculative logics based only on the urban income that characterise today's urban and territorial transformations. For this objective, it is necessary to modify the city's administrative and governance models and the territory based on unbalanced relations between the public and the private sector with the latter, which, especially in recent decades, has guided the choices of the public sector towards private interests and building waste. This situation has left as a legacy phenomenon of exclusion and marginalisation of significant social strata in some large cities and less economically developed territorial areas, as demonstrated by certain internal European areas. In this way, it is intended to innovate the rules of public action in the transformation, restructuring and regeneration of even the most fragile tissues, through an Implementation of Governance and the tool of competition projects. The scale of the urban project, like the one that best acts on the context is known. It is less common to talk about the scale of the metropolitan project, which has a field of action of at least one kilometre by one kilometre and must integrate different disciplines and decision-making bodies. The project or rather a preliminary meta-project could constitute a negotiation level between different stakeholders.

Metropolitan landscape. History and memory

The TELLme method tries to show how the heritage received from the city's past and its territory still functions today to support the contemporary metropolis. We use an approach based on understanding complexity by identifying and studying the concrete dynamics of transformation of the territory and its cities. Through the Metropolitan Cartography and the synthesis of data mapping, we can show first, how the topography and the presence of water that is the geography of the place

interpreted as a resource by the inhabitants of different eras can identify essential territorial factors conditioning of regional, metropolitan, and urban projects. Fundamental is the analysis of the territory' structure starting from historical cartography and plans for understanding the processes and dynamics that have tampered with it and, finally, the study of the current regional, metropolitan, and urban fabric that reveals the underlying structures as legacy, permanence, and support.

The complexity is linked to time and its drama, history, geography and memory. If this is not considered, there is a risk of misunderstood globalisation, depriving territories of their identity and culture. We want to generate metropolitan processes and phenomena that in a first approach seem to have been completely disconnected from the city's historical and geographical origins in its traditional conception. That is, we start from its urban-territorial heritage and the societies that have interpreted and made it.

Today, the physical space of a Metropolis tends to be expansive and dynamic in its territory. In terms of space, the contemporary metropolis' urban dimension calls into question the past's centralities, giving rise to new centralities more linked to the network of regional green-grey infrastructures than to local contexts. The local image of a place is given by geography, which is, above all, a history built through mental images, historical and archaeological evidence. If we ask ourselves what the future cities and their new metropolitan centres will look like, we cannot ignore the value of their strategic position linked to historical processes. Moreover, the history sets all the city sites precisely, reinforced them by epic narratives. However, geography, history, and myth merge in contemporaneity with air and rail links, representing our way of connecting the local with space and time, now disconnected, especially in the distracted contemporary tourist's experience. Unfortunately, in the interweaving of the global and the weaker local, the metropolis runs the risk of no longer making sense. What do conscious management of the landscape and cultural heritage mean? What are the tools of a project based on ecological, economic and social sustainability that will build a consensus between actors, public administrations and private investors? That would reinforce the adequacy between the place and the new inhabitants, considering the metropolitan landscape as a built cultural heritage, essential to understanding the term public good (Portugali, 2000[13]).

The metabolic operations: transformation, replacement and maintenance

We propose a way of conceiving the metropolis where society continues to be its subject: a people that has found understood, imagined and created the point of support for a given territory, mapping it, interpreting its geography and building it through acts of foundation carried out by a public or common institution. In Leonardo's maps, the ground is built and oriented on geography. Referring to his maps, the Metropolitan Cartography is a first example of what Lynch[14] called "dynamic maps". They refer to a design's plan based on a rhetorical-persuasive system (graphic semiology) superimposed on real space that incorporates dynamic meanings, thought and memorised, and then structured in new coded narrative forms of Metropolitan Architecture projects. Many studies focus on the sustainability of anthropological, social, technological, economic and management development and transformation processes. The TELLme approach considers the consumption of energy, materials, and especially soil as the loss of a good within a metabolic approach that emphasises the ecological issues.

Therefore, the temporal component of metabolization as a life cycle project is relevant concerning the spatial qualities, even as a generational legacy. How does an idea of continuous growth impact on structures, mobility, lifestyles, institutions and the use of resources of limited availability, while respecting essential human needs: the quality of life and, therefore, the quality of the environment

13 Portugali, J. (2000). Prototype Urbanisms. In J. Portugali (Ed.), Self-Organization and the City (pp. 17-47). Berlin, D: Springer.
14 Lynch, K. (1960). The image of the city. Cambridge Massachusetts: MIT Press.

in which it develops? The TELLme proposed approach, therefore, is systematic, creative and participatory, for which three metabolic operations are defined: Transformation refers to system structural change and its functioning, not only at the scale of the territory but also related to the historical urban centres. Space, energy and material released from the new scale must be sustainable by integrating the sequences of new landmarks and landscapes. Replacement is a typical operation in unoccupied areas, which implies an overall rethinking of new local structure and layout. Maintenance, an operation typical of historical centres and city fabric, is increasingly applicable to heterogeneous and extensive environmental contexts, allowing the transition from use to the symbol.

In this process, the problems of consensus and participation are linked to the psychological dimension of individual judgment, choosing between acceptance or change and loss of identity; but also, to the problem of globalisation and the need to homogenise spaces, histories, uses and values that put the individual self in crisis. The question then arises: How to define new spatial reference points as mental maps linked to local identity, as part of new multiple citizenships - urban users, tourists, migrants - coming from other places, and therefore no longer linked to local ethnic roots and origins? These citizenships bring with them a double demand: on the one hand, to dislocate in space at very high speed; on the other, to settle down, slowing down the rhythm of movements and assuming a "one to one" relationship with spatiality. That is the symbolic exchange of which Baudrillard (1976)[15] spoke, essential for an intergenerational relationship between the heterogeneous groups that constitute the metropolitan citizenship.

Nevertheless, these metabolic processes -transformation, replacement or substitution and maintenance- are produced concerning the consumption of energy, materials and soil, through a transformation of the territory that we can associate to the contemporary landscape concept. The most recent definition of the landscape that even exceeds the European Landscape Charter of 2000 is provided by the Landscape Charter of the Americas (Peñalosa et al., 2018[16]), that distinguishes five layers of the American landscape but also recognisable in other contexts: the conditioning of primordial nature, which speaks of geography; the metaphysical aspect of the landscape as cosmovision, which speaks of myth; the cultural palimpsest as a witness to territorial biography, which speaks of history; environmental ethics as a principle, which speaks of sustainability; and the interrelationships in the landscape as a sign of identity, which speaks of community. These principles based on the idea of landscape make it possible to make the leap from urban biography to regional or metropolitan biography and to understand its historical dimension through the evolution of its metabolism in the territory.

Environmental justice

Today, the Latin American world has transmitted to us the concepts of "Other knowledge", "Buen vivir", and "Environmental Justice". The theme of the link between the environment, socio-economic conditions and spacial justice sets the issue of the social justice at the centre of the development debate, making it explicit how in the world, pollution and degradation of natural resources affect the weakest and most vulnerable populations. How do we solve the redistribution of wealth, communities' right to exercise control over resources in terms of access and distribution? These questions lead us to reflect on the theme of ecological economy, environmental debt (or environmental responsibility), and unequal ecological exchange. In short, about ecosystem services and environmental accountability.

15 Baudrillard, J., (1986) Amérique, Paris: Éditions Grasset & Fasquelle.

16 For more information see: https://www.iflaworld.com/newsblog/charter-of-the-landscape-of-the-americas.

Grounding the city need

The Metropolitan Architecture project should be grounded in the territory's resources. "Grounding the City" (Sanna, 2016[17]) means a willingness to engage the ground in a Metropolitan Architectural project by rethinking geography. The ground is considered a physical extension and a physical body that carries the history of a community. We attempt to stand against the mere technical transformation of the landscape that leads, as a consequence, to the loss of importance of "place." Therefore, the ground is not considered pure amorphous support for hyper-planned networks but rather as the meaning-bearing structure of the metropolitan project: the place of history and archaeology, leading to the foundation of the urbanity projects at the metropolitan scale.

Bernardo Secchi (1986)[18] argues that type-morphology's primary goal is not the typical classification for documentation when considering the specific physical features of different parts of a city and its territory. These analyses aim to recognise the processes and the systems of relations that generated different city parts. Therefore, the perception of such elements with their specific morphological features is relevant to describing the same region's generative methods and an integrated territorial system. Following this view, traditional type-morphology could enlighten the different levels and scales of articulation of the metropolitan space. Moreover, it assumes an essential role in marking the hinge-points of such "scale-leaps" and arranges their spatial configuration. That is precisely the aim of Metropolitan Architecture project. The articulation of the different scales in the metropolitan context can qualify a specific locality through selected formal solutions with multiple possible uses and meanings. At a metropolitan scale, to "pin" down the metropolitan images, which also represents the memorable elements within it requires a coherent order "to see the hidden geographical forms and their meanings in the vast sprawl of our city." (Lynch, 1960[19]).

The Metropolitan Architecture dimension's complexity regards measure and scale, which is neither associated to human dimensions nor commensurate with the urban fabric, parameters of density, and other indexes of urban concentration as represented in the concept of proximity. The Metropolitan Architecture project is slightly related to people and goods' mass mobility, which implies a different relationship between individuals and groups. The technological Utopia erased pre-existing geographical traces and disjointed or disrupted historical urban and agricultural topological patterns. The old urban typo-morphological structure, whose functioning was mostly centripetal, suffers from congestion and lack of efficiency. Some of the issues derived from the discipline of Landscape Urbanism that determines a deep technologization of the ground should also integrate the concept of Paesaggio: therefore, the green infrastructure, which allows an innovative "renewal" of the environmental qualities, is linked to an infrastructure produced by the industry. Nowadays, Metropolitan Architecture is a territorial project that involves the environment (geography, infrastructures, and landscapes) as the operative element for a project. That must aim to produce a shared and robust civic image of public space (also by using ICT) to meet the inhabitants' needs concerning their economic activities. It determines the need for a continuous dialogue with public politics and policies (new instruments and tools of knowledge-understanding, recording, operating-) about their vision regarding the metropolitan identity and the quality of life of a dwelling's inhabitants. However, it must also consider the five elements for the sustainability of a project (water, energy, networks, pollution, welfare). Following the nature/water-based approach, the project explores the landscape's productive potential and the green infrastructure as new contents for Metropolitan Maps and Scenes (new uses, economies, and public spaces). The eco armatures then are not anymore only the background of the Architecture of the Metropolis but are agents of the metropolitan space. Grahame Shane (2005)[20] called them: the body space.

17 Sanna, S., Grounding the City. The project for a metropolitan urban form between architecture and landscape, Master Thesis, A.A.2016/17, Politecnico di Milano.

18 Secchi, B. (1986). Progetto di suolo. in CASABELLA, 520/52, 19-23.

19 Lynch, K. (1960). The image of the city. Cambridge Massachusetts: MIT Press.

20 Shane, G. D. (2005). Recombinant urbanism. Conceptual Modelling in Architecture, Urban Design, and City Theory. West Sussex: Wiley-Academy.

Thus, shall we, as architects, urban designers and planners still use the traditional procedures and categories of type morphology to define the new way for the definition of the public and common realm, conceiving the social change through our production? Are architecture and urban studies merely a reflection of society, or can they be a more critical statement about society? Can we create an embodiment and reinforcement of a new or revised structure of a given society? Or are we instead going to ask to the new Metropolitan Discipline to identify them? The TELLme Inaugural Book would like to present a critical theory and new proposal referencing utopian possibilities: Our way of interpreting the Utopia della Realtà (Rogers,1965[21]). Nevertheless, it is essential to the critical analysis and evolution of traditional Architecture, Urban and Planning Disciplines.

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21 Rogers, E.N., (1965), L'utopia della realtá: un esperimento didattico sulla tipologia della Scuola primaria, Roma: Leonardo da Vinci Editrice.

Part I

Genesis of the book

Chapter one

Metropolitan contemporary debates

The genesis and purpose of metropolitan architecture, its discipline in the era of the bigness at the metropolitan scale[22]

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Metropolitan architecture from static forming to dynamic spacing

Always, within the solid street-square matrix, which is the structure of the city of the past (Rowe,1980), Architecture is a work of man who marks a horizon as something that "stands there" erected in itself, comes into position and remains in position.

At the basis of the very concept of Architecture there is a demand for original stability, followed by a place in a context within a defined sphere of relevance, within its own limit (πέρας), and its own term (τέλος), which are constitutive, do not therefore qualify a deprivation but make clear the particular sense of every form that man builds and roots on the ground.

With this 'stance' the architectural subject begins to be. We are talking about that "taking a position within its own limit" that Aristotle (IV century B.C.) calls εντελέχεια, to which corresponds the assumption of a μορφή, a form.

Now and only now the idea that the designer has turned in his head for nine months,- as Filarete taught us (c.1460-c.1464) -, can take shape in space and the thing appears (ιδέα), manifests itself (φαίνεται), expresses itself in its own οὐσία, better, its own παρουσία, a word in which the addition

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of the preposition παρά (near, at the same level) gives greater consistency with the authentic meaning of being, which is "to remain within and not beyond one's own limit" assumed by taking a position, "near" the sphere defined by this limit.

The process, caught in itself, of this stance is called φύσις, a term that goes so far as to mean "nature", complex, that is, of entities that have taken a position and have to become. Φύσις therefore contains in itself a double nuance of meaning: the one concerning movement, and the one concerning stabilization. Heidegger thus, with great evocative power, defines the φύσις: "What opens up from itself (such as the blossoming of a rose), the unfolding and in such unfolding the entering into the appearance and the staying in it; in short: the unfolding-permanent imposing itself". Opening-up - permanent - imposing itself: movement and stasis, conquest and its enjoyment: becoming and being are connaturalized in a sequence that sees the overcoming of the state of latency to reach the position (the happening of the non-latency, of the famous αλήθεια).

To reach the position corresponds the entrance in the τέχνη, defined as a "generating, a building as a wise production". The taking of position corresponds therefore to a "remain collected" within its constitutive limit, marked by a form, self-manifesting. Φύειν, οὐσία, λέγειν, φαίνησθαι (manifesting itself through a μορφή) define the landscape of being. The medium in which the divenient is formed is space, in a meaning, however, not extensive (space as extensio, as one would expect), but topical, much more circumstantial: space as τόπος in the meaning of χώρα, not translatable, as Heidegger points out, neither with space nor with place, but as "what is occupied by what is there", a "local space", but also the population that inhabits it and that the Greek Theatre welcomed and embraced by placing it in a cultural landscape, together with the Temple, and natural through the Panorama. The project ac_cade... falls to the ground.

Beyond the limit. Measure and scales of the contemporary city

Since time immemorial, especially in Europe, the measure and scale of Architecture of the city are linked to human size, they are almost defined by immovable types, they are commensurate with the urban fabric and density parameters of urban concentration and are fixed in the fabric of the city through monumental objects, as symbolic mediators. Today, on the other hand, the limit of the Architecture of the city skipped and it must be considered that this order of magnitude, which is essentially due to proximity, is rather inserted in a context of mass mobility of people and goods that implies a different relationship between individuals, crowds and different identities, and in the now globalized exchanges. The theme of incommensurability appears in the last century, a bigness linked not only to the performances, times of flows and meetings on the networks and in the places of intermodal exchange between networks, but also to a new sensitivity towards natural capital; and also, to new styles of behaviour, induced by virtual communications in real time. We have called it the paradox of atopic proximity.

Movement and stasis and the mental city-map at metropolitan scale

Lynch (1981) described a city that is very close to the nowadays metropolitan city that is composed by a network of spaces of place and spaces of flows (Castell,2004). He reviewed the Gallion's formulation (1963) and explored his own pattern system, which makes a fundamental distinction between movement and stasis. Settlement form is the spatial arrangement for person doing things. The resulting is the space of flow for persons, goods and information, and the physical features, which modify space in some way significant to those actions, including enclosures, surfaces, channels, ambiences and objects. The language of urban forms is based on the activities of urban actors, either those locally active in a place (creating matrix of adapted spaces or enclaves) of those in transit, who need pathways or armatures (creating flow facilities).

Each citizen constructs a mental city-map consisting of a system of fragments, each of them with its own characteristics, building types, and microclimate. This mental map contains nodes as attractors that attract citizens to various points. We can name it Psychological geography. Lynch created his favourite imaginary model from this matrix of elements. In his alternating net model, he reintroduced the concepts of time, geography and attractor basins focused on nodes within networks. The network is a loosely defined grid with fast and slow channels of movements. The settlement maintains a permanent reserve of circulation space and may gradually accumulate a layering of notable structures saved from successive epochs.

The contemporary metropolitan city with its armatures, enclaves and heterotopias (Shane, 2005) is able to determine an imaginary that allows citizens to create their personal mental maps so that they can move around the city still experiencing a “feeling of adequacy” (Lynch, 1960). The question of our research considers the transformation of the spatial map at the metropolitan scale as a problem of the reform of mental maps, through new tectonic and architectural signs, which strengthen the action of citizens (residents and city users) in a now global field of action, in order to reposition the local areas of origin in an enlarged horizon, generating a new sense of belonging. The underlying question seeks to analyse how the transformations of contemporary urban territories, the reforms of typological and morphological paradigms of architecture and metropolitan cities (private, semi-public and public space, intermediate urban-rural areas) have been addressed in terms of metabolism, i.e. considering processes of transformation, replacement and maintenance of the context, with respect to the three essential forms of sustainability: economic-social, ecological-energy, and managerial-entrepreneurial.

How do we live in the metropolitan city? What, as architects and urban designers, do we build for this "how"? are there alternative ways to inhabit and build it compared to the past? How do we qualify the way we live in a world whose places are networked and where the vertical notion of time seems cancelled out by an absolute and horizontal proximity? These questions give rise to the need for a Metropolitan Architecture Project. As Architects our task is to root through the places we have found and then made, the new Generations. Today, in the dimension of a city that has been defined generic (Koolhaas,2006), our effort turns to the search of what are the conditions of space in order to create new relationships and new metropolitan identities.

The other fundamental element that leads us to say that the new metropolitan identity is also a hybrid identity is that we have to integrate in the new dimension the past that becomes a fundamental element, in order to obtain the qualified dimension of living as a sign of new lifestyles. Signs, marked in places, that Lynch (Lynch, 1960) defined Landmark, characterized by a vivid and therefore memorable image and object of desire. Shane (Shane, 2005) called the Landmarks Heterotopias, architectural entities that Fenton (Fenton,1985) was the first to define Hybrid Building.

We must define a new approach to this scale design that no longer requires only a management of the bigness phenomenon (Koolhaas,1995), therefore, an adaptive system, that needs an inventive and creative process based on a geographical and geometric approach, on art and memory. These new procedures will determine new tools that will be the interpretative maps of Metropolitan Cartography and the Metro Matrix. These two tools will define the possibility of analysing, interpreting and designing the new hybrid landscapes and the new metropolitan typological form.

The scale

Our demand for research has as its horizon the metropolitan extension, especially of small and medium-sized cities that are proliferating, its management (metropolitan management), its architectural dimension (metropolitan architecture), its ecologies and landscapes. It concerns the definition of cosmopolitan globalization, which does not cancel places, but instead reinforces them by raising them on a bigger scale: it enhances ancient positions and creates new ones; others let them decay, making them reborn as symbolic mediators (sustainable heritage). The new urban and

architectural individualities thus result from reinterpretations linked to their position, but at a different scale.

The metropolitan landscapes

We need to build a neo-eco-pastoral landscape awareness, we need technology that supports new activities and connects them with the network of the cities of the word, changing our aesthetic tradition, linked to the picturesque landscape of the valley, in relation to our renewed environmental awareness. New technologies that give life to a new idea of public space. Urban Design and New Technologies together will allow to define a network of paths through which rethinking public space (Agenda of public metropolitan space design), which in the metropolis we call public realm (Reeve, Simmonds, 2000).

Innovation and continuity

Starting from the belief that the shape of architectural and urban space should be understood as a fundamental factor based on models of sustainable urban metabolism, our research in medium and small growing cities aims to balance macro and micro-economic factors with cultural factors: the physical shape of the city made up of residential areas, public spaces and landscapes. The objectives are the socio-economic development of the territories, through operations of high architectural and urban quality, carried out within the metropolitan system; the creation of innovative processes of integration of the different metropolitan cities through the definition of public spaces; the respect of qualitative and quantitative standards for an infrastructural revival, also through the development of new renewable energy sources and intermodal transport that will change the shape and image of urban settlements.

The discontinuity with traditional architectural and urban disciplines. Contemporary metropolis and polis

We believe that the metropolitan architectural discipline needs to strongly feel a discontinuity with the disciplinary experiences of recent years. The morphological catastrophe that is taking place especially in fast growing countries, represents an important element to frame today's architectural problem:

a) the definition of landmarks in relation to the new metropolitan typologies, which mark, like pickets, the new widespread urban formations linking them to regional urban territories and constitute their relays for the interconnection between the stairs;

b) the definition of new types of settlements that include urban agriculture;

c) the definition of an image of architecture - from the City as a Museum to the City of the Muses - (Rowe, 1984), which, by denoting the relationship between networks, city fabrics, and landscapes can still become the identifier of the metropolitan identity, defining its new measure and the relationship between natural landscapes and internal landscapes.

How does the transition from modern to contemporary metropolis take place? From the original stability, today the occasional is an absolutely typical element of the urban landscape of the contemporary metropolis, especially when several occasionally generated elements meet in a metropolitan context to constitute alienating scenarios: this is what emerges, for example, from some photographs of dispersed "urban scenarios" taken by Joel Meyerowitz (2001), Robert Polidori (2015) or Giovanni Chiaramonte (2015).

Paola Viganò (1999) introduced, talking about composition, the theory of games: puzzles, patchwork, overlapping layers that "partially intersect". Today we talk about labyrinths, hypertexts,

networks, fractal figures, zapping, hybridization, dominoes and inlays, to represent the fragmented figural reality of the metropolis we live in. A metropolis that besides being the place of visual multiplicity is also the place of social multiplicity, of "difference": it is "a patchwork of cultural, religious, linguistic, ethnic minorities, income levels, lifestyles, architectures and knowledge that tend to lock themselves, through complicated processes of exclusion-inclusion, within their own "villages", enclaves or "fortresses", themed cities floating in a sea of mass solitude [...]". (Amendola, 1993). On the other hand, some scholars can even think that it is possible ignore any χώρα, the space is streaked and flows between "erratic boulders" (Calvino, 1985 and Nicolin,1992) without the right measure and limit. Having lost the concept of Polis and public space as a space of representation of an entire society, the metropolitan city seems to be able to disregard any form of co-presence between people and perhaps even architecture.

The contemporary city is the privileged place of fragmentation and simultaneity where an artificial placement of urban entities and materials on different levels generates new hybrid compositions. An example: the republican-era villa that has become part of Renzo Piano's Parco della Musica complex in Rome and is perfectly visible from the foyer. A city where fragments, or entire networks (such as that of the metro line) sink into the lower layers of the ground. Some operations can be alternatives to the polyploid (Bateson, 1984) contemporary metropolitan city and can be produced from the fabric of the city: for example, the defunctionalisation of some areas (industrial areas) and the consequent decommissioning have given the opportunity to reinvent their use, which has thus become residential or commercial; the fragmentation of scales, fabrics and landscapes has generated interesting hybrids between new function and pre-constituted form; the de-semantisation of the structure of the modern city and the removal of its typical "positional values" has allowed principles of democratisation in terms of urban space.

Metropolitan architecture

The generic metropolis has progressively lost its informative vocation, which in the medieval city, was proper to the "space of contact" (Choay, 2004), the space of circulation today downgrades the road to pure medium between points. The infrastructure system has a less intense charge of information because information is progressively delegated to communication structures that are increasingly light (up to the telematic network) and differentiated, in its most evolved phase. The new paradigm of growth that the Metropolitan Discipline proposes is not linear but a net and the themes of the Metropolitan Architecture project concern condensers of rare metropolitan functions and new land uses. It concerns New built form Type, but also its context, whose dimension is about 1km x 1km. It is an "exchange pole" between the infrastructural networks that organizes the relative "exchange district" and that today more and more often integrates the urban agriculture and is defined through patterns of Linkage Urban-Rural (UNHabitat, 2017). These new types require:

- A project of integrated functions.
- A project of fabrics at different scales.
- A project that gives back the depth of the urban biography.
- A project of urban scene as a section that integrates geography and landscape to the city.

For each metropolitan city the goal is to grow in size in order to establish a balanced level of synergy between the parties, evaluating moments of crisis and strength. We work for the construction of scenarios of potentiality born from a vision that is a moral idea for the city.

When we talk about Metropolitan Architecture, we use the word Architecture and we refer to the "way the various parts of an organism or a work are designed and distributed" (Encyclopedia Treccani. Item: Architecture). The metropolitan structure and form is determined by a Green - Grey Infrastructure, with respect to which we identify places, or hinge points at the intersection of high ways and railways where the metropolis will be densified. What used to be the background for the

city now is its structure, its figure and its image. The Green-Grey infra-structure has become a metropolitan structure or armour. Could we say that this is the new Metropolitan Architecture? Yes, if we refer to architecture in its deep meaning of logical structure and ordering of the metropolitan dimension, however, we prefer to use such a strong word as Architecture to identify still and always an inhabited space capable of producing urbanity and intersomaticity (Choay,2004). That's why we indicate as the main problem of Metropolitan Architecture the need to define Urban Morphotypes, New Hybrid Typologies also called Megaforms (Frampton, 1999) able to constitute the new centralities in the diffuse fabrics.

Metropolitan Architecture project, then, concerns the typologies that, like malls and air terminals and stations, can be understood as the definition of the paradigm of the typo-morphology that, in widespread urbanisation, links the global scale of the networks to the local scale of the fabric. We consider the new morph-type not only from a territorial point of view, as places that mark the territory in strategic places, and act as points of support for a territorial reinforcement of structuring a vast area; but also studied regarding the expressive character of their image.

I wanted here to make a clarification on the term "brand". Leaning on the interpretation of some statements of Derrida (1967), the "brand" is the very possibility of language. And it is always present when two things are related. The "brand" does not need language is a sign that indicates the relationship.

To constitute the brand of a territory and a landscape, an architectural object needs a denotative image in the immediacy of an identity. In this regard Bachelard, in his The Poetics of Space (1957), went in search of "an intimate and concrete essence that can be a justification of the singular value of all our images" and even went so far as to hypothesize not only an "inhabited space that transcends geometric space", but also an image that can be captured in itself, in its immediacy, as isolated from its context and not necessarily interpreted, but assumed in the instant. This necessarily opens the discussion on the value of contest, denied by Koohaas (1995) in his concept of Bigness.

The metropolitan centralities. Urban quality and recognizability of a place

What we have called "condensers of rare metropolitan functions" and which, using a metaphor, we call "differentiated containers" have been studied how:

- Land markers
- Interior Landscapes

In one of his texts, Dematteis (2003) argued that if we look at the current territorial context from a perspective that prefers spatial observation, we notice a loss of territorial connotations of urban systems, due to the fact that the networks of the different central functions (trade, finance, information and transport) tend to have their own and different geography (Castell,2004). It is therefore difficult to think in traditional terms of "centrality" as an attribute of individual localities, where functions are concentrated according to different hierarchies. Centrality has become an attribute of the network, since, at least apparently, there is not a single geographically recognizable centre. The city as a central location loses, therefore, its territorial identity and is broken down into as many fragments as the networks from which it is crossed: network interconnections prevail. Hence the homologies with very distant cities and the awareness that "what is similar is not close". (Secchi,1984). The space of the nets assumes new categories: it is sunken; dissipated (relational condensation/nodes); shattered (by the multipolarity of the nodes). We must ask ourselves the problem of a re-identification of the different parts of the metropolis through the design of new types of morphologies.

Masterplan as a process

What is Metropolitan Architecture then? The Metropolitan Architecture project is a vast project, which occupies at least one kilometre by one kilometre, which is in the context and creates it. It is able to select the durable values among the elements that structure the region and the metropolitan city by activating or reactivating the relations among the significant places of the metropolitan scale: new and old places and architectural entities, land uses, infrastructures and landscape sets.

It is a process and not a masterplan. That said, Metropolitan Architecture builds a gradation between the scales and the corresponding maps, then, composes a set of scales and landscapes through the use of decipherable signs, physical signs marked on the territory that allow the formation of a mental-map even at the vast scale of the metropolitan area.

The architectural projects will determine differentiated containers, new types of housing capable of introducing agriculture in the metropolitan city, new forms of land use that introduce the theme of green space as a public or common space. This is the way we believe we can respond to explosive growth, and it is also the way we interpret the map that tells us how explosive urbanization has meant that, in some metropolises, the economic efficiency is even higher than in their National State. We are interested in this data to say that this economic growth must produce a wellness and sustainability that means the possibility to grow up to the threshold of the sustainable scale (the right measure), a fair distribution and an efficient management.

To conclude, we assume the concept of Heterotopia (Shane, 2014) whose meaning is that we have to insert in our architecture something that we discover today fails at that local scale. That is the landscape dimension, which to be comprehended and evaluated at the large scale must be discovered first at the small one that is the only true scale of the human being (scala al vero).

This means that we have to choose and build models that are powerful intellectual constructions, conceptually orienting. Our tool is the Metropolitan Chartography, but we know that the map is not the world. We remain small meanwhile the metropolis is growing and we understand the world and we build it in a sustainable manner only through the intelligence to understand the object that appears as effectual and important at the larger scale, making it able to be significant also at our small scale that is unique. It is always the only one.

Urban quality in the contemporary metropolis

It is the theme of urban quality, which is naturally linked to the complexity of metropolitan functions, but for us it is also intimately linked to the question of identity and signification or image; a question that is still too marginal in urban studies.

In other words, the actors of the new urbanization process have changed together with the spatial and temporal measures of the city (Ortiz,2014), due to the leap in scale that it is a matter of fact. This is why the way of marking places and territories has changed. The question, then, arises of what the monumental space is today, which is also linked to the search, in discontinuous places, for a "city effect" that allows the inhabitant and the city-user to find the things they were not looking for. In this time, in fact, the city brings together what it was not before: functions, but also places that allow serendipity ("surprise, the making of unexpected happy chance discoveries"), that constitute mental spaces, that respond to a new need for beauty and more and more often a planned night. This change is the object of the research.

The mission of the academy. The Galileo's Tool

Developing and sustaining a metropolitan discipline of practice in higher education. The university responsibility

The contemporary massive growth needs to face the largest challenges of these times: resiliency and inequality in developing metro areas. These goals won't be achieved if cross-sector, cross-jurisdictional collaboration and long-term time span are not enhanced. What is, then, the question we have to face? The question is to define a discipline, which exists between architecture, urban planning and regional planning that can handle the metropolitan phenomenon. It must be based on an integrated vision of the various disciplines and different scales. The discipline presents tools for managing the dynamics of growth, economic and social, under an ethical axis guaranteed by the public institution, especially those relating to the explosive growth of the illegal and informal settlements. A discipline based on a precise idea of the role that in the process must have the local scale. The metropolitan discipline, so, has a fundamental role of regulation among the scales, but it is able also to conserve the robust civic image of that local identity (Lynch, 1960).

We aim to lay the foundations for a new Practice of Metropolitan Discipline as an answer to the limitations of public policy, professional practice and academic studies in facing the metropolitan complexity and fragmentation. We understand this social need and we are deeply convinced that is the university's responsibility to manage the contemporary metropolitan complexity and fragmentation through a new Higher Education Institution's (HEI) program able to build and use new ICT tools too.

Our attempt is to sketch out a disciplinary approach for a high quality of life within the metropolis (Lynch, Rodwin,1958). We are convinced that modernity is essentially a research project (Habermas,1983). In order to achieve an objective dimension in urban studies, we must go through an integrated logic of our respective disciplines that today are trying to explain the complexities of the contemporary metropolis by sectorial analyses. Integrated logic means that we are looking for a new set of relations and new knowledge research fields that are segregated in silos now. We also need the local particular case issue raises to a wider dimension, in order to fully understand the complex meaning of its insertion into the metropolitan network of relations.

To face these challenges, we want to improve the Practice of Metropolitan Discipline at the HEI level. And so, our mission is to generate applied knowledge to improve the awareness about these metropolitan issues by bridging the gap between theory and praxis. We must form professors and professionals able to use new instruments and intellectual tools and who are able to apply their skills to the metropolitan complex dimension. Consequently: what, why but mainly "the how" of the metropolitan projects.

The universities and public authorities' metropolitan pact

The construction of a metropolitan discipline taught must be regarded from two different points of view or subjects. The first point of view is the project aim of who expresses the project for the future. It's the one of those that must be enhanced, local citizens who know their needed project. The other one, is the perspective of the academician who triggers the path, he/she is a wise and in a certain way, knows that, relating to the project, he/she should take a step back. This latter, however, knows how it must begin. This is essential, because the former doesn't know how to begin. We must, then, determine the matching of local citizen (who wants to learn for a future project) and wise person that is willing to enter into a process of case studies to pass on what they have already learned in an operative action. This is a practice-theory, i.e., a knowledge to action.

Research innovation and education: a cultural change

Research, innovation and education are synergic pillars for a metropolitan discipline of practice. Research produces social capital due to the fact that it invents the future. According to Fuggetta (2012), visionary researchers used to trust in the idea of the possible transformation of the world utilizing advanced knowledge and imagining new words. Innovation, therefore, needs research, but on the other hand, produces experience. The common aim of research and innovation, related to the urban studies, is to define dwelling practices that create the quality of life. This goal is reachable sharing a network of knowledge toward new design logic. According to Lynch (Lynch, 1960) we would like to delineate a process that produces a conscious design for a visual plan. In particular, the aim of the Metropolitan Discipline is to foster a reflective attitude ('critical thinking') with regard to scientific practice, to the consequences of technology for society and to the moral and social responsibility of technicians. We, the academicians, have to invent the future, serve the society and teach how to learn. We also aim to impart cognitive skills and knowledge required for arriving at informed judgments and decisions on issues that are at stake. It is clear that the challenge is a cultural change that needs to envisage the two different processes of research and innovation that require different methods, skills, competence and funding mechanism.

The Galileo's method for the metropolitan discipline

Human being is the centre of metropolitan studies (new humanism). The object of the study is not only the primary needs of the human being but rather their expectation for a high quality of life. This is the main legacy left us by E. N. Rogers (1958) through the concept of the Utopia of Reality and the discussion he carried on in the courses held at the Faculty of Architecture in Milan between the 50s and 60s discussing the Formula of the Architectural Phenomenon and the changing relationship between necessity and affect.

To understand the continuity with the past, even in the necessary discontinuity of the present, it is fundamental to understand what the genealogies of our research demand are.

Through the method, Galileo (1624) intuits the phenomenon, produces the experiment by building the tool to implement it (the Tool), - binding the conditions of the experiment in order to be able to replicate it - and finally understands the reason for the experiment and then communicates it with a language that, he said, is mathematics. The experiment, then, defines the conditions of observation by making the phenomenon that was previously intuited appear, and that will then have to be communicated.

Galileo is the final point of a research starting from Alberti (first in de Pictura (1450) and then in De re aedificatoria (1452)) which enlightens the artisan Brunelleschi, who meets Leonardo, a craftsman/architect who lived in the Milan of Bramante, on whose work Michelangelo's work stands out. It is important to quote this genealogy in order to understand the necessary continuity of the Renaissance, that from the craftsman/architect, who invented science and art together, goes to the one who invented science (Galileo), and does the experiment to observe that the world is written through mathematics signs. Thus, the cause and effect of the phenomenon revealed by the experiment (tool) are defined, whose relativity is constituted by the constraints of the field within which the observation takes place. The experiment, which in the Metropolitan Discipline is configured as a workshop during a Training Lab, is always a process because when new metropolitan constraints are better understood, the knowledge of the past architecture and urban disciplines decays. This passage explains the necessary discontinuity of the Metropolitan Discipline with respect to the architectural and urban disciplines of the past.

The design concept

The Metropolitan Discipline within the Training Lab. often uses the project workshop as a method and communicative moment where the intuitive imaginative conditions of thought are established; these are the conditions through which we can build our tools. The objective is the understanding of the phenomenon, which will be given in an image that today we call "concept". In that context of study of the metropolitan phenomenon, according to the way we have established the conditions of constraint, the "concept" is the intuitive ratio of the intervention, which is then extroverted into language that communicates: it becomes a sign. Whoever carries out this action, then, represents this intuition as an image, before as language. For us, this means that linguistic notation regarding the image is poorer in expressive power. It is this Power, in fact, that makes us feel the meaning of the metropolitan phenomenon and this feeling is the active/passive moment that allows us to react internally, as reflective citizens. We could call it passivity but in action: the receptive man is struck by the world (the wonder [thaumazon]). Without wonder there is no communication because there is no real time; A man who knows the time value, that is, she /he knows it is ending. Giordano Bruno, instead of mathematics, elected the poetry to communicate the intuition: "[mathematicians] are like those interpreters who translate words from one idiom to another; but it is the others who are deep in feelings, and not themselves". That is why not only mathematics is for us architects the means to communicate our intuition.

Beyond Galileo, we have to consider the relevance role for us of the Giordano Bruno 's though (1584). In the American Lessons, Calvino (1985) speaking about the poetic theory, went back to Bruno, clarifying the essential content of Bruno's thinking, and explaining why numbers are not enough. In fact, numbers do not create, and cannot invent without the help of symbolic mediators. Symbolic mediators are urban concrete facts as testimony of value to successive generations. Instead (Shane,2005) symbolic intermediaries are the new metropolitan actors and their practices producing social and individual projects. The synthetic and poetic intuition of the metropolitan phenomenon (bridging the gap with the abstract and invisible world), through the great memorable images mentioned by Lynch (1960), transforms a site (within its symbolic intermediators) in the symbolic mediator. This mechanism allows to shift from the experience to the knowledge and so, to the awareness of the metropolitan city role for the cosmopolitan democracy foundation.

This feedback explains why to talk about Metropolitan Discipline we have to mention the figures of Leonardo / Galileo / Bruno. Leonardo was the artisan who became a scientist, Galileo was the one who postulated the scientific aspect and invented the experiment, but Bruno was the philosopher who opened himself to scientific invention, teaching us that the "visual imagination" or the "figural imagination" is "the gulf, never saturable, of shapes and images (Bruno)" to which drawing quickly, accurately and taking into account the multiplicity of images and all their possible combinations. This is the "fundamental human faculty to focus on visions with closed eyes". As Hilberseimer indicated in 1929, the possibility and capacity for abstraction are necessary conditions to manage the new complexity of the Grosstad; today we add intuition and invention.

Open questions

Regarding the Metropolitan Discipline, some challenges ahead are still visible, at this moment. According with Professor Wang Hongyang of the Nanjing University who is joining us in the Metropolitan Discipline construction process, these challenges are innate in the relational and holistic nature of matter, and to solve them, it is not enough to break the existing urban, planning, development and governance paradigms. It requires a paradigm shift in existing ontology, epistemology and methodology.

Such challenges include:

How to synergize? Prof. Wang argued this is different from building a metro-matrix framework. It is true, he said, that the existing approach to the complexity of metropolitan development, planning and governance is too unholistic and undialectical. But a more difficult question is that when we approach as much as possible the totality of the thing, how can we find the synergetic solution? Indeed, it seems the disciplinary “development” has been always getting close to the totality of a major. But the world is still desperately divided. How can the contradiction be reconciled, no matter it is stasis-dynamic, openness-limit, or equity-efficiency? It is evident that the post-modernization and neo-liberalism approach, which often tends to render the answer to all kinds of self-organization and autonomous gaming, cannot work. But it is also wrong to believe that the failure of the post-modernization and neo-liberalism represents the victory of modernity and traditional management. Rather, it indicates the inadequacy of both existing models. So, the challenge is: how to jump out of all the existing models and find a new way?

To answer, we have to return to E. N. Rogers' concept of discontinuity of the discipline within the continuity of the tradition. It cannot be a simple tool for upgrading. However, it must be a radical transformation. Nevertheless, in the urban design and architecture disciplines' field, always it happened that to moment-events, which broke the paradigm, extended times of traditional praxis follows.

Today, however, we must admit that if we want to attack completely new problems in our societies (the endemic increase in inequalities; the hunger scandal; the recurrence of financial crises of vast proportions; the bursting of identity conflicts that add to the well-known conflicts of interest the paradoxes of happiness; the sustainability of development, etc.) we must take a standby choosing the point of observation from which to shake reality. Otherwise, the discipline will also continue to expand and increase its technical-analytical apparatus, but if it does not come out of its self-referentiality, it will be less and less able to take hold of reality and therefore less and less able to suggest effective lines of action. Metropolitan discipline must concern the ontological dimension that refers to individualism as the main reason for the practical, functional and efficiency dimensions. These are ways of reducing human experience to the "accounting" dimension of instrumental rationality. Dilating the cultural horizon of research to include the "value of connection" is today the intellectual challenge that is urgently needed. That takes into account the emotions, beliefs, values, symbolic representations, which have relevance for the part that affects behaviour.

The TELLme methodology allows ontological and epistemological reform. First of all, we set our assumptions framing the Metropolitan General Issues and Principles Glossary Software. In doing so, we have reversed the pyramid of knowledge: it is not the process from data to information and knowledge that makes us wise. However, vice versa, we need to be wise to be able to explain the reasons why choosing the data we can illuminate the complex processes that impact on the metropolitan territory. Through the assumptions of sustainability, we interpret the metropolitan region's dynamics producing the groundlessness that our metropolitan architecture project must heal. Besides, using our metadata open-source Metropolitan Cartography tool always it is possible to explain the reason for the elements and related indicators choice.

Following the Professor Wang’s discourse, then, if the above challenge is serious, deeply exploring into it will soon suggest another challenge: are we looking for a new way of governance, or a new way to apply the existing knowledge (i.e. existing knowledge is basically valid), or are we primarily re-inventing our Weltanschauung and methodology? The reason underlying the difficulty of synergy lies on the relational nature of thing’s property (and hence e.g. people’s opinion). The relational nature of property, meaning, value etc. however conflicts against the “scientific” ontology and then epistemology and methodology, in which thing has fundamentally an atomistic nature. Introducing the relational approach to the metropolitan governance will lead to difficult questions such as who is right and who is not, or what is the nature of a specific space (from different relational perspective, a space can have infinite properties; indeed, any space has infinite properties)?

Nevertheless, today the ambition of neoliberalism to become the model of absolute government failed. It is a machine that has internal dysfunctions so much so that the market, which claims to provide maximum security against the uncertain future. This matter today gives strength to alternatives, to a different model of political economy than the neo-liberal economy (Bruni, Becchetti, Zamagni, 2019). The TELLme approach to complexity proposes a multi-dimensional humanism, in which the territory is not fought or "controlled" but is seen as a civilized place on a par with the others as a moment in the public sphere. That is conceived and experienced as a place open also to the principles of reciprocity and gratuitousness and contributes to the construction of civitas and its polis. Can the metropolis be a polis?

As Academy, we believe we have to enunciate our assumptions and to be the curators of the maps, as an assumption of responsibility. On this basis, we will then be able to open a dialogue with the other agents of the contemporary city. We consider our discourse to be scientific because it is based on explicit assumptions, the Principles. Through the assumptions of sustainability, we interpret the metropolitan region dynamics producing the groundlessness that our Metropolitan Architecture project must heal.

Based on our assumptions, the maps illuminate the problems of the real city illustrating the issues of the unsustainability of the metropolitan territory in the light of the assumptions of different disciplines. With our tools, then, it will be possible to define a meta-project as a basis for negotiation between the different metropolitan agents, which will lead to consensus for the definition of a sustainable project.

Participatory Governance is the Enzyme that activates, nourishes and also transforms the Meta Project whose goal is the negotiation plan for the shared definition between the Academy and Metropolitan Agents of the rules of the metropolitan form for the definition of public policies. Since the multiple metropolitan agents, the Participatory Governance Process aims to produce a shared metropolitan vision. Through Contract Competitions, then, we will ask Private Agents not only to define the physical project, but also to construct the practices the physical dimension can facilitate. In this sense, we are talking about the Implementation of Governance.

Finally, Professor Wang introduces the Knowledge and terminology issue. If new weltanschauung and methodology have to be invented, he says, the knowledge and terminology, which build on the basis of philosophy, should also be reformed or even rebuilt.

Metropolitan Glossary is one of the fundamentals of the TELLme Training Program. Together with the Metropolitan Existing Situation Analysis and Metropolitan general Principle and Issues it makes the basis of building the complexity of Metropolitan Discipline.

By its nature, the new discipline is interdisciplinary, merging different academic fields and practices. Every sector has its own terminologies defined within each circle and there is a limit in using the terms without reach an agreement on the meanings of the vocabulary used in the discussion.

However, the Metropolitan Glossary is not a simple list of words with static definitions. The discussion goes be the individual terms and focuses on the relationship amongst words composing the concepts that are fundamental in the metropolitan discipline. The complexity of the new discipline requires a different perspective in framing the issues and solutions and the MGIP Metropolitan Glossary is a way creating the new conceptual structure of the discipline. It is an open-ended collection of vocabularies brought and discussed by experts of various fields. The discussion will constantly change throughout the entire project period and the evolution of the glossary will demonstrate the development of the discipline itself.

A collection of Semantic Packages is the main output of this activity. It is a visual mapping of key words and related concepts that are mandatory in the Metropolitan Discipline.

The aim of the Metropolitan Glossary is to define the concepts of the new discipline defining the individual words, inventing some news, sometimes. The Metropolitan Discipline, then, is bringing

various issues that are transversal rather than sectoral, conceptual operators and operations. Therefore, reaching an agreement on the words used to describe complex issues touching various fields is a challenging yet mandatory activity.

The Metropolitan Glossary has a potential to define the Metropolitan Discipline with clear concepts and words that could be the common language amongst the professionals and scholars. It also helps people to understand where a word or a concept comes from and how it was defined and formed within the metropolitan context.

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What is a XXI century metropolis?[24]

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Contemporary debates on the Post-Metropolitan Net-City

Over time, the relationship between the city and the metropolitan region has changed significantly. Instead of the city-countryside opposition, the form of the metropolitan city has been generated simultaneously as a multitude of medium and small cities are involved in the growth. Based on a metropolitan diffusion of networks and cultivated lands, these local places are transformed. In the end, these small and medium-sized entities, investing in the local territory and connecting to the infrastructure networks, determine the way in which 1:1 scale is embedded in 1:100/200, and this in 1:500/1,000, and this in 1:5,000/10,000, and this in 1:25,000/50,000. Metropolitan fields are created, within which linear systems of widespread urbanisation determine the inclusion of lower scale fields, often an unplanned inclusion, which generates sprawl.

In order to define the metropolitan approach, it is important to recognise the paradigm shift from the urban to the metropolitan scale, thus seeing the contemporary metropolis as a “net-city”. According to D. G. Shane (Shane, 2005), the Net City is “a multi-centred network system” emerged “to handle the apparently chaotic flows of diverse participants in an increasingly global network Growth appears to take place at random over the network, with no clear hierarchy or top-down patterning. Relationships can shift and change among actors, resulting in rapid change and instability.”

The Net City is essentially a system of cities of different sizes functioning as a whole throughout a network of physical and virtual infrastructures. In this polycentric system, however, we are not only dealing with the nodes and edges of the network. According to authors such as Terry McGee (2014), Edward Soja (2000), Neil Brenner (2014), and many more, we are facing a hybrid territory where urban and rural scales define a seamless heterogeneous landscape. This space in-between the network is called “body space” (Shane, 2005), where the continuity and the connection with the previous system are lost due to metropolitan infrastructure systems. The Body Space needs to be reconceptualised with new meaning and new image in the metropolitan era. The recognition of “body-space” allowed us to discover new patterns of settlements that are beyond the dichotomy of urban and rural patterns. It opened whole new possibilities of shifting between different scales and time that require new spatial practices, social behaviours, and organisational structures. This change also fostered engagements of new spatial agencies such as private and public organisations,

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universities, families in the interactions amongst global and local forces challenging fixed administrative boundaries at different scales and requiring innovative forms of institutional organization, and planning.

In many parts of the world, metropolises are steadily being recognised as autonomous governance and administrative entities, while establishing a sense of belongingness to a much larger society. However, this doesn't mean urban or city scales don't exist or are not relevant anymore. The Metropolitan Approach to Complexity, investigates the scale of complexity within the Net-City arrangement and focuses on the Body Space to provide metropolitan visions with a multidisciplinary perspective moving away from a traditional urban goal of efficiency. Even though, the scale of a metropolis shifted, as Kevin Lynch argues, "a feeling of adequacy, the sense of mastery" can be experience through "both manoeuvrable velocity and sensuous contact" (Lynch, 1960). In the new discipline the ultimate goal is to achieve the wellbeing of the citizens living in the metropolitan area, which does not only require the functional effectiveness of the urban structure.

Metropolitan form is the architectonics (the structure) of the new 1:1 scale map. We practice the metropolitan city in the concrete local map, with the body, at the 1:1 scale. Let's say, therefore, that there is an "urban fact" of the metropolitan scale, as well as a portion that is not built city, but cultivated or natural field within the metropolitan city: we call it "agricultural or natural fact". The metropolitan city with its networks of medium and small cities, is the urban vertebrae of an eco-region.

We analyse the contemporary territories that we define as fragile based on an integrated learning approach that refers to metropolitan complexity. Our goal is to identify the metropolitan dynamics that have generated the fragility of territories, recognise their shortcomings, and finally propose a project that is based on a metabolic vision (maintenance, improvement or transformation) of the life cycle of the city, which determines the metropolitan biography over time.

The specificity of the current city is a multipolar way of local growth/transformation involving increasingly large areas based on the effectiveness (performance) of infrastructure networks. The shift from the paradigm of a polycentric model, to the network of the net-city (Shane, 2005) is significant for the contemporary metropolitan city, because it causes the need to deal not only with the nodes of the network and the infrastructures that make them accessible, but also, with the space between the networks, which must be re-conceptualised. We have to give back meanings, structure and image to the space between the networks, the "Body Space" (Shane, 2005).

The middle cities are the champions of the metropolitan area

That means the middle cities of the metropolitan area have to be the main actors of the process: they have, in fact, strong roots in the past history or in the latest industrial period. They take care of a particular territory, perform functions, provide services, and in many cases are rich of fundamental facilities for the organization of the citizens' life. All this, through a sharing of choices and projects which link the metropolitan city area deeply to the neighbouring municipalities of the first and second bands.

The construction of the modern metropolitan city is possible through:

a) an enhanced institutional cooperation

b) the definition of agreements

c) processes and projects.

In short, the new statute of the metropolitan institution and its functions will be defined by the municipalities, moving from a shared starting point: to share the objectives not only the rules. The metropolitan city, in fact, is not intended only as a chance to pursue a model of efficient management, but also as a model of new urban policies and as a new urban paradigm that shifts from a radial

conception, to a multicentre and linear one. One of the issues that seems most relevant, for example, is the need to rewrite the rules of the different municipalities' relationships, the legal concept of new urban spaces, and the approval procedures for the completion of the huge public works. The municipalities will be "weighted" to determine a new balance without altering the established one, all this, in the interest of the territory and not of an individual municipality. The fundamental concept, in fact, will be entered in the motto: "to grow together".

New infrastructure systems determine a new type of metropolitan space, and are able to relate the different layers and the different scales of the city. The actual land transformation issue, can also be read in terms of changing modes of production from an industrial to a post-industrial way, or to an "informational" one. This perspective leads to new building types combinations, which use the ground and the technologies of high-speed transport. The environment, then, changes. It is considered as a social product.

So, it is not only a model of a general plan that we need. Therefore, it is a cultural leap to a new identity, which must represent, through its regulatory structures, forms and territorial vocations within common strategies and rules. Consequently, it is possible to share the objectives and not only just rules. Finally, in any case, it's very important to look into the spatial dimention of the process, that is a formal discontinuity in the process, the radical reconfigurations of the metropolitan city.

Post landscape. The environmental and the new public space question

Brenner (2014) analysis links to the environmental question, which will carry the urbanization discourse to understand the profound changes of production processes, spatial and economic urbanization of contemporary society (Luis Monte-Mor, 2014).

According to Henri Lefebvre (Lefebvre, 2014) the country, right now, is the town's environment, its horizon, and its limit. But the urban problematic can't engage every problem. So, there are problems that are exclusive to agriculture and industry, even though the urban reality modifies them. Therefore, our responsibility is to identify, analyse and design what happens to the forms, functions, urban structures and landscapes within their different contexts that are transformed by the breakup of the ancient city and the new process of fast urbanization.

Lefebvre introduces, then, the considerable idea that urban society, virtually, covers the planet by recreating nature that has been wiped out by industrial exploitation of natural resources and the destruction of the so-called natural particularities.

If it is so, today, there are important issues of post-urbanization which will characterize our landscapes (built and natural) in the same way as post-industrialization did in the past. For example, what will happen to the previous low urban context spread in our territory?

Regarding the natural landscape, we try to describe new common spaces where people could relate to the land not as individuals but as persons inside a community, through new inclusive land uses and social facilities for different citizens. This means that we have to insert the post landscape dimension (Harvey, 2005; Wall e Waterman, 2017), reclaiming land for new hybrid territories, understood and evaluated at the large scale, but discovered at the small one that is the only real scale.

Observing the built landscape, though, as Wall claims, inside the city new landscapes of intense control, through security, gating and fencing-off, were countered within the creative resistance, of protests and demonstrations – both approaches attempting to redefine social relations through appropriation and occupation of public spaces. In practice, these new metropolitan landscapes, reconfigured landscapes formed through mass demonstrations, which gathered in public spaces, undermine scenography promises of managed, pacified and comfortable urban spaces which had accompanied contemporary developments across the city. For this reason, contemporary cities with

highest informality rates are the most prominent laboratories to experiment alternative forms of socio-ecological organization through alternative re-combinations of public/common space patterns informing the city (Frigerio, 2016). The public space issue and the concept of public realm which alternates a space that today is only a public-use space will be a relevant point to discuss along the chapter.

The post-metropolitan city project

The ideas of form, disposition, the architectural figures and their strategies of section, in short the Metropolitan Architecture, - that determines, through the project of the physical space, the typo-morphology in order to pass from one scale to another-, are managed within the open source data maps at different scales (Metropolitan Cartography).

We believe that the project of the contemporary city maybe defined throughout meetings that take place between those who tell the story of the territory and those who identify the problems: the group that we call "metropolitan expert" is not only competent in project solving but also in problem finding and setting and it includes a wide range of stakeholders such as decision-makers, civil servants, local population, and academia. Those who tell the story of the territory and decide the projects need tools that allow them to identify the problem and provide a solution. Within the TELLme project, we are trying to determine the conceptual framework within which the metropolitan city and its "fragile" contexts are analysed, interpreted and designed. Moreover, we are developing tools consisting of a set of open-source maps (Metropolitan Cartography) and the methodology to build them. Through the maps, we propose a reading of the territory, which identifies its fragilities and values, to which to respond with the design. We believe that every problem must first be seen, identified, understood, and communicated through maps at different scales, to be compared with the principles which can represent the metropolitan city we have in mind.

The encounter with reality and the explanation of the passages to reach the metropolitan dynamics interpretation are fundamental. Through the selection and collection of open sources data and utilising them to make a set of maps that can represent the data, spatializing them, we can verify our principles and our interpretation system by comparing it with the data of reality. We are trying to build a vision, an interpretative framework related to the General Principles and Issues of the Metropolitan Dimension, and that is continuously compared with the data of reality.

‘Megaform’ with ‘bigness’

Architecture has long been regarded as the basic constituent unit of the city. It is almost self-evident that the buildings have risen from the ground and eventually formed a modern city. However, in 2006, Charles Waldheim’s ‘The Landscape Urbanism Reader’ came out and proposed to adopt ‘landscape’ as a design unit to deal with urban problems. Since then, an increasing number of related urban theories from different perspectives have been discussed by both supporters and opponents. But in the face of the rapidly expanding and evolving global urbanization process, almost everyone has reached a consensus on the point that, when dealing with today's urban problems, architecture is no longer the only design unit.

Based on the position of the consensus, Kenneth Frampton believes that the landscape is also regarded as a generalized visual unit, the two elements of ‘architecture’ and ‘landscape’, which have long been regarded as the basic unit of human settlement design, are eventually integrated into the concept of ‘megaform’

(Frampton, 1999). Although ‘megaform’ indicates a larger design scale, it is not constrained to an absolute value. It can be a building, it can be a landscape, it can be used in a variety of situations, and it can vary depending on the scale of the project and the complexity of the form and function.

The ‘megaform’ emphasizes the need to jump out of the isolated, closed individual building scales, based on public facilities

and the dimensions of public spaces. It is also crucial to design its living space as well as where it radiates, endowing the space with new meanings, resisting the abduction to urban space by the commercial and capital. Frampton is hoping to reconnect people from the human scale with fragmented cities through this intervention in the public domain of the city. Frampton expects the practice of the “megaform” can recreate critical places and new urban landmarks that can be used to transform these debris in the reality of a broken city filled with big roads and image consumption, looking for and creating the realm of humanity and life in the emerging urban life.

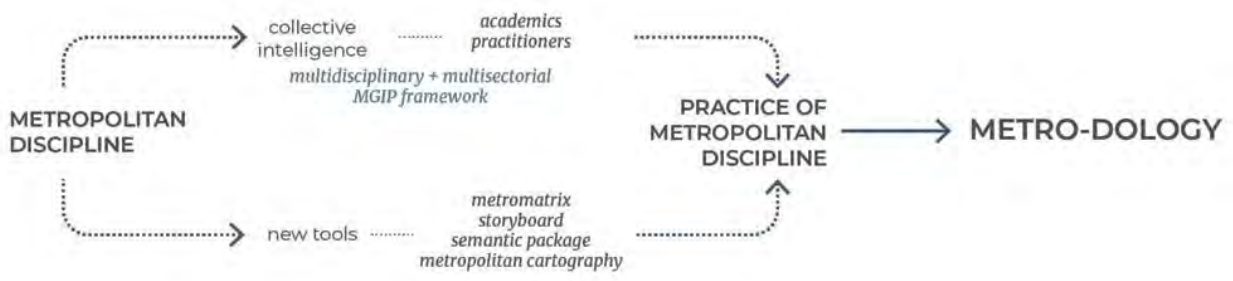
Similar to Frampton’s hope that ‘megaform’ could reconnect people from the human scale with fragmented cities, Rem Koolhaas (1995) believes in the potential of the property ‘bigness’ in architecture. The philosophical foundation of Koolhaas's theory of ‘generic city’ is that chaos ends the overall structure of the city, fragmentation and diversification become the status quo of the city. If ‘generic’ is the main feature and state of modern cities that Koolhaas recognizes, then ‘bigness’ is one of his main strategies for his integration of combatting the fragmentation and chaos of modern cities. However, what clearly distinguishes the theories by the two architects is their preference towards the ‘megaform’ and ‘megastructure’. Frampton in his ‘Megaform as urban landscape’ clearly interprets the difference and relationship between the terms ‘megaform’ and ‘megastructure’. He believes in ‘megaform’ rather than ‘megastructure’ because ‘megaform’ focuses on the global overall of the internal space order and the formal texture, and does not have to highlight the structure’s performance; it may seem to show some of the formal characteristics of ‘megastructure’, but it is ‘a form that is not freestanding but rather insinuates itself as a continuation of the surrounding topography…, a form that is oriented towards a

densification of the urban fabric’ (Frampton, 1999). More importantly, the interior space of the ‘megaform’ should accommodate public space.

On the contrary, in Koolhaas's view, what matters the most could be the physical size alone. It is not important whether the form of the ‘megastructure’ takes care of the past; the historical heritage has been fragmented, the context has not continued, the regional differences are bound to disappear, the convergence of the ‘generic city’ is inevitable. Only by moving forward to the future, solving new problems in complex space in a random and selective way with continuous innovation is the only way out. Nevertheless, these views of Koolhaas are undoubtedly proposed in the context of a metropolis like New York.

Unconsciously, they are generalized into universal urban theories and architectural values and have the right to speak globally.

Figure 1. Vision for the metropolitan discipline



‘Megaform’ as ‘Heterotopia’

David Grahame Shane redefined ‘heterotopias’ from Foucault as ‘a place that mixes the stasis of the enclave with the flow of an armature, and in which the balance between these two systems is constantly changing’ (Shane, 2005). The ‘megaform’ is undoubtedly the ‘heterotopia’ of our contemporary city by definition, which has a form, function and development model that is distinct from the urban matrix. The ‘megaform’ could be either a variation of the urban material form or an exotic implant: derived from foreign form templates or international design and capital operation. But this ‘heresy’ refused to be marginalized from the beginning, and produced what Foucault (1984) mentioned, the ‘illusion’ of entering into the heterotopic sites. The ‘megaform’ has become the object of competition and imitation by many developers, it has begun to move towards the center of the stage and continues to expand its boundaries.

Every component of such a giant construction plays its part in the city: broad, horizontal, complex and distinctive, enough to create different urban spaces. Its unique image and the shaping of the place aim to create a heterogeneous space based on different cultural attributes. The creation of landmarks is a resistance against the similarities in modern cities in a subconsciously way, trying to create a newer regionalism in a revolutionary way. In this context, urban fabric and context have become more of a meaningless word game.

In the context of heterotopia, time and space are discrete segments, and people's lives have also split. The ‘megaform’ itself, as a product in a window display or a work of art displayed in a gallery, affects and undertakes the desires and imaginations of the citizens. In a commercial office ‘megaform’, it is the place where white-collar lovers date, the place where fashion girls consume, and the place where multinational companies work. For most people, their experience of this space only exists at certain times such as holidays, and they are invested in other lives that are completely different and spatially separated on a working day.

The ‘megaform’ artificially creates a kind of mass culture yearning, but only the short-stay life mode and space entity, especially the white-collar escape from the current life, and gain a temporary heterotopic space for physical and mental comfort.

In conclusion, can a ‘megaform’ provide a new perspective and method for us to solve the problem of modern urbanization? It is difficult to say that the ‘megaform’ has achieved a thorough and subversive replacement of the existing urban development model, but it does have a certain degree of in-depth impact. In such a historical tide, the ‘megaform’ has been immersed in the aura of urban glory and has become an important entrance to thecity's ambition. The distinctive place behind the attraction of people is the stage for social wealth competition. Under the wave of commodification and materialization, it has naturally become a kind of expectation of urban regeneration. The thinking behind this concept clearly expresses Frampton's concern about the status quo of the city: architecture and the cities that they formed have long been captured by capital operation and consumerism.

Towards a practice of metropolitan discipline

The contemporary metropolis cannot be defined by statistics nor be considered as a globally homogeneous phenomenon. Instead, we need to focus on the paradigm shift from city to metropolis that brought us a new way of understanding our living context, the new measure and scale of contemporary lives. Therefore, considering the different nature of the contemporary metropolis and its inherent issues, we cannot understand it within traditional disciplinary boundary. We try so to overcome this limit by framing the “Metropolitan Complexity” as the basis of the “Metropolitan Discipline”.

The vision of the Practice of Metropolitan Discipline is to provide an environment where the various perspectives of dealing with the metropolitan complexity are collected and connected to one another using a framework (MGIP), methodology (Metro-dology), and tools (semantic package, cartography). Françoise Choay says, “The competence to build could be defined as the human ability of shaping a specific environment, its set of scales, the articulation of its spaces, and its differences being the setting for human existence and experience”. The various aspects we described in the metropolitan dimensions are considered together to lead to this competence to build the metropolises in a meaningful way. (fig. 1)

Figure 2. The practice of metropolitan discipline

The necessity of a comprehensive and multidisciplinary approach to the study and practice of Metropolis became a common ground for our academic exchange in the past years. The metropolis spatial structure needs a Practice of the Metropolitan Discipline able to support its construction with an organizational technical expertise, and a big project of urbanity based on a physical and virtual network between the new city shape and the new forms of conviviality. The Metropolitan Discipline assumes that cities in the 21st century are the crucial fields that directly reflect the processes and achievements of political, social and economic situations. The metropolitan vision will lead to the improvement of the Practice of the Metropolitan Discipline (fig. 2) with new competences.

The role of the practice of the metropolitan discipline

The role of the Practice of the Metropolitan Discipline in the production of urbanity at the new metropolitan scale, through metropolitan architecture projects, rises as our research question.

We believe that safeguarding the life of our cities and territories from artificiality and seriality is the ethical and political mission of our time, and with this perspective, cultivating an axiology of values that assigns the primacy of beauty means implementing a practice of daily cultural resistance against technological dictatorship and urban planning practices aimed only at efficiency. Looking after the local scale is the reason to think of the city at the metropolitan scale. Therefore, beauty is the way, not the goal of metropolitan city design. We say, then, that the structural base of the metropolitan

sustainable beauty is a hybrid structure that we call green-grey infrastructure. This structure has replaced the solid matrix of streets and traditional public space, in order to create a new public realm, which includes a common space, and a robust civic image (Lynch,1960). The green and grey entities are not alien to each other because they are born from the same concept of harmony. It is also the call to a lifestyle: It is a question of harmony, a question of aesthetic.

The contemporary metropolis is no longer a radial centric city, but a conceptual framework that we call the metro matrix that allows us to serve the peripheries as the new metropolitan centralities.

The physical phenomenon of removal of old (and disused) urban systems replaced by new urban morpho-types immediately involves the citizens who see their original field of life manipulated. The change, moreover, is made necessary by the specific contemporary way of switching between infrastructural networks linking the citizens to the pre-existing urban fabrics. This fact produces local transformations and unprecedented impacts on urban or natural landscapes. It is an introduction to new metropolitan territories, new rites and desires. For these temporal events in space, the physical conformation of the new architectural entities must be constituted as a segment of usable space and its scenario. This new concept of space, relevant to the new situation of metropolitan life, must be immediately perceived and must be understood as a principle of mapping and mental map possible even at the metropolitan scale — the tone of the style of behaviour that becomes metropolitan, and no longer rural or urban, changes.

In the new discipline the ultimate goal is to achieve the wellbeing of the citizens living in the metropolitan area which does not only require the functional effectiveness of the urban structure. Therefore, the approach of the discipline is rather complex, with multiple actors involving a wide range of fields. The metropolitan vision will lead to the improvement of the Practice of the Metropolitan Discipline with new competences. The main component of the metropolitan approach is the Metropolitan General Issues and Principles, the theoretical framework resulting from the process of taking the field experience and merging with the academic expertise of the complex process of Metropolitan Projects. It is a Metropolitan Approach to Complexity, a way to translate the general and theoretical point of view of the HE into the more specific practical ‘operations’ in the metropolitan construction.

That is the reason why the physical dimension, we can say the tectonic determination of the "fragile" context is fundamental because it returns a knowledge in exercise that is never abstract. All the semiology of the city's territory must pass through matter and its tectonics, otherwise, we cannot have any notion of it, therefore we cannot "know" it, because we have lost the communicative moment of thought of the architectural and urban disciplines. However, the discovery of the abstract space of the GIS map is crucial because it allows us an infinite scale within which something invisible, some relations hidden at the local scale for example, is made visible. We are interested in understanding how to read not only the fragile territories of the metropolitan city but also the causes of their fragility over time. We move from an analytic, to a productive, to a theory of metropolitan design, which is essential as an operation whose key is a "utopia of reality", that is, a utopia, but possible. That is the Metropolitan Architecture.

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Metropolitan architecture[39]

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A political project

The challenges the Metropolitan city has to face are:

- the explosive dimension of the metropolitan scale and its functional reading through the definition of geographic locations and the permanence of lasting relationships among them;
- the problem of defining an identity of the metropolitan scale city and of the quality of its lifestyle, that must be expressed, at the metropolitan scale, through mental maps typical of each metropolitan reality.

The coexistence of the instances of different metropolitan places and their communities is the essential issue of metropolitan societies. Thus, a purely political theme of consent and participation in the mutation of reality and related mental maps emerges, because the metropolitan paradigm shift leads to the deeper complexity in the mapping and organisation of citizens' lives. The new metropolitan dimension motivates us to consider the city such as the theatre of memory or as the theatre of prophecy (Rowe,1980). The need of consider the city as the theatre of memory, rises from the fear of losing the intelligibility and control of the space of our lives, of certainty personal social identity, which makes extreme and exclusive the conservative perspective on the change that is a matter of fact. On the other hand, there is the hope that prevails of a future and its benefits that often disregards the past to move forward to the future. The problem of identities that are radicalised make us indifferent to the dangers of obsolescence or divestment, and the conflict only exacerbates with the acceleration of the change.

Dealing with the political question and of how it is rooted in the disciplinary terrain of Metropolitan Architecture, it can be seen that we are still going through a period of extensive and accelerated change. When the people become vulnerable with the accelerated change and uncertain in defining themselves, the space that represents the society also abates its characteristics and the meaning. Therefore, regarding the metropolitan project, when the focus of economic and political power is evidently on one side only, the importance of participation and consensus is as much as the project itself. Many topics require different groups of stakeholders due to the very nature of the subject. Flexibility and cooperation in dealing with such issue are mandatory, facing the current situation of working in silos.

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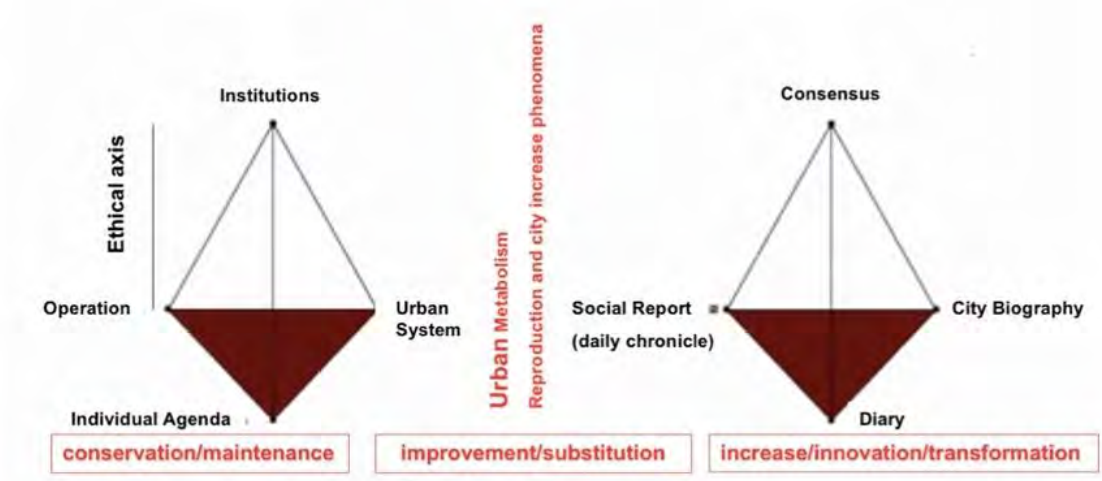
The metropolitan discipline methodology tries to address the issue of governance promoting the local and global metropolitan actors, and the metropolitan experts. However, the decision-making of a metropolitan project is always done at the political level.

The physical space builds citizen participation

Today, an intentional and naïve removal of the anthropological time in the physical space, that builds common sense and citizen participation, is a matter of fact. The irony seems that, in order to join the modern civilization, it is necessary to take part in scientific, technical, and political rationality which very often requires the pure and simple abandon of a whole cultural past. It is a fact: every culture cannot sustain and absorb the shock of modern civilization. This is the paradox: how to become modern and to return to sources, how to revive an old, dormant civilization and take part in universal civilization (Ricoeur,1961).

The recognition of the metropolis as a closely connected network of small, medium and large urban centres spread across vast regions, thus the Net-City arrangement, demonstrates the necessity of shifting from the traditional urban study approach. These urban nodes, or epicentres, and their infrastructural connections frame the 'hybrid territory' (McGee, 2009), where the traditional boundaries between city and countryside, formal and informal, culture and nature, are blurred into an amorphous in-between 'Body Space' (Shane, 2005). It is necessary to re-conceptualize the in-between space, understanding the physical and environmental characteristics of a local site to promote a quality of life for the inhabitants.

Figure 1. Urban Metabolism Scheme based on The Prism of Sustainability Model (MS Lab)



Urban metabolism (fig. 1) is an approach looking into the process of transformation, substitution, and maintenance of contemporary urban territories. Metabolism related to the metropolis means understanding the incremental goal of a metropolitan work according to the relations between cultural, energetic and productive investments, and re-configuring the urban system under the lens of sustainability. This implies considering the changes occurred to the typological and morphological paradigms of space and their impact both on private space and the variety of the public realm and how the old part, the new part, and the neglected part can be integrated as a whole. It is necessary to think about a new language of composition, which refuses direct references to a pseudo–picturesque historicism. Thus, the public realm requires the construction of a narration, through the Architecture, that is able to tell stories about who we are and what a city wants to be. The public realm introduces, above all, a symbolic dimension that brings the architectural project to the use of

formal archetypes, which are able to evoke a new meaning in the global culture. The new project is born, of course, from local scale but now it could transcend to the global scale. It also means to understand the various necessities, desires, contributions, and relationships of inhabitants and their prosperity. The vast possibilities of institutional structures to accommodate these physical, social, economic diversity sets the ethical axis of the transformation and is an important goal of the metabolism.

The architecture of the metropolis as spatial phenomenon and environmental question

While in Latin culture the keywords for urban discipline are scale and limit, the Anglo-Saxon urban keywords are scale and growth (without necessarily defining a measure). Often the Anglo-Saxon world has interpreted the Latin world according to the characterisation of its models (Pictorial) and not by its paradigm value. In defining contemporary urban models, the 20th century had three crucial moments:

- 1850 Paris: The theme of density. The attainment of the limits foreseen by the General Plan;
- 1911 Chicago Plan: the overcoming in one hundred years of the limits previewed and the consequent invention of an original type of settlement that comes from the urgency of exchange between the points no more tied by contiguity of fabric.
- After 1950: the discovery of the regional dimension. Hilberseimer said "on the side of the city" is no longer visible; later Lynch (1980) considered the regional dimension as a total environment made visible and Forman perceived as the landscape ecology.

Today, we return to Lynch ‘s question (1980): how can we come up with a new model of the city that, embracing the environmental issue, becomes part of a spatial phenomenon? We are interested in analysing the city as a spatial phenomenon, which integrates the natural element, necessary to obtain a model of sustainable development. Today, an investigation on ways of thinking about spaces that change, as a study of the urban paradigm over time that creates a series of mental and real where the highest scales imply the lowest scales, is necessary. We are developing the Metropolitan Cartography as a useful tool to define urban paradigms that are more complex, concerning the cultural theme of urban biography.

New metropolitan paradigm and metropolitan architecture

In 2005, D. G. Shane identified heterotopias as the new architectural bodies and urban morphotypes that articulating scales and determine original and self-generated configurations. They are the foundation of mental-map, a tool to mark how we live the city, now dotted with landmarks for the memory and communication at the metropolitan scale.

In the Middle Ages and Renaissance, the Roman villa or convent and palaces were the matrix of the city. The measures of the body regulated their dimensions because they commensurate with the temporality of daily life and thus the representation of the city was unitary. Since the rise of the “city of the car”, the representation is instead given by the integration of the landmark sequences. Today, the new big dimension is scaled according to a new way of offering and exchanging. According to Shane, in history, the development from one form of city to another brought some places called "heterotopias" with it, that is the "other space" or "the space of others", a new systematic organisation

of the codes of architectural practice, which defines the grammatical structure of the architectural language, fundamental for determining the image that inhabitants have of their city as Gandelsonas (1998) reminds us:

"The establishment of society can be seen as the establishment of order through conventions, or, more specifically, the establishment of a language through symbolic codes". At each stage of development, then, a period of chaos opens: "an infinite field of potential for the manipulation of the individual and collective spheres, from the verbal to the sexual", to which follows "the systematisation and institutionalisation of the rules in these domains, the manufacture of the rules, and an invention of social codes of a "language" of relations ".

The image, conveyed by the new urban signs, is therefore linked to the definition of a new structural paradigm, which regulates the leaps in scale, which are the reason before the change of city models. From the European and Italian city (from its maps and its scenes), we learn that the Architectural Image is not just a comment on the form, but is a constructive montage of three-dimensional images, not scenography, linked to an urban paradigm. The purpose of changing this paradigm, therefore, is always to produce a systematic organisation of the linguistic codes of architectural practice, to define several finite and stable forms, with their related meanings within a closed system, that is, to create a language of the Architecture of the metropolitan city today.

However, if in the history of architecture, it was possible to recognise a fully constituted language (orders and types) from which to draw in support of a grammatical structure, in modernism the linguistic organisation is in crisis. Since then, with each passage from one model to another, codes have changed, and a new symbolic organisation has been founded. In particular, in the passage from a city of faith to a city of machines (Lynch,1981), the body ceases to orient itself in the world through that network of symbols that has distributed space, time and the order of meaning in the past. Always in the past the functions have explained the origin of the signs, but they didn't say anything about their combination, through the logic of grammatical structure, neither of the architecture nor of the city.

The metropolitan paradigm has changed since the last century. Its purpose is a possible relationship (new mode of connection) and the reactivation of a tension between the historical centre and the periphery. The Metropolitan Architecture project is an agent capable of mediating and negotiating. It is about new metropolitan centralities linked to the old parts that change their role from being functional to being symbolical, conceiving the centre as the place where a tension is determined for the articulation of the metropolitan contexts with the new functions, and with the new actors that appear in the metropolitan arena in the search for quality of life.

Within a definition of the new metropolitan paradigm, having understood that the critical threshold of growth has been reached, it is a matter of producing the design of the metropolitan works that evolve the existing city paradigm at the scale of the Net-City (Shane, 2005) according to a new paradigm that must:

- strengthen citizens' personal-social actions (Right to the Lifestyle)
- be sustainable (Right to the Landscape/ Environmental Justice)
- accept a democratic principle (Right to the City/Social & Spatial Justice)

The skills we need to achieve this are:

- Competence regarding the historical-geographical situation of the area: a survey on the strong geographical support point for the living (Febvre,1922).
- Competence concerning the moments-events that establish the broad present, i.e. the biography of a city: how each culture has interpreted the role of the geographical situation (orography) as a constituent element of the city (Focillon, 1934).

Competence in choosing metabolic interventions of substitution necessary for the growth/ development of the settlement, whose current state has been produced by activating what has been preserved or invented in the territories of the past.

Architecture is not anymore the ground floor of the city for settlement orientation, with different layers, aimed at marking the differences between the set of landscapes that people had learned to recognise and live and, at the same time, had built them. In the past, in fact, it was just the architecture of the city, which allowed man to elaborate an anthropological image through geometric semantics of the city fabrics. The place known as living space was conceptualized through geometry and recognized, therefore, through its constructed forms. The Metropolitan Architecture has to follow first of all the principle of Continuity to the green-grey infrastructure defined by the Metro Matrix, that requires protecting the still free areas and the water system. Traditionally, we have to deal with the traditional idea of Permanences; Metropolitan Architecture, instead, deals with the idea of Durability. The Durability of a Metropolitan Architecture means maintaining, developing and transforming the relations with elements that define the metropolitan dimensions. The dynamic relations that change over time make the project permanent in the metropolitan structure. Contrary to the static monumental value of the past, the new public realm has an urban quality that deals with the complexity of the new functions linked to metropolitan dynamics, which is intimately linked to the question of identity of the local scale and its significance conveyed by the architectural image in the metropolitan scale. The intensity of time is fixed in the Metropolitan Architecture that is dynamic with durable values. Durability is the character and the aim of the long-term metropolitan project.

The possible locations of the different Metropolitan Architecture projects are selected through the Metropolitan Acupuncture Chart. That is a map that coordinates the Net-City Hinge Points by taking into considerations the structure of the metropolis and the needed projects stemming from the Metro-Matrix, the spatialisation of the metropolitan dynamics and of the local values.

Metropolitan architecture deciphers metropolitan dynamics

The metropolitan dynamics transform existing landscapes, infrastructure networks and city fabrics. The dynamics are processes of transformation of form and map of the urban field in a metropolitan scale. Growth through densification and investment of larger spatial fields change the value of the existing poles and settlement patterns, concerning the new metropolitan paradigm. For this reason, Metropolitan Architecture needs to protect the local value, and also be equipped with "sensitive" infrastructures so that they do not remain or are uprooted or "museumised".

For this reason, the essential architectural problem becomes that of the relationship between measure and scale. The terms of the relationship are the human body (measurement) and the inhabited field in its totality, the metropolitan unit. From a metric point of view, the measure of a man is, therefore, a relative invariant, and the scale of the city is a variant. On the other hand, this relative invariable, the measure changes in reality, if not in size, in value or sense. The change in value is the ability to commensurate, according to the variations of the urban field, its possibilities of action, now immeasurably increased by infrastructure. For this reason, nowadays, temporary measures prevail over spatial measures and the measures become more sensitive and sophisticated.

It is through metropolitan architecture that the entire city acquires a multiscale character. The continuity of the ground is articulated and segmented into relatively discontinuous fields based on the distance from the interchange poles; the metropolitan centralities are then communicating with even larger fields through interchange poles of a higher order. However, connected to the multi-scale and multi-function exchange poles, we immediately find local fields which are in turn made discontinuous by the metropolitan, regional and national infrastructures, yet adequate accessibility

in terms of time is ensured. That is how the net-city is born, which differs from the polycentric city because the interest is no longer on poles and actions of communication, but on the space that is now disjointed Body Spaces (Shane, 2005).

The physical phenomenon of removal of old (and disused) urban systems replaced by new urban morphotypes immediately involves the citizens who see their first field of life manipulated. The change, on the other hand, is made necessary by the specific contemporary way of switching between infrastructure networks and of linking them to existing urban tissues: in this way, local transformations and unprecedented impacts on urban or natural landscapes are produced.

The metropolitan experts need to make the decision related to the field of action of the metropolitan project following a set of determined principles. The principles are defining what the priority for the action is and allow the dialogue among different experts in the level of the value/principle that goes beyond the matter/issue. The main question here is: where do we have to intervene with a metropolitan project to make this system sustainable?

Metropolitan architecture project expresses shared values

Even at the basis of a metropolitan project there are values that are considered worthy of lasting. To produce this value (now linked to a sustainable project) what kind of key processes must we produce?

We have argued that the structural basis of the metropolitan project is the Green-Grey infrastructure. This new entity is not inhabited by individuals belonging to a multitude, but by people (reflective subjects) belonging to a society or a community.

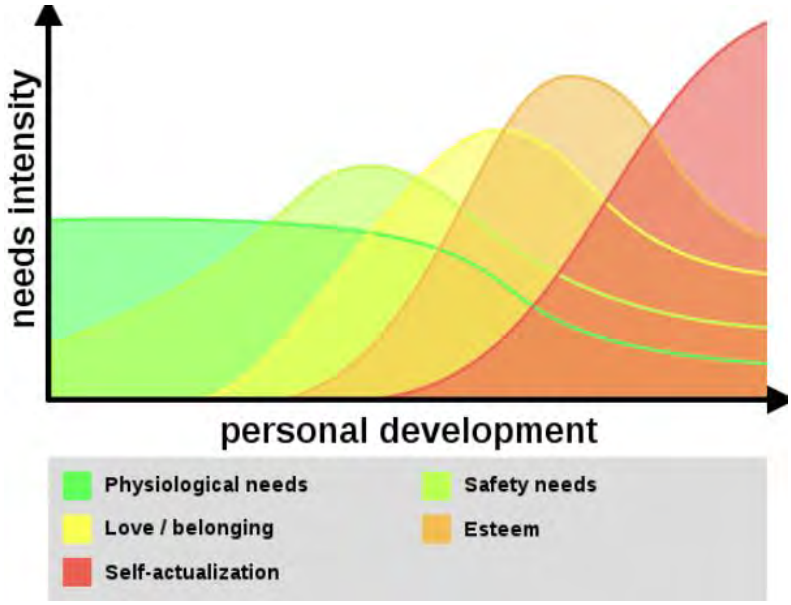
We are therefore talking about a space that can be appropriated by different subjects and a project that is not designed only for the individual. We can say that the community has a priority access requirement to be part of it, for example it is rooted in a particular place. While the society has an inclusive but exit requirement in the sense that it shares a common goal, an interest (which we could call "enthusiastic society").

The Green-Grey infrastructure space is an "agora space" or place of democracy par excellence. This means that for us, it must be designed as the place of cosmopolitan democracy that recognizes all human beings as bearers of rights and duties even if not legally “citizens” (compared to the legal framework of a nation).

If a public space today represents cosmopolitan citizenship as a body/person’s rights and duties, we have to explore in which way this space represents the body of people who by no civic law have "rights". The theme, so, is how the Feeling of Adeguacy (Lynch, 1960) can be achieved as a notion of cosmopolitan democracy through the Metropolitan Architecture Project, today.

The Metropolitan Architecture project is always a morphological invention but also a functional one. First, it integrates a function proper to the spatial characteristic of a space of transition (zone of contact and permeability), and later other functions open to negotiation and appropriation of different citizenships will be integrated: places of know-how, learning, service able to determine the landscape citizenship (Wall, 2019) that incorporates the right to the landscape, the right to the city, and to the life style. It is interesting to refer to Maslow's pyramid of needs (1943) according to which the reflective subject does not necessarily have to express itself in every single function; there is a transition zone that contains different levels of awareness.

Figure 2. Personal development and needs intensity



The metropolitan citizens shared a civic space. What is a civic space today? Civic for whom? Who does it represent? We think that this notion should be based on an "affective notion" of civic space rather than a code or a prescription. What we are talking about is a "feeling of civic space".

It must be robust and flexible. Not because it can be modified but to allow the probable appropriation of different identities; it must have a vivid but not exclusive image, so to be representative of a multiple metropolitan identity. It is above all a "used" place and for this reason, it becomes part of an urban imaginary and becomes representative for multiple populations more recognisable as hybrid community, rather than as a society. For this aim, it must have qualities, that is, it must express the properties that identify a shared value for that community. This shared value represents the people's awareness related to the notion of the qualifying and qualified aspects of the reality of the metropolis. I note that there is a substantial difference between the word quality and the word requirement. Requirements are qualities necessary and required for a purpose, to satisfy a program. Programs require requirements; we instead are thinking in terms of the tonality of the quality of space (Eco,1962). Lynch (1960), too, when talking about the image, foreshadowed a possibility like this. For him, the image of a civic space had to be: vivid, open and plastic.

In the transition space determined by the Green-Grey infrastructure we will have spaces that will meet requirements functional and specific. Particularly in the central location of the Linkage Urban-Rural, we must instead identify pure qualities and then it will be the subject who will determine from time-to-time which requirements the qualities can meet: for example, the requirement of quality to be located in relation to the city must to have environmental qualities that meet the requirement of environmental comfort, etc.

This civic space is similar to an ecotone in the sense of the architectural and urban disciplines: it must express the different tones of the quality of metropolitan living. We are imagining a living space that is hyperconnected, but for this reason it must not erase the characteristics of the place that root it in a precise place in geography. In this space the metropolitan citizens will land with the whole body and all their senses that will produce a total image by integrating itself.

The new built form types and new land uses

The perspective within which it is desirable to act in the planning of a new metro system, is the one that aims to redesign overall a connection and mobility armature structured through a pattern that integrates the new multifunctional type with its field of action (1Kmx1Km), and that combines, as part of the building type, also the grey and the green armature. We are talking about an exchange pole and its exchange district, therefore, a city system, which re-conceptualised the areas that today are "peripheral" in relation to large flows, aiming to widening the city's development scenario. The main objectives are:

- to redefine the development policies of the territories thinking to a "geographical" positioning of the New Morph-Types that we could call "genetic";
- to integrate the strategies of the different municipalities involved in terms of strengthening and proximity policies;
- to create an integrated and shared system in which, the new metropolitan plans and their territorial reference systems, represent an opportunity to give new impetus to epicentric and reticular development, through the strengthening of connections between large infrastructure networks, city fabrics, and landscapes. The aim is to connect the entire metropolitan systems, also through the connectivity of intangible networks (ICT) connected to local territorial armatures;
- to identify the network of interests, capable of feeding the project partnership necessary for territorial performances;
- to identify actions to mitigate negative impacts and to enhance/promote positive impacts (vulnerability and potential) in a sustainable and compensatory perspective.

The most interesting aspects are therefore the synergies that can be established between tangible and intangible infrastructures and, above all, the creation of a global system for the design of urban facilities, based on the integration of green and grey infrastructure; the management and control of flows of goods and people along multi-modal corridors and interchange nodes; the conceptualisation of those territories that are today defined as linkages between urban and rural areas. They were before considered peripheral but today, instead, they are nuclei of new morph-typological inventions, capable of introducing a "contagion effect" for the development of metropolitan regions.

This is a vision of the development of the metropolitan region, which can be implemented primarily through the identification of a shared "model" of development and governance of metropolitan facilities, not only starting from a functional chain. It is fundamental, so, to identify the geographical support points of penetration into the territory (Febvre, 1922), in relation to an urban biography. These are deep planning elements that lead to the identification of some intermodal nodes or epicentres of the Net-City, to be designed in relation to the green-grey infrastructure of the territory, whose continuity must be safeguarded. This is only possible, however, if the strengthening of the connections between the new polarities and the agricultural and natural territory; the development of an extensive and sustainable network of logistic centres and structures and services; and the strengthening of the interconnections of renewable energy networks and communications are implemented.

Three key concepts must now be introduced:

- the attractiveness of Metropolitan Regions that have as a necessary premise, a metabolically sustainable growth, a sophisticated product of quality research, production and management regarding the preservation and enhancement of pre-existing identity, natural and anthropic features;

- the sustainable metabolic development, as a complex of the social vitality of the entire community, and not only as an energy balance. Development, in short, is sustainable only if it is determined by a potential stimulus for improvement, for the attractiveness of today's multipolar metro system;
- urban metabolism, which concerns the system of production and reproduction that growing, to produce, necessarily consumes, but also re-produces. It is essential, therefore, that in the relationship between cultural, energy and productive investment, there is always an understanding of the incremental goal not only for private investment, but also and above all for common and public investment.

New types of buildings, land use units and/or landscape types. A communication problem

A research that concerns the new types of Metropolitan Architecture intended as units of land use and/or types of landscape studied in relation to a metropolitan paradigm, must also give a definition of its meaning and of its scopes, that is, a precise definition of its size and bigness, linked to its recognisable image and a possible determination of mental map at the scale of the metropolitan city. Our starting question is whether these are structures or genetic New Morph-Types capable of changing the face of the territory and the metropolitan city, in other words, capable of putting the new spatial, decisional and relational structure in coexistence at the scale of globalization and the value of a coherent local claim. This phenomenon, identifiable in economic and spatial growth, is linked to the evolution of technologies, to be utilized toward the analysis of the impact between economic growth and territory.

The method of analysis adopted is based on the study of the impact of large public works on the consolidated historical fabric; the impact on the environment and landscapes of Hybrid Buildings (Fenton, 1985), as an element of social aggregation and as a way of transforming abandoned industrial areas; and on the definition of new mediating landscapes between urban and rural areas able to take advantage of the advanced services of the city, allowing metropolitan citizens to choose an alternative lifestyle.

A purely functionalist and quantitative vision does not allow to evaluate the added value of new building types that we call "urban morphotypes", such as place/icon, landmarks, inner landscape and new land uses. In particular, the very close relationship between the character of icon, landmark and interior landscape and the space of flows and communication that characterizes the public space of today's city is not understood, and the relationships to the scale of networks, and to that of speed, with the mental maps of citizens, while they plan their routes or trips that connect the places of their lives to all the places in the world, which they visit more easily than in the past.

The debate on new metropolitan typologies is flattened by the dispute over environmental impact and the skyline of cities, while the environment and the territory are always considered only prey to the aggressiveness inherent in any large-scale work.

This results in the project of a building that is only a pure an envelope rather than a development project over the entire metropolitan area involved, since a value of mutual benefit between the resident inhabitants and the new metropolitan communities is never tested. Only through their reciprocity is it possible to activate changes in customs, ways of life and use of the city. In the process that urban transformations stimulate, through the comparison and contrast of the local spatial character with other places, often known through the new means of communication (television and internet above all), citizens lose the unconscious identification with their neighbourhood, in its social and spatial sense, to assume a new and enlarged one. That fact, sometimes, is considerated by the local inhabitants as a risk of alienation.

Denotative image of an urban identity and mental map

It emerges the need to define a new project at metropolitan scale - as a mark of local space that can be perceived as a sign of mental maps, linked to the dimension of the metropolitan city - closely associated to the local identity. For some power groups, in fact, the search for recognition and identification with the local space through identity images is increasingly strong. But this need for recognisability and belonging to places is now also a need for the new multiple citizenships, coming from elsewhere and no longer linked to local origins and ethnic groups, which presuppose belonging and "proximity" of another type, which don't have any contiguity with the city fabric and in which the mediations of urban forms play a fundamental role. Citizenships that have a twofold need: on the one hand, to dislocate in space at very high speeds; on the other, to relocate, slowing down movement times and assuming a "1-to-1 relationship" with spatiality. In the analysis and interpretation of the new metropolitan realisations the following question arises: how to "welcome" these new citizenships?

One of the most interesting aspects that concerns the project of the new metropolitan types is the one that recovers the theme of the value of the denotative image of an urban identity, as a rule of constitution of the mental map of the diffused city. The project of new types of Metropolitan Architecture concerns, in fact, an articulation of identity through the constitution of an identity image for the different spaces that compose them: space of the crowd, of proximity and expectation, of circulation (Choay, 2004), studied both from the functional, dimensional and distributive point of view, and from the point of view of an expressive image of the quality and identity of the metropolitan space. This is the ideal outcome of Milanese culture in architectural and urban design.

The value of image also allows to recognise and dislocate in mind, in an inner path, places/icon in order to be able to constitute, even at the scale of the networks, that is the scale of speed, a mental map to support a topographic map that must manage the paths that connect each place of one's life to all the others.

New built form types

We can define the New Built Form Types, to be analysed as landmarks and interior landscapes in many ways: as producers of increase in the size of cities to the limits of the paradigm shift; as producers of artificial proximity between remotenesses; as openings of local proximity to remoteness; as urban regenerators through local transformations; as producers of wealth; as producers of alterations in historical or traditional forms; as producers of mutations in urban functioning and identity image; as opportunities for the design of new units of land use and/or landscape types and, therefore, as points of support for the functioning of geographical areas or as formations that integrate mutually combined urban forms and building types.

If we want to understand the meaning of these metropolitan projects for the city, let's pose the problem of a relevance to the re-identification of the different actors of the city itself, through the design of new types of metropolitan morphologies. This, knowing that a new metropolitan landscape is only possible through a project able to give impulse to the transformation of places, by means of a new way of transforming geography, orography and landscapes, which are fundamental elements to be able to recognize and enhance an identity character. It is the theme of urban quality that is linked to the complexity of functions, intimately connected to the question of identity and the signification of the image.

Today, the New Built Form Type is understood as an element that forces the typology to hybridize. Colin Rowe, (Rowe,1976), when he introduced the theme of the Chicago skyscraper frame,

distinguished the pragmatic approach to technology, typical of the American mentality, from the more compositional and symbolic one of European matrix. And (Fenton,1985) introduced the theme of the skyscraper as a hybrid building opening up to the historical dimension of American architecture, which mainly meant bigness: the new size of the buildings on the New York General Plan in 1811. Since then, the skyscraper as a symbol of the new metropolitan typologies has become a point of view on the city, which provokes a wonderful feeling of relation with respect to it, where a vertical city looks from above the horizontal one for a few miles and thus allows the ability to see and grasp it easily as if it were all a symbol. The skyscraper is not only a tall house, but an infrastructural hub, a symbol of real estate development, but above all, a powerful pop image, offering the pleasure of a familiarity with a new, complex and varied world, on a new and immeasurable scale. Pelli's Unicredit Tower in Milan and Renzo Piano's Shard in London are the contemporary heirs to these early 20th century visions.

The theme is the ability of the new metropolitan types to constitute an element of recognizability and identification for places, both macroscopically, as containers settled in landscapes and relative territories, and microscopically, as distinct sites within urban–rural patterns, buildings and urban interiors, new horizons of the intimate life of metropolitan citizens, - the monument for the Choay (1972). In this perspective, in the new containers or urban morph-types, the relationship with space passes through a representation of the world that today is enriched by a dilated sensorial perception, by new relationships between changing social groups, and by new possibilities of interpersonal relationships. This explains the birth of a new "globalizing" aesthetic intention, which characterizes the new projects. It is unquestionable, in fact, that the media (especially television) attribute to places a recognizability that acquires an extraordinary iconic typification.

The predominance today is that of the image of immediate decipherability, surprising at times, because those who frequent it must be placed in a state of recreation, understood as a condition of free exercise of human faculties, not forced or inhibited by an exclusive and conditioning purpose. The image, related to the deep structure of the city, must be thought of in such a way that everyone can immediately read and use it. It can be demonstrated that the interaction between deep, structural, original communication and information communication in the space of today's flows is determined by an elevation in the complexity of identification and recognition of the local in the global, which the project must communicate in the simplest and most immediate way.

The determination of new typologies character put into practice in the spatial form and figure is what on the one hand, extends common sense, and on the other, must be studied as a priority. The main theme for a designer of Metropolitan Architecture, then, becomes the study of the ways in which a new identity figure can be inscribed in the mental map.

The new scale and new types of space

The relationship between housing and urban universe passes between a multitude of places/function and places/icon at the scale of metropolitan region, the metropolitan city or the city district which refer to each other according to the scale value they imply, and according to which the new ways of proximity/closeness, crowd/spectacle, circulation/communication, connection/practice of the places of the world must be studied.

There are two types of spaces: the space of places (local economy) and the space of flow (which is part of the global economy (Castell,2004). This second type concerns the terminals of large infrastructures and the whole system of support around them: regional shopping centres, trade centres, technopolis, tourist destinations, stadiums, etc. It is in this space that we encounter buildings with new sizes and types and also the new hollow metropolitan skyscrapers.

These are the places/icon that belong to the sphere of Public Realm as a space of flows. There are three categories according to which reading and designing them, according to Reeve and Simmonds

(2000): as Information System/Communication Space; as Movie Set; and as a new Appearance Space.

In this sense, the theme to be addressed concerns the recognizability of a place in relation to an "infinity" of places to be recognized, and implicated in everyday life, starting from the housing itself; and in particular, it will be necessary, for each project, to verify the way in which it contains and relates to each other the various areas of scale, which constitute today's urban horizon.

Inner landscapes. Internal structure not pure visibility

These new types must be studied first of all as tonalities of indoor landscapes, before they have a specific function.

Reading the theme of the icon regarding to these constitutive modes of indoor landscapes, allows us to think of spaces and their identity images from the point of view of their internal structure, in the sense of their relevance to a function and not only in relation to the theme of visibility and functionality. In fact, the icon has visual value, but it has no in relation with the body engagement, and is never localized. The real problem, therefore, is how the thing (name-icon) is localized (relationships that it instructs in space), when the habitability that an urban situation of immeasurable dimensions requires is different. The project at the scale of the metropolis is intended as capable of re-describing a place and re-proposing the invention of a new topography. It is in this way that the landscape becomes projectable; we pass from nature to design, but then, necessarily, also vice versa. The culture of the environment must, therefore, refer to new urban elements and must rethink what is the legacy of the local identity in the perspective of a coherent claim. The theme is, at the metropolitan scale, identity and yet growth.

The narrative structure of the agro-urban metropolitan territory

To understand the metropolitan issues, the relations of various types of space and nature are managed by metropolitan mapping that is constantly updated. In the contemporary urban narrative, especially from the governance perspective, there is a lack of storytelling, to establish a new physical metropolitan paradigm and discourse. To introduce the metropolitan hybrid urban-rural linkage to the new metropolitan populations, requires a process of building a narrative of the territorial identity and citizenship, through a powerful metaphor. The figure of the urban-rural linkage represents the transitional space between the urban and the rural areas (Contin, Sbacchi, 2008): It is an ecotone where the different set of landscapes with different tonalities coexist. It is, therefore, the location of “the catastrophic discontinuity and change” (Thom, 1989) that allows various types of inclusions and exclusions. It is a territorial suture that constrains us taking a critical distance from the traditional tools of architecture and urban discipline. The goal of a metropolitan project is to define a space with collective and public dimensions through the new hybrid urban forms that are public, common, entertaining, or productive. In order to build this gradient of metropolitan space and define its functional and symbolic values and forms, it is necessary to develop new syntax and grammar for the design (Contin, 2016). To understand how to do this, we can refer to the stories of the twentieth-century cities. The anguish story of a huge city, the dissolution of the "magical place” (Weber, 1980). demonstrates the hope of establishing a different kind of citizens with new behaviours by providing a new dimension of welfare through modern forms.

From these experiences, we can learn that it is essential to give meaning to the shape of a city. It means to represent the intention of urban design through images and feelings that complement it. Today, this specifically refers to the invention of a dominant metropolitan figure, that is a new geometry tied to geography, water, topography and new social practices. This allows us to read the territory with new types of maps that are local, yet addressing the metropolitan scale context: The maps support us to practice in places that are far away, through recognizable nodes that express the will of meeting the “differences.” They are the critical tools that are necessary, especially when dealing with the abandoned historic centres in medium-sized cities and planning of public open spaces.

Metropolitan architecture and new land uses. The role of the new agriculture pattern

Lynch (Lynch, 1960) wrote about physical and activity patterns, trying to investigate if it is possible to explore how activity pattern and physical pattern interact. Patterns in a coherent way produce the legibility of the cityscape and nowadays of the metroscape. In Metropolitan Architecture projects there are formal and functional patterns, which describe the structural ground of the metropolitan digit – field of action of the intervention-, and which describe spaces for various activities. Besides, other patterns describe the transformations of the form during the time.

Returning to the topic of the urban-rural linkage, today, it is mandatory that agriculture plays a dual role in the metropolitan context: addressing the importance of nutrition promoting citizens’ wellbeing, and creating the renewed signs of affective domesticity. The agricultural area has an advantage over the urban area when talking about a place where there is a strong connection with collective memory. Nowadays, the agricultural area goes through a mediated transformation that is participatory and engaging. The transformation finds the balance between conservation and transformation to respect what was already living in the territory while planning for the future. The agricultural field is a powerful symbolic place for transformation that provides a positive horizon for future life. On the contrary, the city goes through conflicts of transformation and eventually "loses its charm", as described by Deleuze (1968) and Max Weber (1980).

The strength of the agricultural space comes from the section of the landscape: from the strong image of the tectonic of earth that expresses the energy leading to the creation of “objects" and places with a strong identity. The projects of agricultural spaces that are linked to the hybrid territory of the metropolitan urban-rural linkage become one of the realised imagined territories of the metropolitan narrative and the metropolitan value communication, which replace the virtual images of territories distributed almost entirely, by the cinema, the television, and information. Today in the urban-rural linkage territories, citizens become “farmers by choice”. The agricultural territory bridges any critical distance and embraces the reality and its image that is related to a new modern futuristic landscape. It is the physical structure of a new metropolitan reality.

It is necessary to introduce this urban-rural linkage patterns to the new metropolitan populations through stories of inventive imaginations. This can happen in the fringe areas of large conurbations or in the medium-sized cities network, which is the fields of action for heterogeneous multiple elements that are not only related to the measure of size but also in the deep structure of geography. These places are characterised by their distance from the city centre (order of distance), not by an order of magnitude, and they cannot be explored unless the stories are experienced physically on site. The Metropolitan Architecture project deals with the definition of the Urban–Rural linkage pattern, its figure and images, and its sustainable land use requirements, in particular, related to the water management.

Metropolitan architecture issue critic readings

The Metropolitan Architecture project can get a meaning such as a social work that it enhances. The Metropolitan Architecture project, in fact, is a social work that involves the history and the geography of a place establishing a discontinuity within the continuous relation with the collective memory of a territory.

According to Secchi (Secchi, 1986), a good map as an origin for the metropolitan project has to concern a ground project. Ground project means that we have to consider the definition of the characters of the surface where the buildings, related to the metropolitan architecture project, will be rooted. In the urban studies history, this act was ever the first act of construction: from the “centuriazione” such as the foundation of a city, to the transformation of the existing one.

We can describe three tendencies regarding this issue nowadays. The first one, sucks the ground and its functions and meanings inside the building: a huge condenser of images, functions and relations; the second, reduces the ground such as a podium for technical element devoted to fluxes; and the last one, considers the ground due to its physical extension, and economic value. To Secchi, instead, a ground project must take care of the history and the geography of a place: traces of these have to be signed on the map.

Metropolitan architecture within metropolitan landscape

Due to the Bigness issue, - spatial extension and temporal acceleration -, a specific equipment of techniques for structuring and intervening at big scale, related to a formal definition, is needed. Landscape at this scale is a possible material for Metropolitan Architecture too, that gets a new and vast meaning. In the past, the Baroque Architecture used the landscape such as a constructive material for the Baroque city: nature was a dialectic element in relation to the production of buildings; not a background only.

According to Gregotti (1966), in fact, the environmental question not only concerns a biggest set of problems but rather different problems.

If it is so, the territory of the Practice of Metropolitan Architecture discipline becomes more extended dealing with environmental sets at the all scales. An audit of the architecture discipline is mandatory, that allows considering architecture such as a work on the transformation at the metropolitan scale too.

The Practice of Metropolitan Architecture discipline, in fact, must deal with the specialization of the different methodology related to the form issue at different scales. The Practice of Metropolitan Architecture Discipline, consequently, founds a technology for the form of the metropolitan anthropic -geographical landscape (Gregotti, 1966). According to Gregotti, Metropolitan Architecture also is such as the technical description and related project of the “surrounding”, so that, a synthetic way to define a place constitute by built and natural environment together, related today to the scale of bigness (cfr. Focillon (1934), La vie des formes: Physiologic Landscape of Art concept).

Metropolitan architecture to shape a robust metropolitan civic image

Nevertheless, Landscape is not only a productive process but also a meaningful element for a bigger scale city project per se. It produces the quality of the figure of a specific landscape, so that, its identity (Lynch, 1960). Metropolitan Architecture, in fact, applied to the landscape issue is not only a technical language for a little group of technicians, and a deeply poor language, but also, it is such as a linguistic corpus, - within its syntax, grammar and vocabulary -, coincident with the total physical ambient got visible. That is the reason why landscape works such as signs marked into the ground by human beings (their values and ideas) will be forever the shape of the collective memory of a specific social group.

According to Secchi's Project of the Ground (1986) and Paola Viganò's Discovery of the empty space (2012) such as a project related to the space in between and its sequences, which allow new ways of land uses. Viganò argues that the term Landscape Urbanism originally means that the urban space is made of landscape, because it is built with landscape's materials. First of all, in fact, we have to deal with the non-built space where urbanity diffuse and fragmented does exist, in which the landscape has an important part. This context, indeed, requires rethinking the materials and techniques of the project.

A new Metropolitan Landscape, - its structure and imageability-, so is needed and this issue involves a sensitive reshaping of an already existing environment too (Lynch, 1960): natural and built. Nowadays the exclusive technology approach to landscape reduces the local value of the characters of a place, due to the fact that, - according to that vision -, they are more and more connected to supra-local economies, and the progressive globalization of the system of values considers nature and cultures a heritage to make money out of it (Gregotti, 1966). Although, the metropolitan dimension, - considering the metropolitan continuity of eco-armatures and their articulation with the grey infrastructures through a Metropolitan Architecture project-, can be the engine for the construction of a new relational non-static identity, that revaluates the local characters of a place but connecting them to the net of the cities of the world. Frampton promoted an interaction between the "wet" landscape place-form and the "dry" rationally assembled product-form.

Besides, for Lynch the manipulation of the world, - and we would like to remind Secchi speaking about the modification of the existing territory and cities through a project of the ground not ordinary, reductive, technic and inarticulate (Secchi, 1986) -, it is possible for sensuous and so that, for strengthening a robust public image at strategic points. He proposes to introduce inside the analysis and proposal of the Urban Design a visual plan whom final objective is not the physical shaping and reshaping itself but the quality of the image in the mind. For us the quality of the image reveals the quality of dwelling that is the principal aim of the Metropolitan Architecture. According to Lynch, we consider that the human modification must be done with an awareness of the interconnectedness and yet the individuality of both: natural resources and human purposes (Lynch, 1960).

At the metropolitan scale, the need to recognize and pattern the surroundings is crucial too (Lynch, Gregotti). A clear image enables us to move easily and quickly, and it is able to furnish the "raw material for the symbols and collective memories of group communication" (Lynch, 1960). Lynch wrote about the chance to pin together the images at different level of organization in complex environments through landmarks to avoid an extra burden of organization on the observer (Lynch, 1960). This issue reminds Secchi's observation (Secchi, 1986) about the need of articulation of the different collective and private spaces, or among infrastructural net's elements, or among different types of infrastructural elements and built form types. To Secchi, the descriptive rules of possible articulations hint at city dispositive rules. This is the role of the type-morphological value for the metropolitan discipline: to analyse the articulation between the metropolitan elements (in the

complex environment) aiming to a local qualification through a selected solution among a plurality of possible uses and meanings.

In short, we need to pin images (the memorable ones) to the ground to be able to see the hidden forms in the vast sprawl of our city (Lynch, 1960). So that, we need a coherent order, - such as an antecedent form – ordering this complex environment.

Bernardo Secchi (Secchi, 1986) argues that we have to take into consideration the different parts of a city and its territory, so that, their differences and specificities. But it is not only a need of documental classification. The aim of that analysis, in fact, is to recognize the generative processes or the system of relations, which have produced these differences. The perceptual characters of the parts, which reveal their morphological features, are relevant to describe generative processes. At the end, to Secchi we have to mark the leaps in scale to enlighten the different spatial levels articulation; this is the Metropolitan Architecture's aim. And this is exactly the Metro-Matrix model's aim (Ortiz, 2014): to provide the need of a formal ordering to make perceptually manifest the conceptual essence of a new built form type through a Metropolitan Acupuncture Chart.

The antecedent form of any Metropolitan Architecture project is geography as the structural holder point for the shape of a territory. According to Gregotti (Gregotti, 1966), therefore, geography structures landscape, in which we can find an esthetical will. Our perception, so that, gets the awareness of the figural quality of a landscape as a footprint of a specific identity of a place, that nowadays can be conceived such as a formal type of image into which we can divide the metropolitan image, - Set of Landscape or Section of Landscape (Lynch, 1960, Smithson,1968). As we know, according the Matrix model, the shape of the metropolis is a green/grey structure. So that, we do not only have path, landmark, edge, node and district but Green-Grey infrastructure too. The Metropolitan Architecture so is perceived such as a total environment.

Geography within Metropolitan Architecture can be considered as a whole project, which controls the process of continuous substitution of the environment, determinate by production activity: geography, so that, must be continuously invented again in a sustainable way (Gregotti, 1966). Although, our cultural experience as metropolitan territory users continuously found geography again. Metropolitan Architecture contributes to the definition of the metropolis' great figure and image: landscape is a whole and we have to discuss about the formal structure of architecture at all the scale.

Memorable landmarks

Memorable landmarks, remarkable objects in term of their setting in the whole are the Metropolitan Architecture projects able to pin images to the territory defining its mental map. This is the reason way, according to Eisenman (Eisenman,1963), the individual expression cannot prejudice to the comprehensibility of the environment as a whole, so a general system of priorities must be proposed, that only can legitimise individual expression. The individual building cannot be regarded as an isolated entity, as an end in itself, but merely as a transitional element in the establishment of the whole. It may still assume an ideal state in itself, but only within the limitations imposed by envisage future order. Any notion of future order would be open to the criticism that it is romantic-utopian. Is it possible to say that the fabric is a network, an urban fields network, and that the monument is no longer bounded to a type in particular and that it still is able to go beyond time limits? In short, we would like to consider the metropolitan monument such as an architectural subject able to re-activate a geographical dimension, able to act so, as an interpreter of the geographical dimension, and that is not only the object of a documentary preservation. The quality of an object, according to Lynch, that might be called imageability, gives it a high probability of evoking a strong image in any given observer. The object, so, is into the environment and builds it due to the fact that it is the shape,

colour, arrangement which facilitates the making of vivid identified, powerfully structured highly useful mental images of the environment itself. The total landscape gets visible.

Frampton, in *Megaform as urban landscape*, (1999) introduced the Megaform idea as an urban nexus set within the "spaceendlessness" of the megalopolis. Megaform (and not megastructure!) is a "unifying environmental trope" that "tends to blur in different ways the conventional differentiation between architecture and landscape". To Frampton the project of ground is done through canals, railways cuttings, autoroutes, dykes and other artificial earthworks which all have "the potential of gathering up the contingent landscape around them by virtue of their anthrogeographic status, so much so that they may at some juncture appear to merge with the ground or alternatively to become, through their topographic presence, the status of being a landmark" (Frampton, 1999). A seminal attribute of the megaform is, according to Frampton its quintessential horizontality, - civic microcosms, space of public/human appearance, the cultural and the political together, within the universal ever-expanding context of Webber's non-place urban realm (Frampton, 1999) -, which is integrated as much as possible with the site on which it sits (Frampton, 2010). Frampton then, lists some piecemeal strategies for development or modification of urban form that already exist: piece urbaine; catalytic form of urban intervention using large roof forms as devices for creating identifiable urban place-form; urban acupuncture, catalytic small-scale interventions.

All these three strategies converge about the concept of urban megaform involving, Frampton wrote, the creation of a largely horizontal fabric capable of effecting a local transformation in the megalopolitan landscape (Frampton, 2000).

The Frampton's megaform "may come into being quite different scales and assume a distinctly different place-creating potential depending not only on the scale but also on programmatic complexity of the form in each case […] it has the capacity of providing a public domain in what is otherwise a totally privatized, processual and largely placeless environment […] It may possess a catalytic potential".

At the end, Frampton's primary principle of architectural autonomy resides in "the tectonic rather than the scenographic: the revealed ligaments of the construction and in the way in which the syntactical form of the structure explicitly resists the action of gravity […] tectonic is not be confused with the purely technical […] we speak of the presentation of a structural poetic rather than the re-presentation of a façade […] readdressing the tactile range of human perceptions, so that, the capacity of the body to read the environment in terms other than those of sight alone." (Frampton, 1983).

New built form types. bigness = urbanism vs. architecture

According to (Koolhaas, 1995) I would like to extract some keywords related to the qualities of new metropolitan built form types:

- complex interactions; choice and clarification of objectives and values; a creative task of imagining;
- figure need/significant urban form/ project of the ground;
- cultural precept/ "place" creation / public-human appearance, the cultural and the political together / creation of a micro-cosmos;
- general greening strategy /the cultivation of landscape;
- integration as much as possible with the site;

- largely horizontal fabric capable of effecting a local transformation in the megalopolitan landscape;
- programmatic complexity of the form in each case;
- catalytic potential tectonic.

If we agree that these are some of the characteristics of the new Metropolitan Architecture, we cannot accept the Frampton's assumption in favour of a rear-guard position of Architecture in opposition to the avant-garde modern architecture tradition. The Italian contribution to the architectonical culture, in fact, is an approach that gets the context's new conditions meanings promoting always new conceptual categorises such as in the Futurism's avant-garde tradition. This is radically in opposition to the idea of Architecture as post-production of the Industrial Design high-tech production approach.

The Metropolitan Discipline approach tries to define what is the meaning of a project of Metropolitan Architecture. It is a huge project, - it occupies at least one kilometre for one kilometre -, it is inlayed into the context, though, it creates the context, due to the fact that it is able to select the durable values among the territory's elements activating or re-activating their possible permanent relations. This is on-going process not a master plan.

Discontinuity into the continuity of the tradition

We'd rather say that the metropolitan new identity is a hybrid one, due to the fact that we must integrate the past into this new dimension too; this fact is crucial getting what we define a qualified dwelling dimension, so that a sign of new metropolitan life styles and citizenships marked on the ground (constructed ground, project of the ground) by the Lynch's landmarks. These are characterised by a vivid and sensual image, a memorable one and are objects of desire. That physical consistency of the modern hybrid spaces and mostly the environmental question determine the need of completely different procedures of analysis, interpretation and project.

Grahame Shane (Shane, 2005) in Recombinant Urbanism: Conceptual Modeling in Architecture, Urban Design and City Theory defined deeply the enclave concept introducing the three models of Heterotopias. Shane 'd rather prefer to name the Metropolitan Architecture projects Heterotopias than Landmark, so that, they are architectonic subjects such as the Fenton 's Hybrid Building (Fenton, 1985).

In Small, Medium, Large, Extra-Large (1995) Koolhaas argued that beyond a certain scale, architecture acquires the properties of Bigness. In Delirious New York (Koolhaas,1978) he theorized a latent "Theory of Bigness" based on five theorems.

According to Bigness concept, beyond a certain critical mass, a building becomes a Big Building that cannot be controlled by a single architectural gesture, but by a team of different disciplines experts. Depending of this, and due to the fact that new buildings' impact is independent of their quality, Koolhaas considered that the traditional art of architecture discipline composition did not work anymore and even the city changed.

For him, Bigness coexists within the classical city, in fact the relationship that it determines is "in the quantity and complexity of facilities it offers, due to the fact Bigness is itself urban". So that, Bigness no longer needs the city, but rather competes and represents it overwhelming the nowadays-meaningless architecture. Though, Bigness allows a new concept of architecture: a hyper-architecture in an after-architectural landscape, "a world scraped of architecture in the way Richter's paintings are scraped of paint". According to Koolhaas "only Bigness can sustain a promiscuous

proliferation of events in a single container. It develops strategies to organize both their independence and interdependence within a larger entity in a symbiosis that exacerbates rather than compromises specificity".

Anyway, beyond the Koolhaas' Manifesto force, we must take into consideration the Bigness multi-scalar cross-reference: among global, regional and local dimensions. To understand how to pass from one scale to another, we have to define different scale maps from 1:50.000 to 1:5.000, to 1:500 until 1:50 sometimes. We must consider their synergy, so that, the relationship among the four essential relational levels of the nowadays net-city:

- the interaction among intercontinental metropolis;
- the metropolitan one among regional different places;
- the urban relation between centres and peripheries;
- the collaboration inside the neighbourhood.

The control of these relationships and collaborations cannot be defined by totalitarian plans such as Brasilia and Tokyo, above all, due to the widespread diffusion of the web. It is mandatory, instead, to harmonize the urban development phenomena emerged in the last decades: we have to reconsider the modern spontaneous settlements, - showed by Venturi (1972) -, for example, we must re-examine Las Vegas as a spontaneous city antithetic to the age of Nolli's Enlightenment city or such as a rationalization of the medieval city too. I mean that it is mandatory to conceive the sprawl from that point of view including it into the new difficult metropolitan whole again. Meantime, providing a counterweight for the dominance of the sprawl rules, we need to find a new coexistence between portions of old and new city fabrics and the hyper planning of the infrastructural nets: the transportation and communication networks which work in real time (a-topic proximity).

We can recognize the strategic value of the metropolitan multi-scales hinge point, recognized through the Metro Matrix model (Ortiz,2014), a new network centrality such as a global-network hub where all the other nets converge too: so that, defining a strategy for the synergy between the telematics nets (Meta-city, Shane, 2005) and the transportation ones.

Metropolitan Architecture project, so, is dealing with the metropolitan epicentres, which, coordinated within the historical ones, have to provide the new public spaces necessary for the social metropolitan life equilibrium (wet and dry synergy). That is why is mandatory to read again the urban historical- theoretical literature in light of the fact that it can be a way to react to the fast growing and placeless metropolitan phenomenology of the last years, starting from the Frampton's mega-forms thesis and the new types of differentiated containers: tower, high rising building, row building trying to find the necessary connection between roof and earth works that today are not only structural ones. We can argue that basement and garden roof of new built form types constitute new ground levels of the metropolitan public realm.

Although, it is crucial to consider the Fenton and the Steven Hall's thesis related to the Metropolitan Architecture hybrid types compared with the Foucault's Heterotopias that Shane considers from the urban design point of view, such as new built form types able to interpret the metropolitan citizenships life style.

Anyway, we think that we do not have to leave the classical type-morphological formulation that considers the relation between typology and urban morphology, due to the fact the so-called hybridization is realized through the graft in the new differentiated container of "organs" characteristic of the urban morphology, conveniently scaled, miniaturized and transformed, integrating different building typologies. To conclude, the new built form types, - that we named mega-form, heterotopia, container, new urban morph-type -, are defined through four original characters:

a) the mega-form container as built. Its technical structure coordinates both the huge earth works and the roof works light of heavy;

b) the mega-form container ‘s image that impacts on the skyline. The new built form type’s image, indeed, identifies the building inside the city. So that, it becomes a city-icon able to characterized it, a new metropolitan brand that identifies the city dominant function. It is a land-mark not only because it is visible from afar, but due to the fact that it marks the local scale ground. It is a ground-mark organizing and qualifying the local scale context such as a mental map related to the local time: it is, so, a time-mark too;

c) the mega-form such as a layer machine: a dispositive complex map and a section strategy too. In fact, inside the new built form type, a layer machine distributes, for every building’s part, the different scales and functions, through intra-typology hinge points and interfaces. These hinge points define the adequate functional proximities that allow reciprocal exchanges and grafts among the scales. The functions or uses map is such as a layout of the amount of the surfaces (square metres) gathered together into the mono-typological “box”, which concretise the traditional typologies mix as the multi-typological programs provides for;

d) the mega-form’s inner landscape: a set of inner landscapes, which detonated the layout’s local specificity such as a tactile/visual interface of the inner local map (the plastic character of the Lynch’s mental map), allows the new built form type‘s inhabitants to choose their inner path. This path is the last one segment of a fluxes movement that starts outside within the metropolitan infrastructural networks (green and grey) and converges the hinge points such as virtual attractive meeting points inside the mega-form.

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Chapter three
Metropolitan methodology

The Metro-dology[40]

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The methodology for the practice of metropolitan discipline

As we describe above, the metropolitan complexity can be analytically broken down into its four dimensions, the physical, social, economic, and governance dimensions. Each of them has a specific goal to reach, but they all contribute to achieving the Metropolis' ultimate goal: sustainability. These dimensions are internally articulated into a series of principles, issues, operators, and operations to address metropolitan dynamics. Together with the goals, these elements build up the Metropolitan General Issues and Principles framework, that is the basis of the Metropolitan Approach to Complexity for bridging the gap between the goal of the metropolitan real constructed city and its virtual model.

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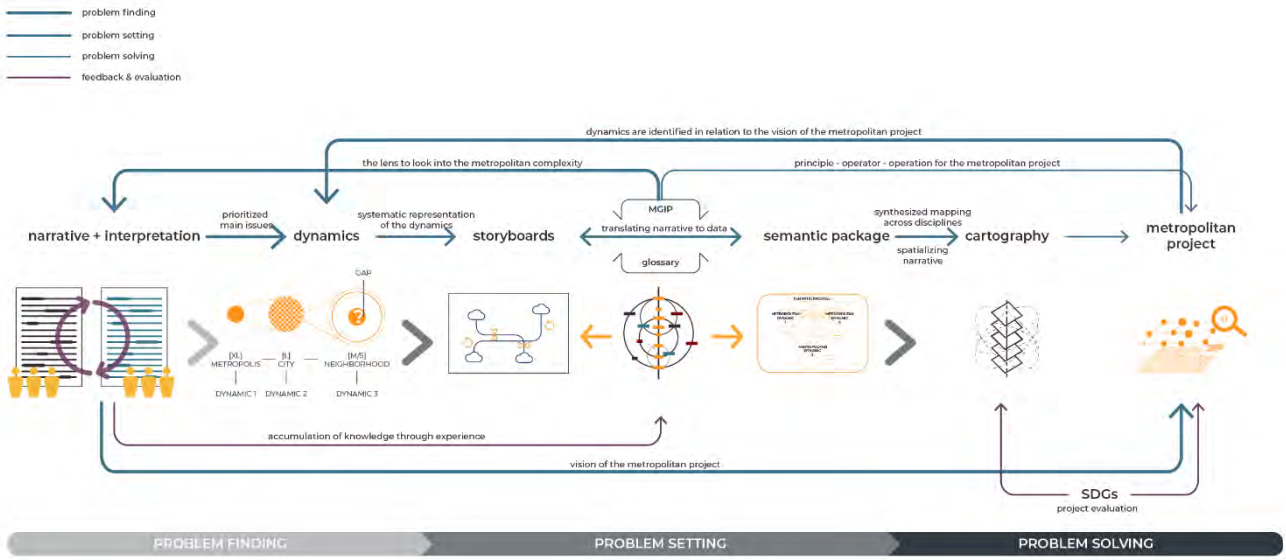
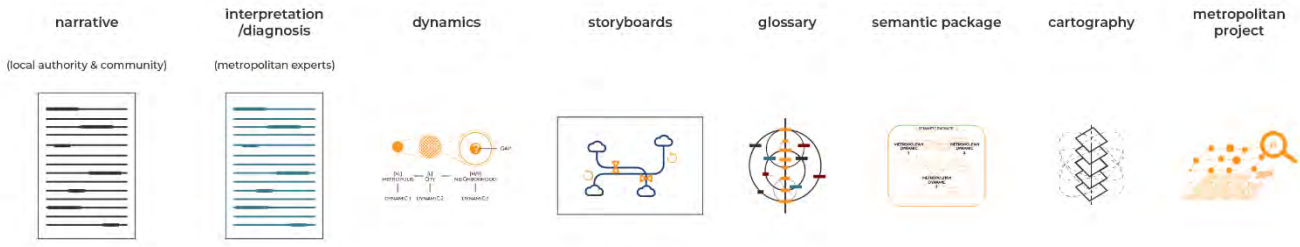
Figure 1. The Metro-dology



In this chapter, we explain how to apply this theoretical framework in actual contexts through Metro-dology, the methodology for the Metropolitan Discipline Practice. Metropolitan Discipline's aim is not only the territory's administration. It also wants to implement a new goal, a new objective of a higher level. Positioning Strategies (Metropolitan Strategic Planning) do not solve problems. They set goals, aims, ambitions, life projects. Metro-dology is a method insert into the practical-theoretical part of the Metro-Discipline specifically for the Practice of the Metropolitan Discipline, is the design process of the Metropolitan Architecture projects. (fig. 1) It is a sequence of phases (Problem Findings, Settings and Solving) implemented with specific tools that support the decision-making process of the physical transformations of a metropolis through the building of a metropolitan narrative.

Figure 2. The Elements of the Metro-dology



The result we want to achieve is a metropolitan narrative, which is not meant to be a linear process, but consists of different phases that relate to each other through a feedback mechanism: Narrative, Interpretation/Diagnosis (Protocol Maps & Metro Matrix), Dynamics, Storyboard, Glossary, Metropolitan acupuncture chart and Metropolitan Project. (fig. 2)

As a synthesis done by the metropolitan expert obtains from the analysis of metropolitan agents' specific literature and knowledge, the metropolitan narrative sets up an intellectual context that is already strategic in the approach. It contradicts the civil servant's role, such as the 'problem solver administrator', and instead introduces the conditions for the collective intelligence production.

The Metro-dology is applied to metropolitan contexts that are a territorial assemblage of rural and urban patterns of settlements, and infrastructural networks merging with the natural elements and the historical traces of places and producing hybrid landscapes that are the new living environment for billions of metropolitan citizens. Building a multi-dimensional and multi-scalar narrative of these

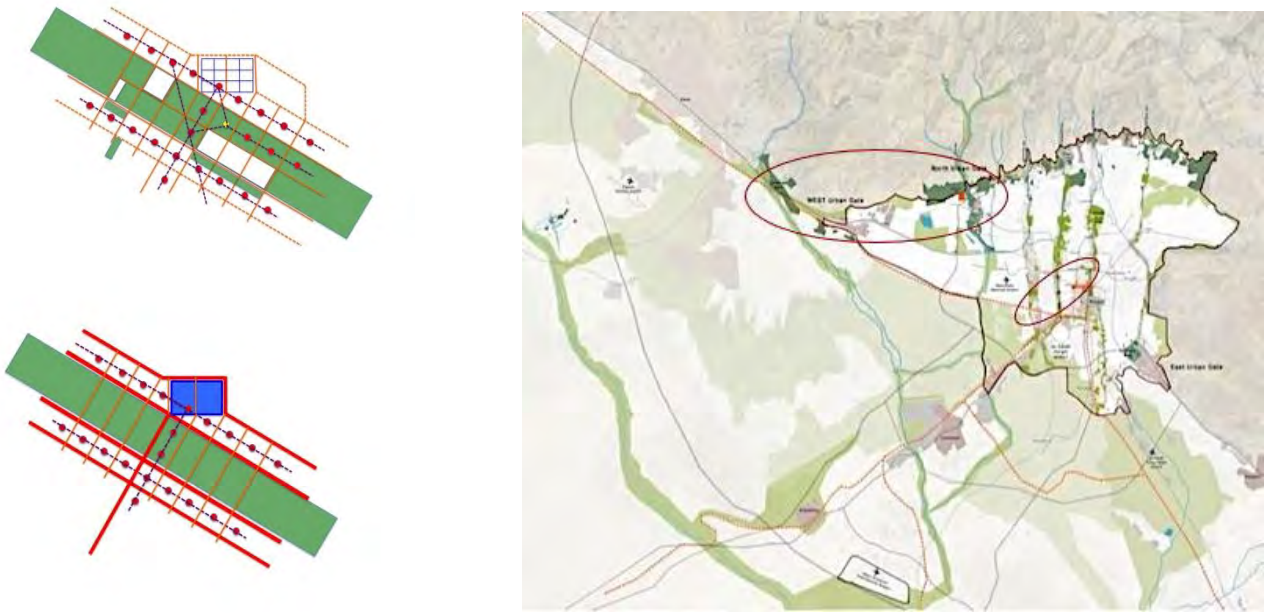
territories is essential for investigating the complexity of a metropolis, thus implementing the Metro-dology.

The narrative of a metropolis

Geography, geometry and memory are the first three components of analysis the Metro-Matrix carries on. The result is a territorial assemblage. It is a multi-dimensional narrative that allows us to investigate territorial, social and ecological complexity. Through the Metro-Matrix, we interpret the geo-historical DNA of the metropolitan context. We can then define the points of geographic support that can allow us to define the metropolitan acupuncture chart where we can generate innovation in a new inventive system through our metropolitan architecture projects. The strategic "metropolitan acupuncture" approach selects action-oriented priorities on metropolitan investments, both tangible and intangible, and reinforce discussion, the debate of quality of dwelling, governance, participation and integration. The completion of the Problem Setting phase is the production of the Maps of Dynamics, which are the synthesis done by the Metropolitan Expert, of the experts' perspectives.

The Maps of Dynamics within the Metro-Matrix diagram allow producing a geographic-based diagram that lets to identify the correct location for the priority metropolitan projects. That choice is due to identifying geographical and historical position values strategic for the metropolitan relations activation. The Acupuncture Chart is the analysis of the underlying, hidden structure of the Metropolis. The DNA: that is the outcome of the strategic and structural plan combination. The Strategic Plan is the Metropolis' 'objective in life' (What do you want to be) and the Structural Plan is 'what you have to do, in physical terms, to achieve that goal'. The Acupuncture Chart is the Structural Plan instrument to put the necessary things (that fulfil your Strategic Plan objectives) in the right place.

Figure 3. Teheran (Iran): Metro -Matrix Diagram; Scheme and Analogical Metropolitan Acupuncture Chart

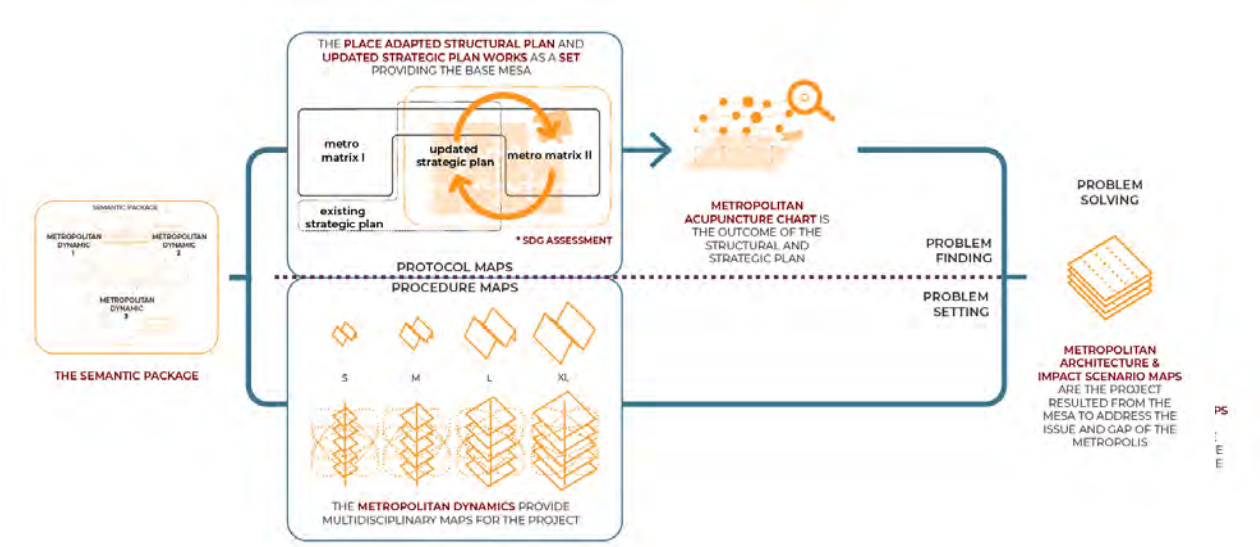


Source: www.pedrobortiz.com.

The selected areas and the themes of metropolitan architecture are: The central area. This area and its historical axis, have a bypass with the diagonal metropolitan south-west axis of the dismissed Ghale -e-Morghi airport; The northern area with its critical aspects within the nature/culture relations, which looks as compromised by the recent urban development filling the gap between the flat land and the mountains and even sprawling on the sloping topography; The area of the old airport, Ghale –e-Morghi, that is the real infrastructural hinge point of the metropolitan area that connects the metropolitan axis, the urban and the historical one from which the penetration into the territorial regional starts.

The project of the physical space activates the inventive system in the metropolitan context. The Metropolitan Cartography is the tool that unifies the Physical (Structural) approach to the process. (fig. 4)

Figure 4. The Zoom-in in the Metropolitan Cartography: Protocol Maps & Procedure Maps

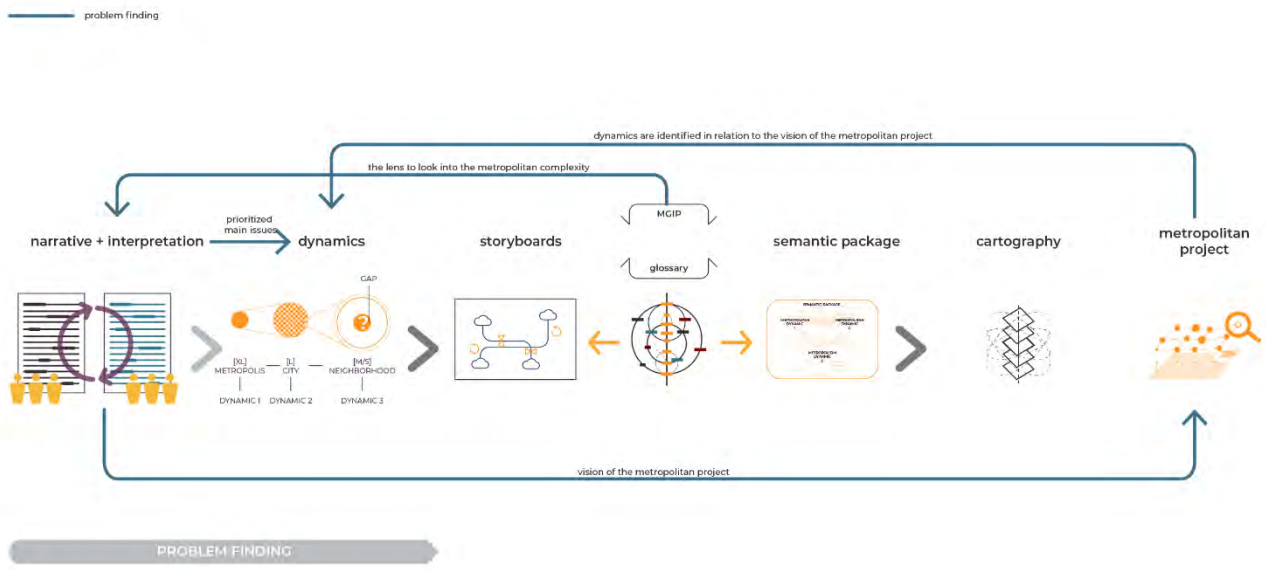


Regarding the Higher Education Institutions, the primary role is to connect the school's knowledge and the knowledge of the global and local essential conditions of the metropolitan region under examination. The question is how to regulate the two types of knowledge. Following the definition of a stakeholder's map, through a workshop dedicated to this phase, we first set up a comparison between a pool of experiences of the different actors of the metropolitan city (Issues) and a reference to principles of general sustainability (Principles) expressed through words and key concepts (TELLme Metropolitan Glossary). It is necessary to test the technique to verify the hypothesis of metropolitan dynamics, which are previously arranged using a set of open-source maps (Metropolitan Cartography/ Procedural maps). We propose maps that spatially highlight the data that are the premises for orienting metropolitan planning that starts from a hypothesis of explosive growth (the main issue), but that also presents the idea of a possible "social work" between communities, public and private institutions. That is the difficulty: How to represent in maps things that are not physical: economic flows, social values, and institutional procedures.

Problem-finding. TELLme lab. Phase 0. The inception workshop

Problem or Fact-finding is the first phase of the Metro-dology. It starts with the narrative of Internal Expert or Local Stakeholders, namely local decision-makers of a metropolis. They describe the problems, needs, and expectations of their Metropolis and the tools available to address them. Metropolitan experts, who are External Experts, analyse in a constant dialogue with local authorities this storytelling and have an insight into the problems of the Metropolis and the processes that may produce them.

Figure 5. Metro-dology: Problem Finding Phase



The TELLme Lab. Phase 0 starts with the Inception Workshop dedicated to the Metropolitan Decision Makers.

1. Participants: Decision Makers (Local stakeholders) and External Experts.
2. Tools: Protocol Maps and MGIP Software Glossary.
3. Outputs:
   a) Stakeholders Map.
   b) Comparison between TELLme Team ‘s literature analysis ‘results and real dynamics of metropolitan process.
   c) Dynamics of the Metropolitan Processes definition.
   d) Strategic Plan describing the projects, physical and non-physical, the Metropolis needs to define the local long-term goals in the global context.
   e) Civil Servants needed training according to the Issues and Gaps identifications (through outputs; inputs and outcomes).
   f) Maps of Dynamics of Metropolitan Processes produced by the TELLme Team.

The narrative interpretation process starts with the **Stakeholders map creation** organised through a matrix calculation on the questionnaire distributed among the **Decision Makers**. Participants are selected among the representatives of:

Economic resources answering the question: What economic resources can support a change in the short and long term?

Structural resources answering the question: What are the rules of the form of the metropolis? (Official of the most relevant sectors for metropolitan planning)

Professional resources: answering the question about the new competences and soft skills to carry out the metropolitan project?

Know-How Resources: answering the question about water treatment, renewable energies, sustainable construction, metropolitan planning (public and private)

Legal Resources: answering the question: which Licenses/Authorisations (the link between formal and informal); which legal frameworks implement a social innovation project?

Civil society resources: answering the question: Which city do the citizens have in mind for which society?

Before the inception workshop

The TELLme team sends a questionnaire to the identified Decision Makers. From the questionnaires, Stakeholders Map is defined. A map of issues is then drawn, and gaps of knowledge are identified and discussed at the tables. The Team could ask the questions related to their process and results indicators considering background the dynamics of metropolitan processes identified from the narrative's syntheses the TELLme team extracted from the literature. Then, the Team presents their analysis results to see if the real dynamics rooted in the territory come to light.

Negotiation tables' construction

Negotiation Phase 1. The articulation methodology between actors consists of questions asking each agent who are the other most important stakeholders to have a dialogue since they can be considered strategic for reaching their sector competence' sustainable-base goal. Each actor will give a list of preferences marking from 1 to 5. The location of these values in a matrix will immediately give the interrelated interest groups, and these will form the inception workshop groups. These groups will have to negotiate their positions in exchange for those who need dialogue.

Negotiation Phase 2. As the actors will be in more than one group, these actors will have to change groups in the next phase of the workshop (secondary priorities). They will come in this second phase with agreements adopted in the first. The agreements of this second phase should not contradict or invalidate those of the first phase. If the second meeting results invalidate the first phase, the actors must assess the cost of this contradiction to their interests.

Negotiation Phase 3. The same for a third phase. Once the negotiations of this cycle have been developed, some will have to return to the former to notify them or renegotiate the previous phases' agreements.

Once the stakeholders' tables are defined, the fundamental questions for all Local Stakeholders (Internal Experts) and External Experts are how to structure the metropolitan region's basic knowledge affected by a radical global transformation from the narrative of local metropolitan issues. To answer this first question, a set of Protocol Maps, the axiology of values, as principles that can ethically guide the decision making on metropolitan projects, must be produced by the TELLme Team before the Inception Workshop. These are the same for every Metropolis. They show the continuity of the green and grey infrastructures. They are essential for detecting metropolitan areas and regions' underlying structure and understanding its agencies and parts' relationship through the Metro-Matrix definition (Ortiz,2014). The Metro-Matrix will be one of the results of the TELLme Lab.

Using a set of Protocol Maps helps all the participants in the working groups understand the premises and ask their particular question by applying the General Principles of the Metropolitan Discipline concerning their own culture and professions. That will figure out the Metropolis' Issues. The General Principles and Issues of the Metropolitan Discipline can be implemented considering the local situation and context shown through the maps. That determines the phenotype of the actual Metropolis. In fact, on many occasions, specific interpretations of metropolitan transformations, which we have envisaged before, are possible. It is challenging to prove that an understanding is adequate, unique, and necessary, for example, a priority for city's common and public good (Ortiz, 2014: chapter 8 of the Art of Shaping the Metropolis).

We read the Metro-Matrix as an infrastructural connection. Where different infrastructures meet and intertwine, new centralities are born, giving life to a dynamisation of the territory "in-between". It is a matter that all this must be negotiated concerning the sustainability principles. The metropolitan area's infrastructure will be implemented through the connection between the airport, train station, and metro while answering how to pass commuting to public transport.

The Metro-Matrix Metropolitan Acupuncture Chart presents:

1. a supra-municipal vision in a supra-regional, non-topographical sense (not following the water basin). It starts from the airport as a hub expression of equivalent temporal proximity. This fact is a sign of the vitality of the modern city that must defeat a reality of peripheralisation represented by the different time of the cities in the region;
2. an answer to the question of how to overcome a topographical vision in urban planning;
3. it deals with the problem of decentralisation: how people move around the territory to qualify their lives;
4. it deals with the territorial dimension of the Metropolis to save the suburbs by "getting out of the suburbs";
5. it deals with the ecological structure of the settlement.

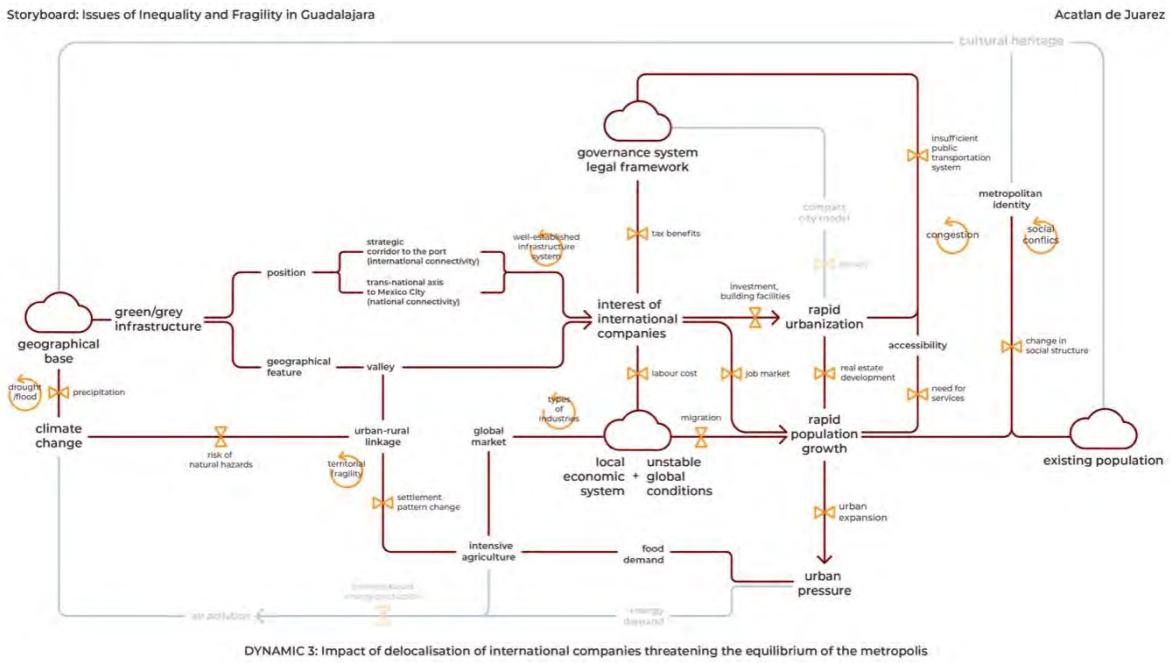
It must play through cities and their airports to build an integrated polycentric metropolitan area. The theme is how to carry out the mother-city decentralisation through a relationship between airport, railway and metro. The mother-city develops itself into a multiplicity of centres, each playing a predominant role (specialisation) and keeping an intrinsic balance of the required elements to make an urban unit (city) enjoyable equitable and efficient. That is the Metropolitan Digit definition and need in order to decentralise and to make the territory grow. In the region, the airport aerostation, unlike the train station, centred inside the urban fabric, structures the territories since it is positioned as the hub of a vast area, which will become for this fact, metropolitan. Nevertheless, the answer is to strengthen the centralities in the metropolitan region and, in the local area, to study the relationship: historic centre, growth and peripherality. The metropolitan region's value does not lie in the centre of the metropolitan digit, but its possible opening towards the peripheries so that they leap in scale and quality of life.

Storyboard & semantic packages

Once the local experts communicate their problem (the gap, so that a lack of specific knowledge), the External Experts lead the dynamics that generate it: the reduced complexity as a series of phenomena related to particular topics (problems). Metropolitan Dynamics Map represents the interplay among phenomena explaining the processes generating an issue and the reality gap. These are related to specific issues, (Ortiz,2018) therefore, have limited factors to consider compared to the real complexity. However, the relations network reconstruction allows the restoration of each part's meaning within the system. Once the narratives data have been collected, the metropolitan experts describe the dynamics through a synthesis scheme called **Storyboard** (fig. 6), an interpretation of the cause of the issue that emerged during the Inception Workshop. The

storyboard represents the big picture of a given metropolis' issues and the dynamics that produce them. Through the MGPI Software Glossary of metropolitan keywords and related concepts used in describing the dynamics, the storyboard is connected to the semantic package.

Figure 6. An Example of a Storyboard (Guadalajara, Mexico)

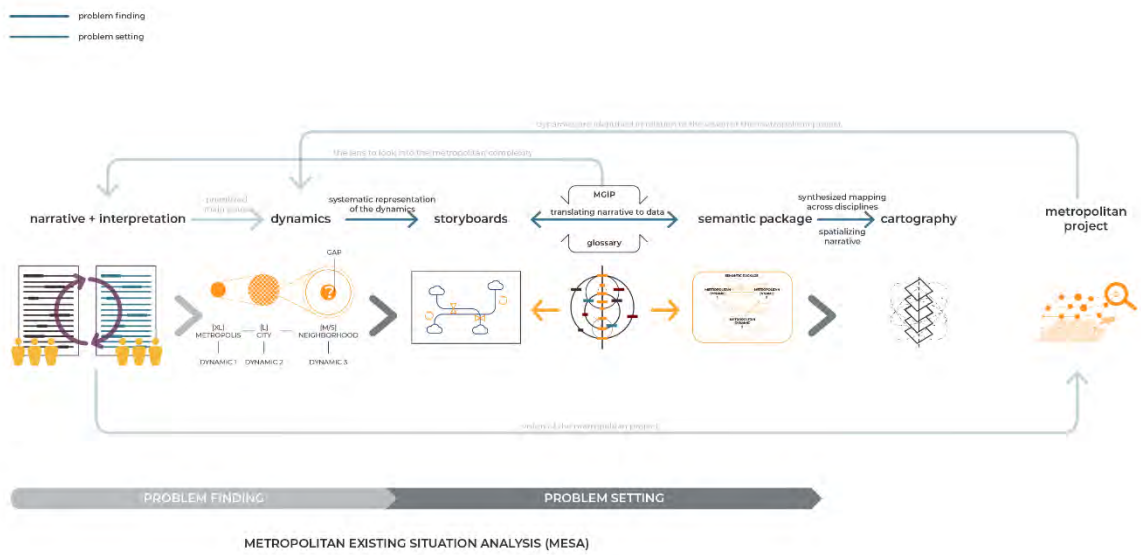


The issue is a set of problems and factors that emerge from the Inception Workshop conducted with the Decision Makers. Narrations are the basis on which the metropolitan experts, through a deep intuition, can give a name to the metro dynamic; the name of a dynamic, which can be presented at different scales, expressed through a sentence, re-elaborates and links the narratives to the fundamental concepts (keywords) contained in the Glossary.

Through a pattern of causes and effects (feedback loop), the storyboard relates pre-conditions in the four dimensions, and rate of exchange produced by the new relations that the metropolitan dynamics foster. We may say the storyboard simplifies the system's complexity and serves to select the system elements to investigate the relationships between them because of a metropolitan dynamic.

Problem setting and the TELLme training lab. Phase 1

Figure 7. Problem Setting



The TELLme Lab. Phase 1 is dedicated to the Metropolitan Civil Servants and other Local Stakeholders who are used to manage the Metropolitan Projects.

1. Participants: Civil Servants, NGOs officials, Professionals (Local stakeholders) and External Experts.
2. Tools: Storyboard, Maps of Dynamics and MGIP Software Glossary.
3. Outputs:
   a) Dynamics of the Metropolitan Processes comprehension through the Maps of Dynamic.
   b) Metro-Matrix and Metropolitan Acupuncture Chart.
   c) Structural Plan locating the projects, physical and non-physical of the Metropolis.
   d) Cross-cutting sectors approach to work “out of the box”.

Meta-Projects proposal produced by the TELLme Team.

The metropolitan city and its dynamics are the subjects of the problem setting. The Civil Servants and other local actors selected since their actual involvement in managing a metropolitan area have been aware of the political choice regarding a metropolitan transformation. They must report verbally on the Issues (goals, challenges, strengths and weaknesses, gaps and tools used) that affect the city’s expectations due to their management’s limits. The other fundamental component in the problem setting phase is a corresponding objective and uncritical attitude on the External Expert’s part towards the subject’s production. The metropolitan experts’ function is to listen without prejudice and tendentiousness, without introducing any predetermined concept on the origin or meaning of the metropolitan phenomena being investigated; their only interest is to help the local actors analyse and understand the metropolitan dynamics of their city. This part of the technique needs to eliminate any additional cause of ambiguity in communication.

That narrative’s objective is to create a complex of observation plane conditions in which data provided exclusively by the local subject are integrated with spatialised data presented through

open-source maps. Therefore, all the data are initially observation data, analysed by the metropolitan External Expert through the general Principles agreed upon based on the Metropolitan Genome and sustainability.

However, there are contamination factors that introduce dynamic mutations in this analytical situation. These “incidents” can provide essential data that bring new knowledge and developments. We started from the definition of Genome (Ortiz,2018), but real life, the Phenome, provides the contaminants in the field of observation. The metropolitan city’s actual events, dynamics, and contexts introduce dynamic mutations in the previous (more ideal) analytical situation. Still, the observer’s detached attitude must also be preserved towards them.

Once the observation data have been collected, then, through the dialogue conducted in working tables, the process of correlation and interpretation takes place, taking into account the coherence of the hypotheses, the repetitive patterns (types) of sequences of relationships, the ability to predict certain phenomena, based on the knowledge of specific patterns of relationships derived from the Genome. The result of Problem Setting phase is the verification of the Inception Workshop ‘s hypothesis on the metropolitan dynamics.

Through the Metropolitan Cartography the Metro-Matrix identifies the metropolitan project themes and its development hypotheses. It allows a geometric interpretation of a metropolis; it is an abstract model related to the sustainability of a territory translated into actual contexts through maps that represent the lines of force of a territory. The Metro-Matrix diagram sets the Structural Plan for the location of the metropolitan physical projects. Its result is the Metropolitan Acupuncture chart

Today we recognise that the urban elements having an active part in urban phenomena changed due to the new urbanisation process and following the city's subsequent enormous spatial and temporal measures. We have to admit that the city structure, its physical and temporal relations with the citizens, is altered due to its scale; the temporality of people and citizens is particularly changed. The Metropolitan Acupuncture Chart is a map that arranges the different Metropolitan Architecture projects' possible locations by considering the structure of the Metropolis and the needed projects stemming from the Metro-Matrix tool, the spatialisation of the metropolitan dynamics and the local values.

When the Metro-Matrix is complete (like a truss) immediately, the important links that are missing appear, in particular, we refer to the first metropolitan strategical and structural plan define in Madrid in 1995. The Metro-Matrix allows a more detailed description and Analyses and Proposals. Following a Chess analogy, it provides links and examples of projects made in Madrid as a result of this methodological approach (Fig.8).

Figure 8. Detection and Selection of Priority Projects in a Metropolis

1)Integrated Framework: Chess board
- ***a) Prospective Analysis***: Set up the Metro-Matrix truss with urban nuclei and strength lines,
- ***b) Policy***: Detect existing and missing links.
- ***c) IE:*** Madrid Analogical, Diagrammatic, Schematic

2)Public Transport: Chess tactics
- ***a) Prospective Analysis:*** Locate the important urban nuclei with potential rail linkage.
- ***b) Policy:*** Develop existing rail service, unused rail infrastructure, and expandable one.
- ***c) IE:*** Madrid rail extension to Toledo and Guadalajara

3) Road Transport: Chess tactics
- ***a) Prospective Analysis:*** Locate where the road system is in collapse.
- ***b) Policy:*** Add and the bars needed in the truss to make it flow evenly.
- ***c) IE:*** Madrid M-45 breaking metropolitan monocentric structure into a polycentric reticular one.

4) Environment: Chess strategy
- ***a) Prospective Analysis:*** Locate the links missing in the environmental network
- ***b) Policy:*** Complete the links to make of the environment system a continuous network.
- ***c) IE:*** The Guadarrama, Jarama and Henares river protections, up to Sierra, down to Tagus

5) Housing: Chess Pawns
- ***a) Prospective Analysis:*** Calculate housing land needs for the next 30 years
- ***b) Policy:*** Develop housing land within train stations walk/cycle range (urban centralities)
- ***c) IE:*** Arpegio 200.000 dwellings land in urban units

6) Industrial Productive Activities: *Chess Bishops*
- ***a) Prospective Analysis: L****ocation avoiding urban fabric with nat./international accessibility.
- ***b) Policy:*** Industrial developments along nat./international Metro-Matrix thoroughfares
- ***c) IE:*** Arroyo Culebro across Getafe, Pinto, Leganes, Fuenlabrada, Mostoles and Alcorcon.

7) Tertiary Productive Activities: Chess Rooks
- ***a) Prospective Analysis:*** Where do productive activities and train intersect
- ***b) Policy:*** Tertiary Centralities linked to the Airports to promote airborne global positioning
- ***c) IE:*** Getafe and Torrejón freight airports

8) International Positioning: Chess Queen
- ***a) Prospective Analysis:*** Airport expansion potential: Runaways expansion land protection.
- ***b) Policy:*** Airport expansion reserve, or new airport location.
- ***c) IE:*** Barajas expansion and Campo Real relocation

9) Diachronic Variable Geometry: Chess strategy in time (4th Dimension)
- ***a) Prospective Analysis:*** Conflicts on development evolution.
- ***b) Policy:*** Prioritize projects that are compatible in time within forecasted integrative evolution
- ***c) IE:*** Metro to Arganda, and then Campo Real Euro-American airport

Source: www.pedrobortiz.com.

The Meta-Project proposal is the result of that phase.

Problem solving. TELLme training lab. Phase 2

The TELLme Lab. Phase 2 is dedicated to the Metropolitan Civil Servants and other Local Stakeholders and aims defining the Metropolitan Architecture Projects Action Plan. It uses the Balanced Scorecards Methodology applied to the Metropolitan Participation Process.

- Participants: Civil Servants, NGOs officials, Professionals (Local stakeholders) and External Experts.
- Tools: Metropolitan Acupuncture Chart, Maps of Dynamics, Meta-Project proposal and Balanced Scorecards Methodology[41].

Outputs:

a) Selection and location of the Priority Metropolitan Architecture Projects (through the Metropolitan Acupuncture Chart).

41 See the chapter: The six steps on a path towards agreement, between subjects with potentially divergent interests and objectives, by Gianluigi Contin and Guglielmo Mormina.

b) Metropolitan Architecture Project Key Actions.

c) Action Plan definition for a project contract competition.

Every city needs a tool to help politicians and administrators defining objectives based on SDGs at the global and local scale and their impact indicators to make decisions on the metropolitan scale. The traditional Active Managerial Approach takes the planning agents to see what the city looks like today. They collect information, analyse it, understand it, decide and finally do it. It is an approach that is equivalent to a guide who only looks through the rear-view mirror because everything they analyse has already passed.

The storyboard's result produces the meta-projects proposal done by the TELLme Team. That will solve the metropolitan issues and leap ahead of the Metropolis into a collective project (Strategic Collective Intelligence). The role of the Metropolitan Meta-Project is the definition of the metropolitan form rule for public policies. The public authority position will be the definition of an Action Plan for a project contract competition.

Once these meta-projects are established, the Metropolitan Experts must advise the Civil Servants to convert them into a physical proposal once they reach the Metropolitan Decision Makers 'consensus. The Metropolitan Approach to Complexity proposes a new design thinking approach, where the designers produce innovation and do not know in advance if their product will be successful. It is a new phase to take a decision on the meta-project assumption, and its constituted by a participatory action through the analysis of the potential field of activity, the vision: what it is possible to do; the local action project: to do it; the innovative proposal: the decision; the errors analysis: what we have learned; finally, the balance and adjustment of the errors: the budget of mistakes. Our goal is to improve something or invent something that changes the rules.

Consequently, we have changed our assumptions. Usually, an only efficiency approach deals with Rationality, Objectivity and Measurement. Instead, our Design approach is also related to the subjective experience that allows us to be proactive as reflexive individuals (Giddens, 1991) to build a new reality. We are aware that our Design Approach insertion in the Metropolitan Methodology could be tricky. Design Thinker doesn't know all the strategic variables and items of the Genome involved in the outcome of the project's proposal out of the storyboard and the Metro-Matrix integrative process. Their proactive subjectivity can have disastrous secondary effects that they are not aware of. However, Design Approach inclusion is due to the necessity to a much deeper form of immanence and renunciation of control over a definitive form. It is related to a Metropolitan Architecture Project where appropriation is negotiated collectively and will occur at the moment of fruition also, rather than in the design moment only. That means the final project proposal cannot be a simple masterplan, but a meta-project. The need is to internalise the project with a different vocabulary that includes effects not only intentions. We seem to identify this space in the metropolitan transitional territories (McGee, 2014) and their design.

To produce metropolitan projects, then, according to our Principles and the values linked (TELLme Project MGIP) to a sustainable project, we have to define what kind of crucial processes must be produced in how long and short time. Working within the different metropolitan agents will allow defining the Metropolitan Architecture Project Key Actions. We can describe that moment as "to Know-How" needed to manage other operations: water purification, renewable energy, sustainable construction, metropolitan planning. Exploring how the different sectors can collaborate is essential. For example, what economic sector can support the desired change in the long and short term; which rules of form the structural sector can provide; which key processes; roles, resources and needs we demand and who can give them.

It is fundamental also to recognize the professional who can support the project with new soft skills, too; which licenses/authorisations (between formal and informal) and legal frameworks we have to know; to identify the civil society agents; the key partners (to find the resources). During the

negotiation among the Metropolitan Agents, if there are dystonic result indicators or missing resources, the discussion among the metropolitan agents at the tables defines how to feel the gaps.

The selection of sustainable projects that better represent the city biography's expectation and Action Plan definition is the final step of the Metro-dology. The Public Authority can launch the development plan for the authorisation studies and the Metropolitan Architecture project's detail. The competition-contract phase will then follow the study phase; the sustainability study related to ecosystem services analysis; feasibility; competitiveness; and the economic support search. That phase can be decided by a Community Foundation (a legal entity that can comprehend the different metropolitan agents within the public authority). It can be managed by a private entity. The Community Foundation can start the development contract assembly involving the private agency that will begin the inspections; the authorisations; the negotiations and partnerships. Lastly, the Metropolitan Architecture Project final investment decision can be taken.

Our proposal aims to relay on the urgency to continue to offer a substantial critique and an intellectual contribution to the arrogance and finitude of the operative and interpretative dimension of the design. We deal with a less intense and functionalist, but not superficial and straightforward approach, addressing, without overdetermining uses, functions and subjectivities. We propose a substantial critique to pragmatism and functionalism as methods for producing Metropolitan Architecture Projects as idealised, autonomous objects that reproduce a determined function. The Metro-dology is indeed used as a key to understanding and as central intellectual scaffolding. We insert very central strength in our work and the needed change in urbanism and architecture disciplines and an incursion in the architectural and design new explorations.

Technical note to consider the metropolitan context as a method. Framing the activities of the stakeholders to help achieve shared concerns about spatial changes

The TELLme Lab. second phase starts with our participatory plan methodology towards some questions of research:

How can we provide a physical base for the new communities that allows smooth integration with the hosting communities?

Which areas of the cities are suitable, which land would be available, how to connect new settlements, how to formalise already existing pockets of informal settlements? What are the main challenges or opportunities in remediating the impact on the existing society and land caused by the expansion of informal settlements?

How can environmental risk be reduced (caused by informal or spontaneous settlements)?

What are the main challenges new communities face for economic inclusion or when starting and scaling enterprises in host communities?

What are the main opportunities for hosting communities when faced with a large influx of people, especially in a crisis?

What are the main social challenges felt by the local and migrant communities and hinder integration and social cohesion?

What are specific challenges faced by women, youth and the most vulnerable of both?

Academy research analysis as TELLme lab.'s tools provision

To frame the TELLme Lab. second phase, we would like to go deep into some needed. Technicalities. First, some note regarding the Academy analysis needed towards the TELLme Lab. entire process.

Through the TELLme Phases, we want to co-produce the local metropolitan agents' technical expertise to merge the Metropolitan Architecture Project with the metropolitan inter-scalar planning. We based our training on open-source mapping, bringing a sustainable perspective and aligning it with regional responses, national policies, local development visions, and other regarded frameworks.

During the TELLme Lab. second phase final group work sessions, the Local Teams must develop concrete action plans to implement the selected projects and define appropriate tools (such as guidelines, spatial planning standards and physical planning regulations) needed for their concrete implementation. The TELLme Lab aims to train the Metropolitan Agents to use metropolitan planning and projects to reduce spatial (and social) inequalities and local economic development. To obtain that goal is mandatory to raise awareness of planned city extensions applying metropolitan integrated urban and territorial planning approaches facing real estate speculation through participatory mapping and planning of metropolitan contexts to increase social cohesion. The expected outcome is though the Metropolitan Acupuncture Chart linked to the Structural Plan.

Our first act of research before the Inception Workshop is a Metropolitan Region Profile through the Protocol Maps. Metropolitan Cartography protocol maps can also provide information on:

- Ecosystem services assessment and improvement as metropolitan supporting infrastructure;
- Natural resources preservation and development of sustainable consumption patterns for reducing climate change impacts.

That can suggest us as a total output the Stakeholders map for an inclusive governance structure for all-encompassing cities and establishing a cohesive governance structure—integrating the most vulnerable into society.

Then, producing the set of Maps of Dynamics, we can study the urban part of Metropolitan Areas (including territorial perspective) to better understand their main Issues. We analyse the spatial distribution of services and then prioritise actions; including identifying gaps in housing, infrastructure and services, and developing incremental upgrading strategies.

In a dialogue with the local authorities, which help to define priorities and provide additional expertise on opportunities and challenges of local situations, tangible and sustainable metropolitan projects for improving the life of local communities will be designated for specific locations and based on the particular local (social, economic and environmental) context. That for promoting long-term strategies on land value capitalisation, revenue and investment strategies, including market space development and assessment of economic development potential.

The output is the selection of Priority Metropolitan Architecture Projects. Finally, specific areas will be chosen for the implementation of any particular action.

Survey identifying the stakeholders' role and issues for the TELLme lab. Phase 2

Organizing the second phase, the TELLme Team will send to the stakeholders a straightforward questionnaire on the two dynamics identified and their effects on the selected territories. The question will be related to four outputs produced by their action (What are you for?); and four inputs (map of technical, relational, management, know-how, licenses, hardware or resources) needed to transform their outputs in outcomes.

From the questionnaires, a map is drawn of issues that refer to the inconsistencies that we will verify between our stakeholders' objectives. When we find an inconsistency between those themes, we will build the workshop's tables on the first day. We could ask the questions related to the outputs and inputs in the background of the dynamics we identified.

Once the tables have been set up in the light of the inconsistencies between the results identified by the different stakeholders, the discussion will have to be managed based on the two identified dynamics, their effects on the different metropolitan landscapes shown through the maps, the

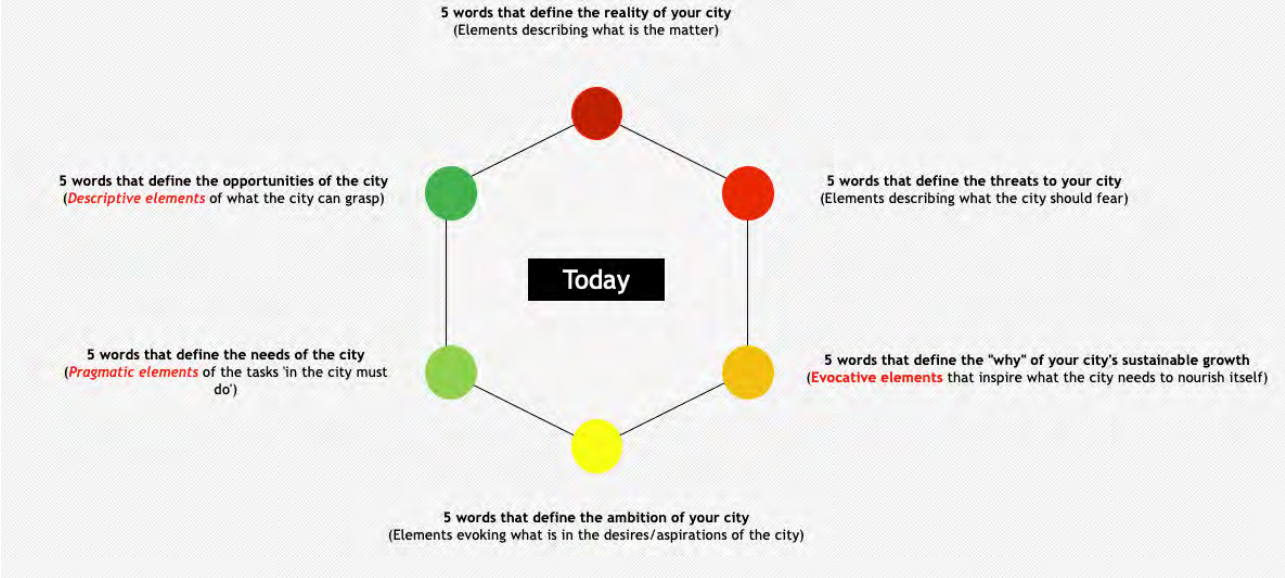
discussion on the fundamental processes that could solve the gaps in the city, and the definition of the metropolitan projects through a discussion on the Metro-Matrix.

The Post-It Wall Day

The Post-it day is dedicated to the Metropolitan of Today vision. We will facilitate a dialogue among the metropolitan agents asking question-related to descriptive elements, pragmatic elements and evocative elements. The aim is to envision the stakeholders' perception regarding their metropolis conditions.

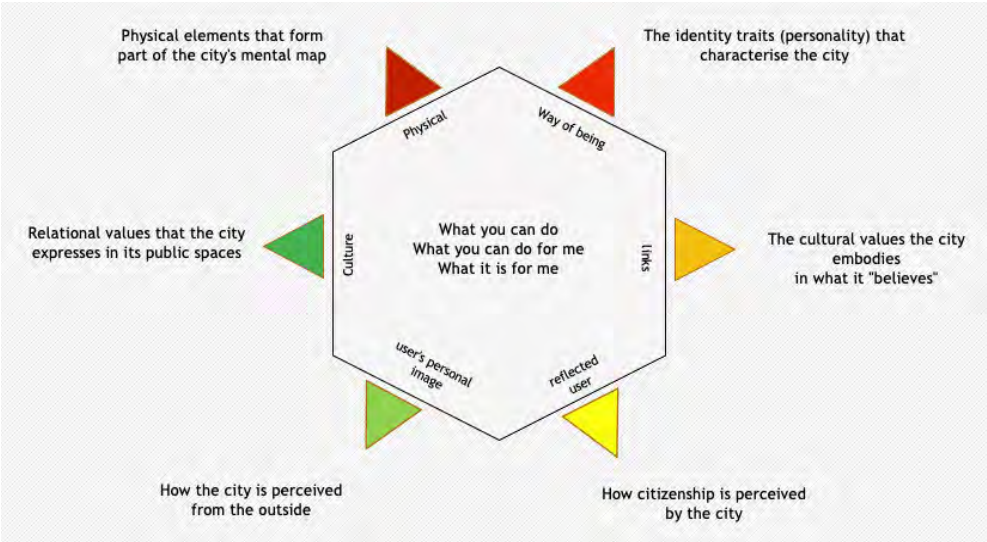
The second day of the workshop is dedicated to build the identity of the metropolitan city:

Figure 9. Post-it day



Source: Contin, Ortiz and Kim (2021).

Figure 10. Building the identity of the metropolitan city



Source: Contin, Ortiz and Kim (2021).

Then, we will open up a debate to define the action plan that will inform the Priority Metropolitan Architecture Projects analysis. Seven are the questions that will stimulate the debate:

1. Why: all in a minute, you say "a good reason to come to your metropolitan city".
2. What are the obstacles to planning a metropolitan city that need to be removed or avoided?
3. What solutions are proposed to eliminate or avoid them?
4. Why these solutions and not others (data, experiences, good practice cases)?
5. What the city expects of you.
6. The First Steps to Take Immediately: Key Processes and Priority Projects.
7. The Action Plan of the Metropolitan Architecture Project implementation will be the result. It will be possible for the Public Agents to start the Contract Plan process preliminary inquiry.

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Chapter four

Metropolitan practice

Metropolitan cartography: practice, tactics and projects[43]

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Introduction

The purpose of contribution "Metropolitan Cartography: practice, tactics and project" of the TELLme Inaugural Book is to present Metropolitan Cartography as a creative tool for the representation and design of the metropolitan area. During three research years, Metropolitan Cartography, within the TELLme project *Training for Education, Learning, and Leadership towards a new Metropolitan Discipline*, is presented as the result of a process of experimentation that starts from the theoretical and conceptual sphere to manifest itself through an immediate image of representation of metropolitan territorial complexity. Today's city must be able to make its map; skilful map to facilitate the participation of citizens in decision-making process. Generally, mapping a city means examining analytical information projected on the geographic level to describe urban and morphological growth phenomena, while instead the maps produced by the research divulge the intention of defining a new idea of spatial and temporal mapping in order to design new inter and multi-scale architectural entities to operationally delimit the relationship between built space and mental space.

The study is developed with the intention of enhance an experimentation on new possible uses of the soil that include new urban morpho-types, mega forms, heterotopies of the metropolitan landscape through the ability to determine itself as potential inner landscapes and landmarks. To achieve these objectives, the definition of the Metropolitan Approach to Complexity, in the

43 To cite this article: Contin, A. and Galiulo, V. (2021). Metropolitan cartography: practice, tactics and projects. In: Contin, A., Giordano, P. and Nacke, M. (eds.). (2021). Training for education, learning and leadership towards a new metropolitan discipline. Inaugural book. Buenos Aires: CIPPEC.

construction of the Metropolitan Discipline, was the first step in outlining the principles underlying contemporary urban planning and design, with the aim of improving the *coordinated, interdisciplinary and executable* territorial strategy to optimize the processes of growth and sustainable urban development which aims at a higher quality of life.

The Metropolitan Approach to Complexity in the TELLme project is the preliminary descriptive framework for the construction of the Cartographic project: the definition of the critical issues arising as a consequence of the physical and spatial transformations of the metropolitan regions, such as social inequality, the vulnerability and fragility of the systems, is decisive. The environmental, natural and historical heritage systems, political and governance issues determine the dynamics of rapid change and growth of contemporary cities. It is a complex approach in which it is essential to highlight the relationship between the elements through an innovative form of presentation of reality.

The research favoured the construction of the definition of Metropolitan Cartography intended as an innovative methodological device in which the act of representation is not only descriptive but also explanatory of the process of selecting and extracting information; the method for the construction of the map becomes the project to facilitate multidimensional decision-making processes.

The systemic actions necessary for the construction of the TELLme map project define an inventive survey project, as they contribute to make the map an active agent of cultural intervention (Corner, 2011). Therefore, the cultural theoretical-practical research of the Metropolitan Cartography allowed to define a new interest for the map: not a single descriptive product but a practical act of logical actions. Therefore, it is a project of composition and disposition of the relations between the morphological and tectonic elements of the metropolitan city. Then it needs an inventive methodology that comes from the analysis of spatial information to be carried out in a sustainable urban and architectural planning project. For this reason, it is possible to define the act of the Metropolitan Cartography as inaugural because result of a logical sequence of choices defined by "rules of form" (L.B Alberti, 1472) that guarantee the establishment of a preliminary mental map (Semantic Package) which allows the generation of geo-referenced maps in space. The maps are built following a process that aims to "inform the shape". The invention of new two-dimensional and three-dimensional forms placed in the real space through which it is possible to create combinations of different information elements capable of obtaining possible scenarios through multiple visions and interpretative readings of the metropolitan territory.

1. How to inform the urban morphology of metropolitan contexts through Metropolitan Cartography maps

Recent growth models have shown limitations in achieving new life quality and well-being indices of the metropolitan inhabitant due to the effect of driving forces of urban development such as externalities linked to economic growth prototypes, the differences between the local and international political agenda and the optimization of industrial and technological skills in the metropolitan area.

Priority should be given to metropolitan contexts in which the complexity of the relationships between the factors of territorial alteration of the physical, social, political and economic dimensions are most evident. Today it is extremely important because it is believed that the question of how to deal with the metropolitan complexity to achieve the goal of sustainable population growth is mandatory in the field of academic research. Nevertheless, some issues cannot be addressed with a single, static and traditional disciplinary approach, but understanding them requires a comprehensive and multidisciplinary vision. The Metropolitan Cartography methodology allows the possibility to focus on

four main lines of research: the management and relationship of data in physical space, scale of representation of them in different spatial dimensions, spatialisation of territorial vulnerability processes due to exposure and risk sensitivity evidences of some metropolitan contexts. Therefore, the study of metropolitan complexity through Metropolitan Cartography maps is always linked to the relation of scale between the different territorial levels, from global to local, because the study of the city has a systemic character and currently has a global extension (Martinotti, 2012).

Thus, in order to understand the spatial relation between physical and social spatial relations of Net-City (Shane, 2005), the MC' maps action framework is tied to the location of the possible dynamic interactions of the contemporary metropolis:

- interaction between the intercontinental and trans-national metropolis;
- interaction between the metropolitan scale and the different regions;
- interaction between urban centres and suburbs;
- collaborative interactions between neighbourhoods within the urban scale.

Moreover, the TELLme maps allowed to generate an experimental process that informs the shape by redefining the structure of a spatialized information through the determination of criteria such as:

- The categorization of the concept and the data, from the semantic package to the map, through the use of ISO 37120: 2014 standards, indicators for city services and quality of life, defined by the United Nations Member States (Sustainable Development Goals) for sustainable development as stated in the for Sustainable Development 2030 Agenda;
- Data Quality identified with respect to the potential use of the data through a selection that takes into account the completeness of the data, the accuracy, the timeliness (time of acquisition and production of information), consistency with respect to the main purpose that the map intends to bring out, plurality of information with respect to the 4 metropolitan dimensions (geographical, social, economic and management), integrity with respect to how the original data is used in the Protocol maps and in the Maps of dynamics, formal compliance with the in order to guarantee how they respect the semiological criteria established by the methodology in the case studies tested;
- Historical Data Sequence (Data Time Series) which allows to identify a series of interrelationships between changing physical variables by ordering them with respect to the dynamics expressed in a phenomenon.

2. Metropolitan cartography as innovative methodological approach for inaugural operative action

In the last decade there has been a development and a particular interest in the representative practice of the geographical map and the digital visualization of material and immaterial cultural data in the knowledge of design and multidimensional planning. Indeed, the study of the masters of architecture and cartographic representation has allowed the research to understand how the formation and decomposition of composite proportions into minor harmonic relationships is not an academic fact but it is a spatial experience managed by the individual. The origin of the research for the spatial representation of the elements of reality is an historical knowledge that can be traced back to Renaissance cartographic experiments up to the new cartographic experiments that mean the map as open-connectable experimentation with real Corner, 2011).

Nevertheless, innovation that the TELLme project proposes with Metropolitan Cartography is the establishment of new projective representations of cartographic practices giving particular emphasis to the manifestation and manipulation of the physical and abstract components that make up the metropolitan territory. Its feedback is possible through the intersection of the digital components, the experience and spatial intelligence of the architect, the metropolitan expert and the local agent.

Maps are also intended as the result of experiments on reality from useful traces to determine an order (Deleuze and Guattari, 1980), as a practice for rational reasoning.

Therefore, Metropolitan Cartography is presented as an innovative methodological tool for the representation of the infinite possible relationships between the elements in order to read the variability that symbolic information can have in different metropolitan areas.

The research of the Metropolitan Discipline has allowed to experiment the application of two types of maps of the Metropolitan Cartography in different metropolitan contexts: Protocol Maps and Maps of Dynamics.

The Protocol Maps are tools that facilitate the reading of the generating principles of the critical issues of development according to ethical values of planning on a metropolitan scale. They reveal the metropolitan structure by layering physical aspects of geographic, historical, and geometrical data. Protocol Maps are used as a base for discussing the metropolitan dynamics. All metropolises have the same set of maps that are comparable, as can be shown in figure 1.

Protocol maps are generated through the collection of open-source data of global and local coverage, starting from the unique association between the Semantic Package concept[44] and information level.

It is therefore open-source maps constrained according to a transparent process and shareable in both academic and professional.

Figure 1. Green-Grey Protocol Maps Guadalajara, Seville and Mendoza XL

Source: V. Galiulo, 2019.

Maps of Dynamics are also produced using open-source data selected according to the unequivocal correspondence between concept and information level. From the Semantic Package it is possible to choose the necessary and sufficient concepts for the description of the phenomenon through reading areas, linked to the experience of the user, in order to understand metropolitan phenomena according to interdisciplinary points of view. The Maps of Dynamics operate on a large scale and aim to highlight the complex dynamics intersected between the geographical, social, economic and

44 See chapter Cartography and Open data, Tagliolato, Galiulo, Žižek, Oggioni.

territorial management dimension. Their purpose is to define strategies for promoting the sustainable development of the metropolis.

The production of a set of Protocol Maps has allowed us to verify how an equivalence of meaning of a concept, explained in the Semantic Package, can have a different semiotic value in the graphic and spatial restitution of information.

The practical and theoretical project of the Metropolitan Cartography allows to evolve the research towards the opportunity to compare the Metropolitan cities through protocol Sematic Packages and highlighting the different image of the territory of each urban reality.

The process of connecting the information level to the territory, compared to a multi-scalar development, is important in order to extract the intrinsic cultural value of each territory, of each housing settlement, city and region. A differentiated cultural analysis is required for each metropolis that frames the complex reality as a study system.

The maps produced using the TELLme methodology are not simulations of reality, but are tools through which, on an infinite scale in the abstract space of GIS (Geographic Information System), something invisible is made visible. It is interesting to understand how to read, not only the fragile territories of the metropolitan city, but also the causes of their fragility over time. It is possible to move from an analysis to a theory of metropolitan design which requires the presence of geographical references related to topography. The topographical aspect, which is architectural and tectonic, is the main support for metropolitan analysis.

Therefore, the geographical reference is not a simple vector point, but it is the relationship between information elements that generate lines of forces (Contin, 2005). They allow to root the use and meaning of quantitative information of the data to the cultural identity of the spatial context in which it acts. As in Leonardo da Vinci's representation of the city of Imola, the line of force is the river, as for Milan, in the Protocol Maps, the change in frame and scale is determined by the permanence of the line of force in its three XL - L - M dimensions (Kolhaas, 2002), which correspond to three different scales: 1: 500.000, 1: 150.000, 1: 50.000. The lines of force are constant signs in the territory that maintain a meaning and usefulness from the passage of the mental map to cartography.

For Milan case study, the representation of the Green-Gray Infrastructure in the Protocol Map allows us to highlight how the mountains, valleys, ridges, rivers and existing vegetative heritage represent the potential of the geographic support on which geocoded data is grafted. Geography is not an aesthetic tool but it is the necessary physical component (Fig.2) that allows to trigger transversal readings of information systems for the development of Decision-Making strategies.

Moreover, through the trans-territorial and multi-scale reading of the narrative of a place it is possible to understand the logic of the Shrinking Scale that binds the spatial digression, from the large to the small spatial dimension, through the correspondence between concepts of the Semantic Package (XXL - XL - L- M - S) and spatial information.

2.1 Shrinkage Scale in MC’s maps

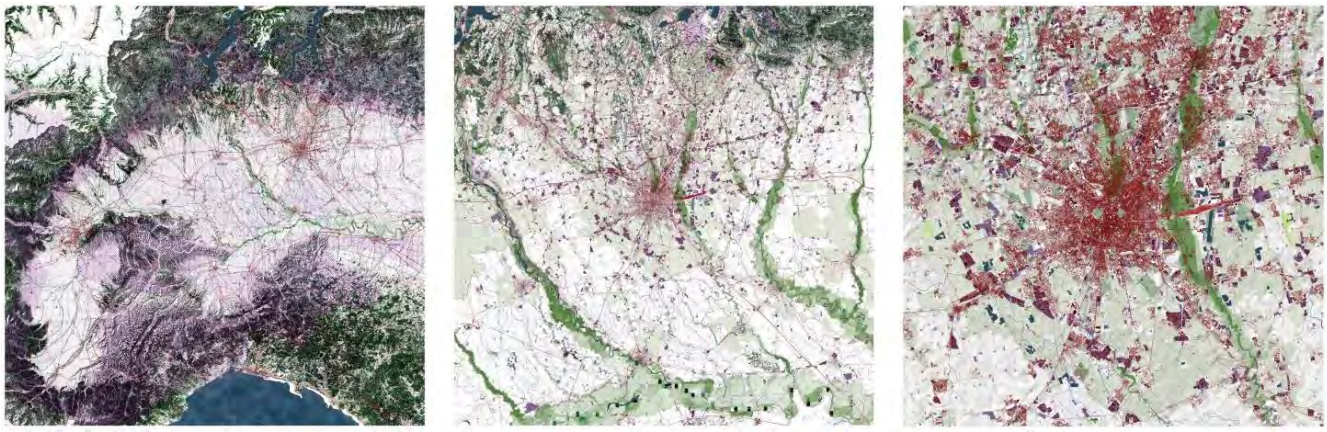
What is necessary to visualize data on a large scale is related to the territorial macro-structure of the Metropolitan city and its relation with the sovra-national and trans-regional borders that determine the condition of city in hyper-infrastructural connection. At the small scale, however, the structure of the territory acquires greater significance because loaded with new spatial information patterns, linked to active socio-cultural dynamics and visible at the scale closest to the strategic project. In summary, therefore, it is possible to define that the Shrinking scale in MC’s maps is the result of logical design sequences that link the projective geometric dimension with the topographical and morphological dimension of the metropolitan city since the process is the result of a methodology

from a mental abstraction that is evaluated by the choice of the global or local coverage data in the phase of Data Mining and Data Collecting of the Metropolitan Cartography.

Some operations that define the process of Shrinking scale from the spatial geometric representation and Problem Setting goals are:

- Use related concepts, based on shrinkage of Semantic Packages, to detect real-world phenomena and effect on iper-local dimension;
- Visualize similar and distorted transformations of spaces in shapes;
- Identify categories of similar figures by comparing shapes and attributes;
- Distinguish that lengths between similar shapes and vector changing by a constant scale factor;
- Recognize the relationship between similar and equivalent shape but with different alphanumerical features;
- Determine and use scale factors to find unknown attributes of informative level in order to compare them with other similar;
- Make distortion between alphanumerical values for global coverage data applied locally using geometric and geographic software to explore controlled distortion of spatial data;
- Search for patterns based on quantitative and qualitative spatial relationship of information levels;
- Observe and visualize ratios of lengths and areas on morphological space and learn the effect of scale factor on length and area ratios.

Figure 2. Green-Grey Protocol Maps Milano, XL – L – M



Source: V. Galiulo, 2019.

So that means that the operation of Shrinkage scale between concept and map design of the MC is determined by the manipulation and distortion of spatial information and its bond in order to operate in a plastic way between mental perception and metric projection on the ground about the strategical purpose of the map and project field of action.

Conclusion

In conclusion, the progress of the research has allowed to define the Metropolitan Cartography as a project and tactical tool (from the Greek taktikós "concerning the order" intended as a system of rules), cognitive and technical experiences that allows to order the necessary elements for understanding the causes of territorial context vulnerability. Cartography as a rational reasoning

practice allows the analysis and representation of new realities by determining constraints, quantity and quality by making explicit phenomena of existing conditions through immediate visual communication that allows participants of the metropolitan reality to recognize their experience as a citizen.

The potential of the methodology explained is the ability to produce a flexible mapping tool through the generation of maps, at different scales, allowing decisions to design new public and common metropolitan spaces for the sustainability of the local context with global value. The selection and connection of the concepts of Metropolitan Discipline and the interpolation of the corresponding levels of information, according to a tactical and strategic vision, allows the metropolitan expert to operate through non-linear processes that, as in scientific experimentation, require numerous tests, feedback and controls in specific case studies. It is a flexible analytical method, and it is also a project tool that allows to analyze the processes of change in the physical and social dimension; Not least the health dimension of the city and the citizen, understood, as in the current situation of the pandemic Covid-19, as a global local effect.

The direct experience of the researcher, first of all citizen and thoughtful individual, allowed to raise questions and considerations on the event of global spread of virus Covid-19; referring to the relationship between health and the place where you live, it has been possible to comment that scientific progress in this disciplinary field is expressed in modern times, unfortunately, in terms of spatial functionalism. For this it is necessary a remodelling of the method of analysis and interpretation of the territory to draw new urban morpho-types that can also be understood as a space of re-appropriation of the public.

It is, in short, a problem of collective action and management through the definition of a new geometry of spatial relations able to promote a network of community based on communication, inheritance and trust.

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in the case of the environment, it could be logical that an energy saving presupposes a reduction costs and opens the possibilities for society in general to benefit from technological advances. A neologism of recent emergence is for example the one that refers to the "blue economy", which is defined as the "use the knowledge accumulated over millions of years by nature to reach ever greater levels of efficiency, respecting the environment and creating wealth, and translate that logic from the ecosystem to the business world. " (Alvial, A., 2015).

Regarding governance, and more specifically the term "urban governance", it is understood as "the sum of the many ways in which individuals and public and private institutions plan and manage the affairs of the city (UN-habitat, 2003), and although this can be given a business interpretation, where the city is organized as a collective actor, in order to privilege its economic growth, a second interpretation or modality seeks to reconcile economic growth with the preservation of social cohesion (Le Wales, 1996, cited in De Mattos, 2004).

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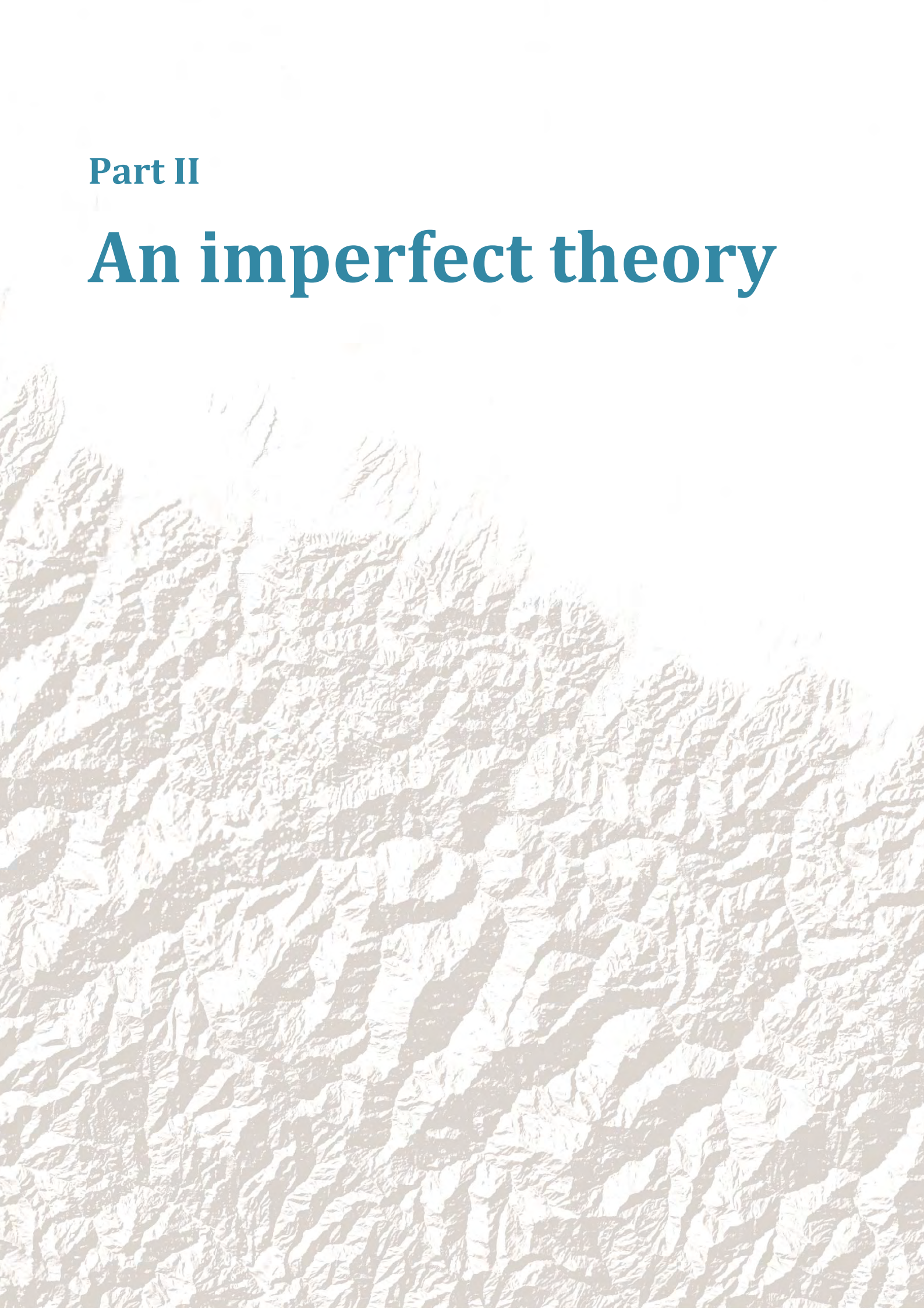
Part II

An imperfect theory



Sustainable natural and cultural heritage[56]

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Nowadays, the heritage is understood as the set of cultural and natural goods that document the different periods, the historical evolution, spiritual, scientific, artistic and environmental within a community, which we are obliged to protect and transmit, as much as possible, the intrinsic cultural message of the built and environmental heritage, the trace of the past, of what is document-building, to guarantee the conservation of the matter, mainly spatial that makes the site a cedulary of knowledge. The Architecture is transformed by the normal course of its functional life, it is affected by the destructive capacity of atmospheric and telluric events, incoherent uses or its substitution by anodyne buildings, those are aspects that limit the action of the architect and define the philosophy of conservation or innovation.

Heritage enhances the public sphere in various ways: it shapes the urban silhouette and its metropolitan area, it uniquely marks the city, leads the observation of the human being towards its exploration, underlines the crossing of the streets, even at its most modest level, as a traditional *Mazahua*[57] house, the way in which construction systems are linked to the human scale is significant for the metropolitan landscape. The smallest detail has a crucial effect on the totality. Any building with a certain pretension of beauty -that transcends the everyday and elevates the spirit of its users- must have those precepts.[58]

The global city, is the one that includes the metropolitan area, is randomly reaching its limits of density and self-exploitation, a lot of the metropolitan areas in Latin America have absorbed historic districts, understanding their cultural and natural heritage, generating a *unicum* and *continuum* conglomerate that should be added to the beauty, to sense and proportion, the prudence, in sustainability benefit: in the past, a church was a church, a theatre was a theatre. Now it is possible that this church will end up being a theatre or cultural centre. Therefore, in the structure of metropolitan areas, the cultural heritage of development must not be disarticulating. Historical buildings must be given a degree of flexibility, but without transforming their cultural message.

The TELLme project made us understand metropolitan areas - their past, present and future- in a new light of cartography, analysis and metropolitan dynamics, of the *Metro-Matrix*.[59] The metropolitan areas are organisms, which consume resources and produce waste. The larger and

56 To cite this article: Alcántara Onofre, S. (2021). Sustainable natural and cultural heritage. In: Contin, A., Giordano, P. and Nacke, M. (eds.). (2021). Training for education, learning and leadership towards a new metropolitan discipline. Inaugural book. Buenos Aires: CIPPEC.

57 Pre-Hispanic culture that still survives in the State of Mexico, which is part of the metropolitan area of Mexico City.

58 Rogers, Richard, Cities for a small planet, Editor Gustavo Gili, Barcelona, Spain, 2000, p. 71.

59 Metropolitan - Matrix, is an abstraction of the metropolitan structure, either by the main roads or by the urban land parcels. This concept was created by Pedro B. Ortíz.

more complex they are, like Metropolitan Zone of the Valley of Mexico, their dependence on the surrounding territory and their vulnerability to change in their cultural landscape increase.

Previous urban cultures have been destroyed. Teotihuacan culture, 1,280 – 2,200 years ago, the deforestation and the consequent suppression of the vegetal mantle finished with the necessary humidity, even in summer, was a site with springs, *chinampas*[60] and aquatic vegetation, was the paradise of *Tláloc*. The decrease in rainfall along with declining soil fertility and a growing population caused the Teotihuacan culture to lose its resource base and collapse. Undoubtedly the specific causes of such phenomena are several, but there are four variables present: population, culture, environment and resources.

Almost all metropolitan areas were absorbing historic districts, with their natural and cultural heritage, the faster the growth of communities, the greater the danger of losing social cohesion and heritage are. During the course of the TELLme project methodology, I have thought that the good mental health, of the metropolitan citizens, requires that we return to the idea of valuing the heritage city as a structure of the intangible heritage, to maintain the cohesion of inner urban life and preserve it from the destruction of the outside.

In the TELLme team, we all know that there is something wrong with the sustainability of metropolitan architecture, and that it could get hopelessly worse if we do not come up with a different kind of metropolitan discipline for the future, based in the historical memory, an ecological metropolitan area, as Richard Rogers said *that contact needs to be encouraged, equal, open and, above all, the city is a place of equality, openness and, above all, beauty, where the art, the and the landscape will stir and satisfy the human spirit*. [61]

In the metropolitan areas we must consider how to adapt a number of historic buildings, leaving aside the conservation of larger monuments such as cathedrals, churches or municipal palaces, the preservation of the societal architectural legacy a number of significant issues. The buildings have always been rehabilitated, innovated, re-engineered its infrastructure of facilities have been renewed during its life in a harmonious process. They must be flexible, not expensive to reconvert and can adapt new uses and functions. In the Metropolitan Area of the Valley of Mexico there is a practice of maintaining the facade and building a structure totally alien to its interior, reducing it to what Richard Rogers mentions, *"reduces an interesting building to its historicist shell".*

Historical memory teaches us that cultural heritage can be updated to meet new needs, creating dialectic between the new and the old.

Preserving historical appearance in metropolitan areas also brings problems. A good contemporary work done with order and quality can better complement the historical context. Associating old and new architectures is a practice that has a long tradition in our cities and metropolitan areas.

Cities and particularly metropolitan areas are producing a delicate social instability associated with the inevitable environmental and heritage decline. Despite the global increase in wealth, due to free trade agreements, which surpasses the population one, poverty is worsening and continues to grow. Most of these poor people live in the metropolitan areas, in the most disreputable environments such as Ecatepec, State of Mexico, exposed to the limit of habitability conditions and perpetuating the cycle of erosion and contamination, to the loss of identity due to the lack of appreciation of its cultural and natural heritage.

The metropolitan areas are destined to house an increasing proportion of this poor population and it should not surprise anyone that societies, lacking in cultural equality, are suffering an obvious social

60 The original meaning of chinampa (in the fence or fenced land) denotes the wooden stakes placed around a constructed floating islet that resembled a raft.

61 Rogers, Richard, Cities for a small planet, Editor Gustavo Gili, Barcelona, Spain, 2000, p. xi.

erosion that accentuates environmental and heritage precariousness, components that are intertwined.

Poverty, unemployment, a poor health, transportation and education system, and conflicts -social, cultural and environmental injustice in all its manifestations- all hinder the ability of metropolitan areas to be environmentally and culturally sustainable.

Mexico City and its metropolitan area exemplify the growing pollution and global polarization of a society divided between rich and poor, with its dubious privilege of being the most populous and polluted of cities. In 1900, its population was 471,000; today it exceeds 22 million, with 6 million cars, in the cultural and industrial heart of the country. Sometimes the smog layer is four times denser than those of Los Ángeles, United States of America, and six times more toxic than the maximum standard set by the World Health Organization (OMS).

The ozone level exceeds the permitted risk level for more than 220 days a year and, when pollution is too dense, industrial production is stopped while citizens are encouraged not to use their cars. Nevertheless, rural immigration continues, and this poses a serious housing problem, public services and facilities for the 6,000 new residents per month. These factors are making the Valley of Mexico Metropolitan Area, as well as other rapidly growing cities, an environmentally and culturally unsustainable city.

The city and its metropolitan area are a complex and changing *Metro-Matrix* of human activities, environmental and cultural effects. Planning a sustainable metropolitan area requires the broadest understanding of the relationships between citizens, services, transportation policy and energy generation, as well as their impact on both the immediate environment and the cultural and natural heritage. For a metropolitan area to generate true sustainability, the disciplines and concepts of urban ecology, economics, sociology, and cultural and natural heritage must be integrated into urban and landscape planning.

Environmental considerations cannot be separated from cultural and social heritage, since the policy aimed at improving the landscape must favour the quality of citizen’s lives.

Cultural, natural heritage and social factors feed off each other to build healthier, more educated and more open metropolitan societies. Above all, sustainability means a better life and culture for future generations.

In the scenario of urban development policies that have been applied in the last 60 years in Latin America, without any discussion, have not been born, nor grown to human measure, due to the fact that they have given way to building speculation outside the human and landscape scale, as well as the increase in environmental and cultural deterioration.

It is unavoidable to mention, to the city's quasi-physiological need to shift primary uses to tertiary, to the building of road infrastructure, of mega services, creation of releases and landfills, of the establishment of huge gasoline distributors, of the abuse of advertising in the streets and avenues.

In addition to all of this, the lack of planning in the architecture of public space, both in sterile, and eroded or residual areas, to the uncontrolled exploitation of natural ecosystems within the city and its metropolitan area, construction of shopping centres represented by anodyne architecture that leaves established small merchants defenceless, to light pollution in historical sites, in the city and metropolitan area as a whole.

This urban landscape, typical of Latin American cities, is configured as a privileged terrain for a political, technical, cultural: the recovery or re-qualification of monuments and the environment in the most deteriorated parts of the metropolitan areas, that are the most intensely populated, which must be considered, as a priority, for the landscape reordering of the territory.

It is important to highlight the value of the architecture of open spaces and green, in particular, with specific attention to the gardens, orchards, urban groves, open spaces between the housing, between education, health, work, transport and circulation buildings, which up to this day are absent from architectural and landscape ideas.

It is important to emphasize the specialized and irreplaceable role that open space architecture plays in the metropolitan area, among them, green elements mainly native plants, the ground, the water both for the physical re-qualification and for the vital functions of the city and the opportunities that these sites offer to the work of landscape architecture. From this point of view, the challenge is interesting and extremely current, considering that:

- The open spaces, to carry out an environmental requalification of urban or metropolitan areas, however, appearances, and exist in great quantity, in the great majority of the sites are resources that are exposed to useless waste, are currently areas that are lacking in ideas.
- Due to the morphological characteristics of the historical urban structure and contemporary cities and metropolitan areas, the insertion of spontaneous or designed natural elements, physiologically find their space in the city, the existence or insertion of spontaneous vegetation in sanitary discharge areas, urban orchards or gardens, in sterile spaces or urban remnants, residual spaces along the abandoned railroads. The lack of planning for green elements, as landscape design components or urban requalification is a missed opportunity, and a subsequent cause-effect of environmental decline.
- Environmental aspects escape the rules of rationalist urbanism or zoning, in the eighties of the last century, concepts in force today in traditional planning that ignores the importance of plant architectures and the quality life, according to the numerical - quantitative and land use definitions of the urban standards, the Urban Development Plans consider the green area as AV and is only painted green on the plans, even if they are sterile areas or urban remnants. Nevertheless, the ecological aspects constitute a system, a fabric and an incessant and continuous link of the urban structure. The cultural and natural heritage establish the connection between the different functions of the city, streets, squares, atriums, canals or apantles, residual spaces between schools, public parking lots, public and private green, or everything that is not built. The architecture of open space resurfaces as a filter, through which the population uses the city, it transits, and it goes through the life of every day.
- The architecture of open space is the inverted image of the metropolis that defines the functionality or waste of available public spaces, also shows the different phases of the city's growth, in a logical or illogical way, thought out and designed in terms of feasibility or abandoned to spontaneity.

Similarly, it concerns, above all, the natural cycles that occur in the city and its metropolitan area, with singular attention to the standards, not of quantity like the urban ones, but of quality, measurable not with square meters, but with chemical, acoustic, biological analyses, e.g., reading of sulphur dioxide pollutant emissions, carbon dioxide, chromium, lead, nitrogen dioxide, nickel and even asbestos. Long-term exposure to these chemicals can cause a wide range of serious health problems, such as hypertension, diabetes, heart and cardiovascular disease.

Poisoning our environment means poisoning our own body, and when you experience chronic respiratory stress, your ability to defend yourself from infection is limited.[62]

It is necessary to classify the architecture of the open space in the weighting of the uses of environmental, perceptive, functional, artistic and historical order to understand which are the purposes of each open space in the city and its metropolitan area, and what role it could play in a process of monumental and environmental re qualification.

62 Ogen, Yaron, Linking pollution to deaths from COVID, Newspaper Reforma, April 21st, 2020.

When talking about open or public spaces it is not only referred to the green, considered by many people as a neologism, the green concept is still subject to many shortcomings of traditional urban practice, rather it should refer to the system of reorganization of the architecture of an open space, that is, to the negative of the city, built or mineralized, or, to the spaces in which the reproduction of the animal and vegetable life, still can be given.

The very specialized role of open spaces in the city expresses concerns and demands of environmental order and in the case of Mesoamerica of a spiritual culture.

Each city and its metropolitan area are characterized by its physical-environmental elements, which must be valued, the weather, the wind, rainfall, temperature and the determination of the heat island, altimetric movement, hydrology, vegetation, intrinsic characteristics of human settlements, risk areas, transportation networks, socially problematic areas, among others.

From these categories the pathological elements can be isolated, since each element is capable of influencing and qualifying the Formal Units of Heritage and Landscape that constitute the urban scheme, so it is possible to diagnose the problems and induce intervention therapies through a Landscape Plan, based on the identity and characteristics of the environmental subjects.

It is a matter of rearranging the spaces that penetrate the metropolitan area to the city, a search that can and must be innovative, nature + history + spirituality and landscape design.

The components of urban green in Latin American metropolitan areas are the cosmetics of the disfigured face of cities that have grown badly, that is, the makeup that hides and mimics the deformations.

Nowadays, open spaces, in most metropolitan areas, are an anti-city where part of the collective life of its inhabitants. Governments are reluctant to venture into the field of landscape heritage design, planning and conservation, because of the costs compared to other forms of urbanization. However, the building and rehabilitation of vegetation are among the lowest costs, is moderately inferior to a banal asphalt binder or stamped concrete for paving a street.

Metropolitan areas should celebrate life in society and respect for nature. The current need for a sustainable landscape gives us the opportunity to establish a desire and new aesthetic orders capable of giving a revitalizing boost to the new metropolitan discipline.

Most of our parks, squares, and avenues have been bequeathed to us from the past. In this 21st. Century, many more important contributions on the public sphere could be expected, but, on the contrary, we are faced with the fact that our contribution seems to be more the erosion of such spaces due to building speculation, informal land tenure, trafficking and the greed of some people.

The architecture of open spaces must be understood as a quality element to design, plan and preserve the historic city and its metropolitan area with a renewed hierarchy of historical values, environmental, spiritual and artistic, among which architecture and environment are intertwined, using open space architecture planning for this purpose in a logical relationship, as between male and female, between positive and negative pole, without the subordination of one to the other.

Chapter two

Metropolitan practical-theoretical approach

The Metro-Matrix[63]

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The Metro-Matrix (Ortiz, 2014) is one of the tools of Practice of Metropolitan Discipline. It is a reticular system of axes: few structural geographical axes and some completing penetrative ones, which first, determine the development of structural axes along lines and, second, define hinge points of activity and densification. The matrix assumes its legitimacy from the definition of the logic of historic and geographic settlement-distribution, which makes possible the localization of interchange nodes even in those areas of the metropolitan region hitherto considered peripheral to the only centre of the mother city.

A cognitive tool

The Matrix is an abstract interweaving network considered as an interdependence between the mental and the physical temporal space of the city. It is held in the mind as a scheme (the term of idealistic Kantian phenomenology), not so much in its ontological nature, which is immutable, but as a structural basis for the acquisition of a competence by each individual in their exercise of exploring a territory in order to know it and to act in the reality. As elaborated by thought, this scheme encompasses the space-time nexus developed by a mental, i.e. virtual, exploration of the world in which to live and act. Not a psychological world, but a concrete and practicable world. The

63 To cite this article: Ortiz, P. and Contin, A. (2021). The Metro-Matrix. In: Contin, A., Giordano, P. and Nacke, M. (eds.). (2021). Training for education, learning and leadership towards a new metropolitan discipline. Inaugural book. Buenos Aires: CIPPEC.

metropolitan architect is the person in charge of theoretically elaborating the paradigm of the space-time scheme. Not as an abstract, but as a concrete one, which conforms to a practical knowledge, i.e. a knowledge of where and how to locate and build activity containers, not just as efficiency-bound buildings but as well as signs on the map (metropolitan acupuncture chart) to be explored, frequented and lived in.

The three elements that constitute the Metro-Matrix are geography, geometry, memory, and its instruments are: schema, diagram, model-name (Madrid, Teheran for example), maps.

The attitude of reduction (geometric simplification) is the indispensable starting point. It can be defined as an intermediate layer between the solid street-piazza matrix (Rowe,1980) which forms the omnipresent background of the traditional city and the new structure of the metropolitan city. Engaging in geometric reduction (schema) means exercising a systematic ability to understand complexity in a glance, thus opening up new possibilities within our usual mental flow. It is the Platonic quest for the conceptual 'Idea' behind perceived reality. The result of geometric simplification is an "acute intuition" so that the immediacy of experience appears surrounded by a multiplicity of horizons towards which we can divert our interest. This intuition of the synthesis is fundamental because it represents the basis of the criterion of exactness in the analysis of the metropolitan discipline, the nature of its evidence. If the 'Synthesis Idea' is the beginning of this process, it regenerates the exercise of imaginary variations (scenarios or exercise of thought), in the virtual space of the mind, and then multiple possibilities of the metropolitan phenomenon appears through the cartography. These ideal variations are familiar to us from mathematics.

Schema diagram model-name map

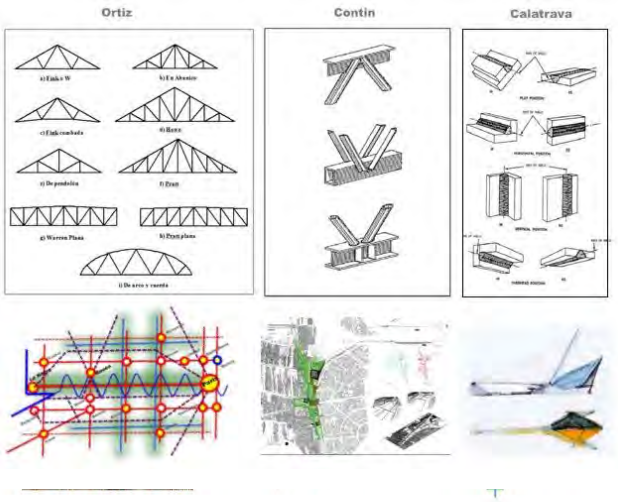
From the interpretation of a satellite map (a google map often) the mind produces an abstract schema that is a relational tool. It defines the hinge points of a metropolitan region or city towards their existing and/or possible relations. It becomes a diagram, then, and we are able to produce the topographic map, that is, unlike an ortho-photo, a mental construction. We build it through the Metropolitan Cartography tool that is an instrument to produce series of synthetic open-source maps. The figures of the schema and diagram allow the model of a specific city appears within its name identifying it. With the model, the map of the city suddenly appears also, letting suddenly memorize the strategic hinge points of a metropolitan city structure through a mental map: the metropolitan acupuncture chart.

The process to shape a model passes through a schema and a diagram, which since are factual (the diagram, in particular) give to the model a total factuality that is not synthesized in the model-name; it is much more complex. That factuality, so its capability to be operative, is possible through the interpretation of the figure (schema and diagram) of the model-name and then, through a map. The figure of the model-name coincides with the model when we look at it synthetically and is valid also as the name. The model-name then, necessary, evokes the topographic map. A real map that is no longer necessary if only we have to name the city but it becomes necessary when we have to operate at the scale of the place. The map is fully identity. The scheme is a mathematical geometric operation, but when it is conceived since its rigidity, the properties of the places (their values) often are not visible. The schema is like a telescope used to see better. Instead, in the map, space is not considered in its quantity and extension, but as *topos*, as its value and quality. By naming the places.

So, the though movement is through the 1) Ortho-photo, the 2) Diagram and the 3) Scheme (Synthetic Cubism). Then it is possible to see what is missing in the Idea of the city and program the investments to complete it. (Isostatic Truss 3-scales analogy).

These investments can be either bars (connecting infrastructures) or nodes (urban centralities). Both are necessary for the truss. Otherwise, it will fall.

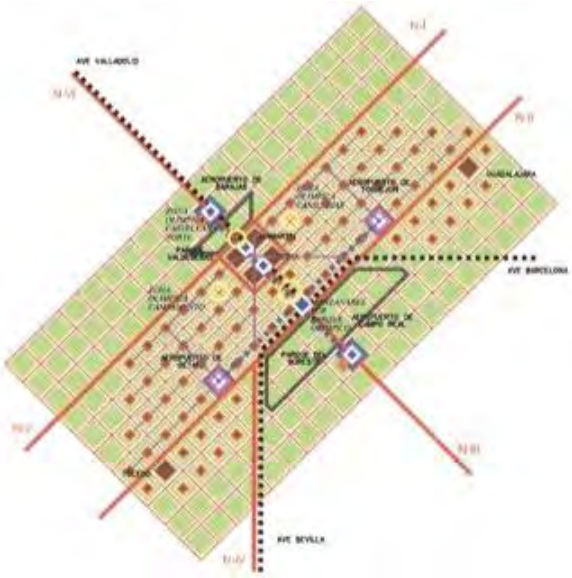
Figure 6. The Metro-Matrix concept process

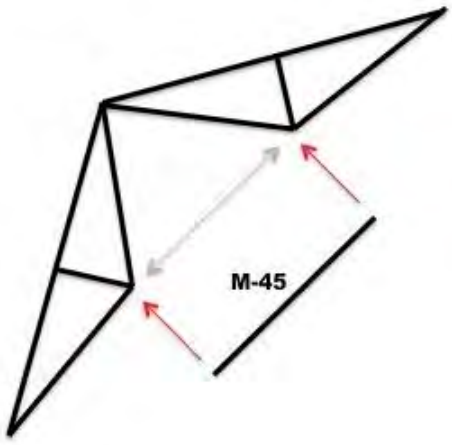


Integration of scales

Each truss is different at Metropolitan scale. Each urban centrality has to be designed differently because they respond to different pulling/contracting forces (Urban Scale). Then it is possible to decide the welding (which is the specific urban spaces and architectural scales).

Figure 7. From the Schema to the Metropolitan Acupuncture Chart





As the Newton Formula is a synthesis of complex situations, each different, to stop at a geometrical reduction, however, would mean condemning this method to the production of non-operational assessments. The formula is to be applied to practical means. For 300 years it has defining the evolution of all our technological developments, from pullies to moon travel. Intuitive evidence must be translated into communicable terms, through the language of spatial disciplines or through other symbolic scripts: that is the aim of the Metropolitan Cartography. On the other hand, the concrete physical execution of the descriptions/schemes of the metro-matrix is an integral aspect of the simplification process itself, and shapes our experience as much as the intuition that generated it. In other words, it is not so much a matter of "codifying" the territory, but of attributing qualitative value to the points that we have identified through the matrix scheme. Through an accurate graphological semiology the maps of Metropolitan Cartography give body and shape to what we experience through the schemes and diagrams of the matrix meter. The maps of Metropolitan Cartography can complete the knowledge of metropolitan dynamics through the representation of the qualitative "variations" of each position identified by the scheme, i.e. the precise conditions under which an observation can be communicated. Thus, the local variations of each position, once recognized and related to each other, become invariant to the metropolitan scale.

A practical example

We want to give a practical example of the logical succession of choices needed to achieve conception while the Metro-Matrix

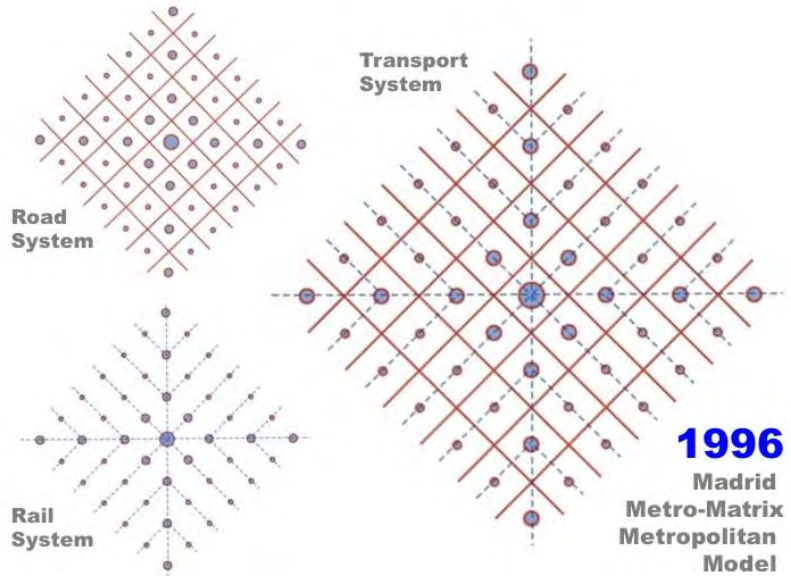
The starting point is a satellite map (zooming in and out to understand the different scales) and ‘discovering’ the main structural green lines (main directionality and secondary one). Then, it is necessary to locate the historic urban settlements and see the periodicity between their locations. That gives the ‘mesh width’. Most of those lines have already been historically built as ‘the ancients were not stupid’ and they already had a practical perception of the patterns of the green infrastructures determining the territory.

To complete the lines, which have only been partially understood by the existing plan with discontinued implementation, it is necessary to fill up the gaps of the mesh. These lines might, or might not be for location of infrastructure. It all depends on geo-topographical possibilities and development strategies. They just are the necessary lines to understand the pattern of historic-cultural location in the territory. Each node so that, acquires a specific personality and function. Plays a different role that has to be defined and designed. Completed in its components to play and fulfil its role (Karma) to the best. To the best in social, economic and environmental terms. As the pieces in the chess game. Each game is different; each piece has to play its strategic role to fulfil to its best.

Only then does the geometric simplification arise in the mind as an insightful intuition. The synthesis formula of the scheme and the diagram comes, that is, from a higher level of conceptualization. This

(Fig.1) is the Metro-Matrix reticula, like the Gravity Synthesis Formula applied specifically to a given physical experiment.

Figure 8. Metro-Matrix _ Schema



The Metro-Matrix and the question of the birth of a metropolis

The Matrix is a way to pose the question of the birth of a metropolis with respect to the rule of its physical shape and not according to an economic model. In fact, to define the rules of the games (chess board) and their possible combinations is to deny the possibility that the condition for which we can say: "play your game ...". So, following the game's metaphor, considering the territory as a chess, at the beginning of the planning action, allows us to describe the functioning of each points of the territory's rules. Through the game, it also eliminates the possibility of descending urban formation from myth, that is, from a dogma.

The Matrix is a mental paradigm that comes from a deep ambition to synthesis showing a strong will towards a geometric choice. After the synthesis obtained, however, the rule that derives from it must be impeccable: by changing the existing shape of the city, the city articulation changes among the different units, and the risk is leading to a fogging of the existing relations. We will no longer have blocks in the metropolitan fabric but fields of practicability. The form of the city has opened to the line. No longer, then, only street and blocks, no longer the interpenetration of a microcirculation in the centre, but articulation between different orders of magnitude.

The question of the metropolitan project will concern the definition of the unit of intervention and how should micro intervention be articulated at the higher macro scale: what persists, what changes? We are looking for the definition of a metropolitan potential.

The Matrix represents the faculty of thinking and imagining: it has a mental imprint, that is, through the Matrix we can conceptualize the relation among the territory's elements (we can mathematize the element). It is based on the exercise of the mind that produces a metropolis paradigm, - within a schema and a diagram -, that, then, becomes a model (a city model-name: Madrid, Istanbul, Tehran) through memory and imagination. We do not start from the territory functions, then, but from the

matrix relational idea that sustains its possibility of being scalable to obtain a homogeneous cellular space (the metropolitan digit).

The Metro–Matrix reticula, therefore, implies an imaginative (mental) approach that concerns a mental operation of totalisation. It is therefore, an ideal operation. The tracing of the lines, then, refers directly to the infrastructures, i.e. the traced lines prefigure the tracing of things that connect or separate parts of territory. What we get is an infinitely large cellular shape homogeneous of cells expandable to infinity (the dimension is variable and depend by the character of different geographical region). The schemas of the metropolitan cities are the figures of metropolitan models - type declinable. With the Metro-Matrix we experience the principle of scalability, - already sanctioned by Leonardo with his figure of the square and the circle -. Its grid is a figure that scales to infinity and divides to the infinitesimal, such as the renaissance painters' grid. The question is: at the metropolitan scale has the principle of scaling been questioned? we mean that if we start from real measurements and not from reticular abstraction, are we able to scale them? That is why from the paradigmatic schemes we obtain, then, the diagrams. These are produced conformed the schema to the geography of a territory.

Rule and model

In the world of urban planning first of all, there is the program, that usually descends from a city model. There is a difference between planning and programming. Planning is the long-term consistent vision of the whole (4- or 8-years vision, beyond mandate responsibilities). Then, there is programming, which is the 4 years priorities on investments within the political mandate. The Plan has to have 'variable geometry' capacity so different programming approaches can be acceptable. That will be the difference from a government that prioritizes social facilities form the ones that prioritize productive activities.

It raises the question of the transformation of a territory and a city conceived through governance and policies or, above all, as a question of Form, because the program can design, but cannot do what the form of a metropolis does: establish how all the places needed to inhabit a mental map are interconnected. The mind map provides many more alternatives that are necessary and defined by a planning process, so you can choose and decide what will be the priorities of the city. This is the condition to design a metropolitan city where all citizens can satisfy everything they need and want to live a territory and a city. Therefore, the program as a real program never gives the syntax of space/time organization. This is the role of Metropolitan Architecture. According to the Matrix model, the shape of the metropolis is a green/grey structure. So that, we do not have path, landmark, edge, node and district following the Lynch 's idea of the structure's elements of a city, but, above all, the green-grey infrastructure. The Metropolitan Architecture so is perceived such as a metropolitan total environment (see First Phase, A. Chapter 1. The genesis and purpose of Metropolitan Architecture, its discipline in the era of the bigness at the metropolitan scale. (A. Contin)).

The diagrams, however, cannot be sensory inhabited. They, as every traditional topographic map, are mental maps but still more abstract. It is necessary to know that the spaces to be used, with the relevant equipment, have a distributive arrangement of functions that is not a problem of program, but of form (multiple pockets) within their physical properties and qualities. That is why the Matrix must to be understood, above all, as a tool to define the rules for composition / form and not only as an instrument for the definition of program / functions for a metropolitan city model (capitalistic city, socialist city, XXI century city, Smart city, and so on); albeit It works as well. A paradigm that becomes a model through a schema and a diagram to which we give the name of the metropolitan city that we are analysing.

Today we recognize that the urban elements having an active part in urban phenomena changed, due to the new process of urbanization and following the subsequent huge spatial and temporal

measures of the city. We have to admit that the city structure, its physical and temporal relations with the citizens, is altered due to the change of its scale; the temporality of people and citizens is particularly changed. In order to keep the physical issue as a focus of the design approach, the Metro-Matrix methodology produces a metropolitan city mode. Through its schema/diagram/protocol maps, - the latter obtained through the Metropolitan Cartography tool-, we have a conceptual shape of the metropolis that provides metropolitan architecture scenarios and allow the metropolitan expert to study the metropolitan dynamics impact on territory, society and on legal and institutional forms.

The metropolitan unit

We could say that this is a discontinuous reform, the creation of the interferences inside the new metropolitan roads: a development method. Referring to the result of Ortiz's methodology, rather than a formal model we need to talk about a development model, which consists of both series of:

- patterns that indicate a direction of the settlement's growth;
- a series of maps or networks that suggests possible configuration and characterization of specific qualified locations with a gradient of formality: from the centre (new metropolitan morph-types related to real estate development) to the countryside (new urban-rural settlements able to involve urban agriculture). This aspect contrasts with the relative immobility of the traditional cities order, based on a now outdated horizontal system of traffic, and leads us to propose an integrated model that is also based on a capillary action, on the rapidity and the multiplicity of communications, which lives and spreads freely in space in any direction, reclaiming the land for nature.

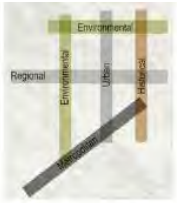
The metro-matrix schema is a simple square geometry that reflects the forces of the geo-topographical features of the historical territory. It responds to the geography of the region and the structure of the historic towns as well as historic urban evolution models. The digit of the plan is the figural landscape unit (named Unidad de Desarrollo Equilibrado (UDE), or Balanced Unit Development (BUD)) that is the medium distance between urban settlements in that specific metropolis. As large as 15 km in Buenos Aires due to the, poor, edaphological values and the colonization proves. As short as 3 km in Havana or Piacenza, for the same factors working in a different setting. Most of the time it is in the range of 4.5 kilometres X 4.5 square kilometres. Which corresponds to the span of the medieval length of a League. The anthropological distance of an hour’s walking travel. In Madrid, as the first case study, that was the medium distance. But it is different in each metropolis depending on the distance between the historical urban settlements that reflect the properties of the territory, geography, agriculture production and culture. This is a lattice topology, a sign of human presence in motion inside the territory. The schema is not only a tool that mimics reality, or represents it, but also an operational tool that extrapolates and necessarily allows an experience of cognitive mapping. Geography becomes the original archetypal form of Western knowledge and needs to be redesigned to meet the challenges of the globalized society.

The interpretation of the new “metropolitan region dimension” is achieved through geometric linear lines of green-grey infrastructures. The interpretation of the new “local dimension” is a topological network that determines a new portion of the body space. The grid tames the existing infrastructures, which become linear, not circular. The new infrastructure model is conceived as an interrelated system between commuter trains and highways within the green infrastructure system.

After a first phase that identifies the force lines (geographic lines) of the territory (we name it Metro-Matrix 1), then the Metropolitan Architecture comes out from the location and integration of large-scale structural elements, which coalesce the metropolitan size and extend urban-style living standards to larger populations in suburban areas. We name that phase Metro-Matrix 2 or Metropolitan Acupuncture Chart and it is the result of the analysis of the Maps of Dynamics.

Figure 9. Metropolitan Acupuncture Chart _ Teheran

The Metro-Matrix result: The Metropolitan Acupuncture



hinge points + metropolitan themes
1 metropolitan layer

a) the gates towards the region and two ecologically relevant areas east and west;
b) a very critical area for the city's bio-potentiality in the north, where we have to deal with the explosive growth;
c) the center of the city that is the hinge point with the historical urban axis of the city;
d) the old airport Ghale-e-Morghi now abandoned;
e) the industrial city Eslamshahr raised inside the agricultural area in the south of the city;
f) the new airport.

The areas are present together and interconnected through projects of metropolitan architecture that operate as bypass.

3 Selected area and themas

The selected areas and the themes of metropolitan architecture are:
a) the central area. This area and its historical axis, have a bypass with the diagonal metropolitan south-west axis of the dismissed Ghale -e-Morghi airport.
b) the northern area with its critical aspects within the nature / culture relations, which looks as compromised by the recent urban development filling the gap between the flat land and the mountains and even sprawling on the sloping topography.
c) the area of the old airport, Ghale -e-Morghi, that is the real infrastructural hinge point of the metropolitan area that connects the metropolitan axis, the urban and the historical one from which the penetration into the territorial regional starts.

The Metro-matrix as a political tool for the governance of a metropolitan territory

The profound criticism of the Metro-Matrix toward a vision of an only economic or ecological territorial development is especially represented by the way it addresses the matter: its empathy on metropolitan infrastructure and regional development. Within the discipline of the metropolitan project and the territorial analysis, we are often increasingly facing the implementation of the infrastructure, due to its resilience affordance, as the key to the structuring of the territory. This topic has been the subject of some infrastructure works that have selectively destroyed landscapes of greatest importance for local populations. The Metro-Matrix implements a sustainable infrastructure strategy. The territory for that strategic issue is fundamental because it is the context of the memory of the inhabitants, but, overall, because it is the framework of their experience and the space of their everyday life.

Finally, one the most important result that we obtain from the application of the Metro Matrix is the construction of a new series of open-source maps (Protocol Maps and Maps of Dynamics), which are the device capable of supporting a mental map at the metropolitan scale, the Metropolitan Acupuncture Chart through which we can identify the correct place where it is possible to locate the Metropolitan Architecture Projects. These maps are made up of a continuous and a discontinuous system (local space within the global scale) and by layered ground. The matrix, so, moves from a geographical scale to local geography. Compared to the traditional structural urban paradigm, the Practice of Metropolitan Discipline still wants to recognise the possibility of a value for a syntactic and communicative Metropolitan Architecture (a cognitive value), through the definition of a geographical and historical statute of the architectural subjects, which is recognized as fundamental for the construction and the symbolic interpretation of the built environment but at the new scale: a metropolitan landmark, as a new relay, a hinge point for the interconnections between the scales.

Tool for action

The metro-matrix presents a diachronic, dimorphic and diastatic structure which is stable and complete in time, form and scale. It provides the clues for what is missing or what is needed. As in an Isostatic Truss structure each knot and each bar are necessary. If any are missing the structure fells. In the Metro-Matrix if a bar or a knot is missing the structure is under performing and should be provided. The Metro-Matrix allows for redundancies. Inherited wrong decisions have to be assumed, as possible unbuilt yet wrong investments but politically committed. The Metro-Matrix includes these deviations although plays on minimizing redundancies and allowing for unwanted alterations to the core of the structure.

The Metro-Matrix immediately allows to prioritize the main strategic projects necessary to the metropolis. It is an integrated tool for action even if political and administrative action is mostly disjointed and incrementalist. Comprehensive Strategic and Structural Plans (see difference in attached document) would be welcome but are not imperative. As a matter of fact, Metro-Matrix proposals have been implemented around the world (see Diagram) as independent projects without the backing of an integrated Plan.

Figure 10.The schema that becomes the model-name

Principles, operators and operations[64]

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"An operator is an analytic tool that serves to generate the rules of the building and the order of an inaugural book. It is about how to deal with metropolitan dynamics. With the name principia, partes or rationes, some of them are explicitly identified by Alberti. The operators of first type are considered as axioms and respectively called: the axioms of the triad (which generates the general plan of the book), the axiom of the bodybuilding, the axiom of the classification of uses.

Note. The operator is here understood in the sense of indicator of sign transformations which allows defining the rule of operation following the definition of N. Dunford and J.B. Schwartz in Linear operator".

- F. Choay, (1980), The Rule and the Model, Officina Edizioni, 1986, Rome. Page 99

"The Operation is not only a practical action, but it is a principle of conception. What we would like to underline then is the logic of the action. In the Alberti's book the six "principles" of conception concern the region (regio), the area (area), the plant division (partitio), the wall (paries), the roof (tectum) and the openings (aperitiones). For Alberti, there are three fields of application: necessity, comfort and pleasure. After a lógico-critical deduction, which serves to establish them, the six operations of the conception are briefly defined then, in the order in which they recur from beginning to end of the project, examined one after the other and crossed with the three principles of necessity, comfort and beauty, which make them generate specific rules each time".

- F. Choay, (1980), The Rule and the Model, Officina Edizioni, 1986, Rome. Page 103

The reconnection of the ideal city with the real built city in the MGPI (Metropolitan General Principle and Issues) framework comes through the process of a conceptual operator that brings the principles and issues together for finding how to transform, develop, or maintain the existing situation and reach the goal of sustainability. Sustainability is a goal but also is the foundation of our project. Towards this perspective, both the academic knowledge's theoretical field and the practical field of the Governance and management of a metropolis are equally acknowledged. (fig. 1).

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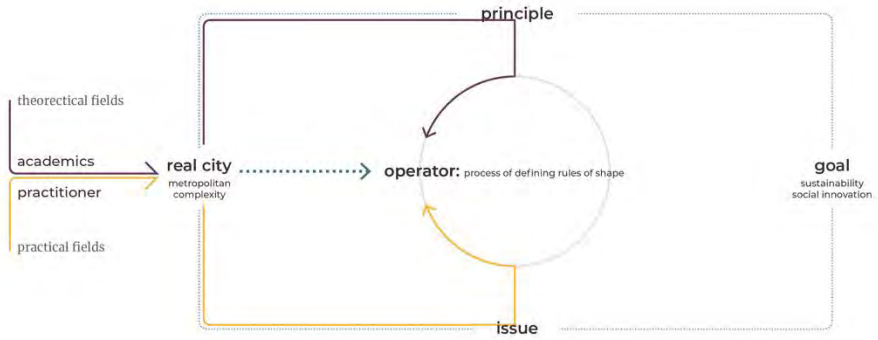
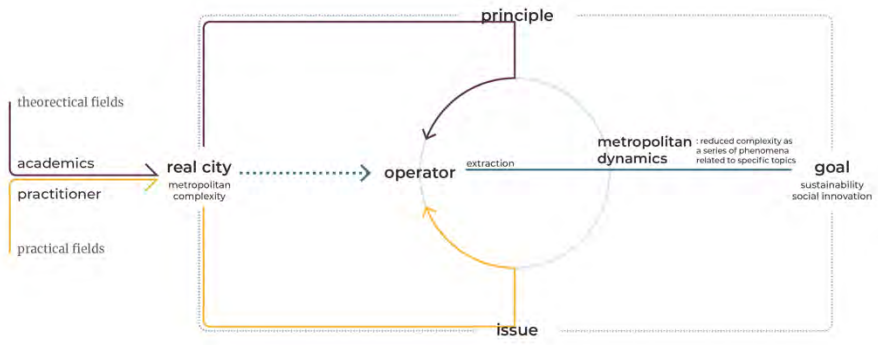
Figure 1. The Operator within MGIP Framework



Operators are "rules of shapes", that is, they are analytic tools that enable to produce concrete entities from theoretical concepts through a complex process. The operator as a logical process consists of two moments: "extraction" and "concretisation". The “extraction” moment (fig. 2) aims at exploring metropolitan dynamics and, as a consequence, the intention of the project, and at translating them into information through data related to the elements of the metropolitan contexts that need investigation.

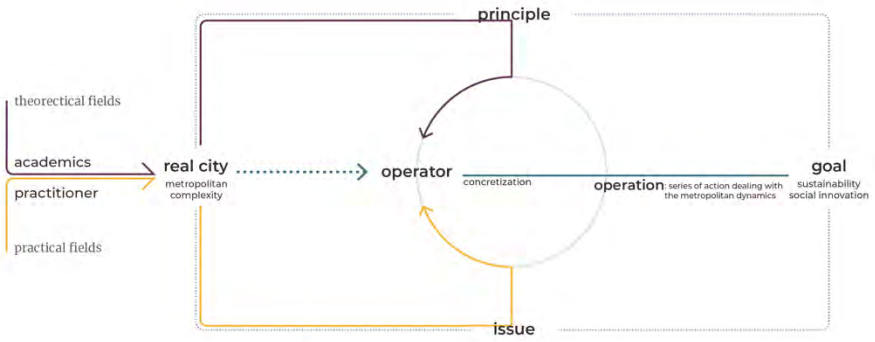
In the Metropolitan Discipline framework, the conceptual operator, - developed within the Metropolitan Cartography tool-, extracts from the MESA (Metropolitan Existing Situation Analysis) the Metropolitan Dynamics and Processes, which determine the Metropolitan Issues. Then, the Operations are the specific actions following the concretisation done towards the conceptual Operators, to address the given issue and bridge the gap between the city reality and the goal. These operators and operations are represented visually as maps using open-source data in the Metropolitan Cartography tool.

Figure 2. The Operator – extraction – Metropolitan Dynamic



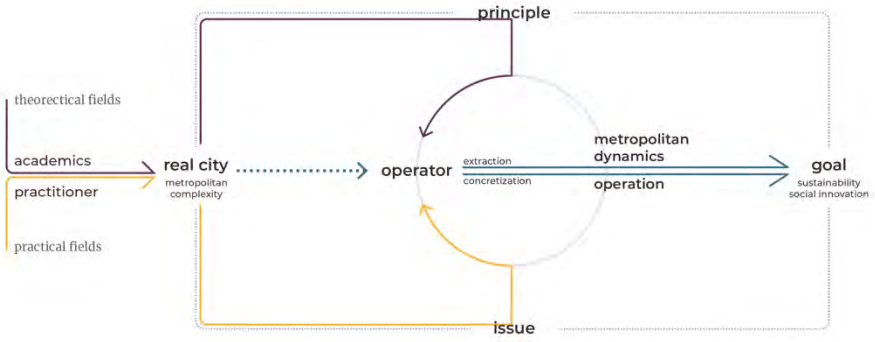
Reducing the metropolitan complexity into metropolitan dynamics is an essential role of the MGIP framework. Compared to the entire entangled system that is the metropolitan complexity, metropolitan dynamics represent a series of phenomena explaining the issue and the reality gap. These are related to specific topics and issues, therefore, have limited factors to consider compared to the real complexity. Recognising metropolitan dynamics is one of the most important works for collective intelligence. The academics, together with metropolitan agents will understand the issues and holistically define the dynamics.

Figure 3. The Operator – concretisation – Operation



By forming catalogues of data selected according to value judgements expressing the intention of the project, the second moment of the operator process, "concretisation" (fig. 3), aims at the definition of concrete operations to shape the real Metropolitan Architecture project. Selected catalogues of information, or semantic packages, within the MGIP Glossay Software, are used to produce geo-referenced maps of metropolitan dynamics needed to determine the metropolitan projects.

Figure 4. The MGIP Framework



The rules for selecting the data, creating catalogues of information, and their synthesis into semantic packages constitute the operator process for translating into concrete operations what was previously conceived on an abstract level. (fig. 4) The maps produced under the ethical lens of sustainability are, therefore, a mental representation of reality. Nevertheless, they become operators of reality through the concrete operations they suggest. The geo-reference and the representation of data that is the semiology of space indicate the different map points in quality and quantity. These are potential points of the intervention of the metropolitan projects. Through maps, it is, consequently, possible to reveal the specific importance of the Metropolitan Architecture projects as projects for the quality of life of and the well-being of the metropolitan citizens.

Within the Metropolitan Cartography, the operators as a set of rules to define a metropolitan fact (linkage urban-rural; public-private; urban-metabolism) refer to a common meaning also for other disciplines (e.g. the rules of urban metabolism through the definition of an urban biography are among the concreting metabolic operations for the production of a planned part of a city).

The operators, then, are within the maps, the rules of the production process of the metropolitan city through determined operations.

Urban Biography and Metropolitan-urban metabolism

Through the Principle of Urban Biography, we propose a different interpretation of the Urban Metabolism that we do not consider only as a model to facilitate the analysis of the ecological footprint of a city. Urban Biography tells how each culture has interpreted in the urban system the geographical situation. It is the spatialised narrative integrating the morphological and geological image with the work of the society that interpreted and transformed the territory. The Urban Biography, or the evolution of urban age, is closely linked to the historical and geographical meaning of metabolism, and it is understood as the constant transformation that has produced the current state over the centuries. On the one hand, it aims to establish strategies for the adaptation of metropolitan metabolism to the capacity of the natural systems that surround it and to climate change or to increase the capacity of wise use of soil, energy and climate. It is also intended to promote the connection of metropolises with their rural areas, to reconcile a healthy life with the preservation of local ecosystems, as well as the correction of global ecological imbalances.

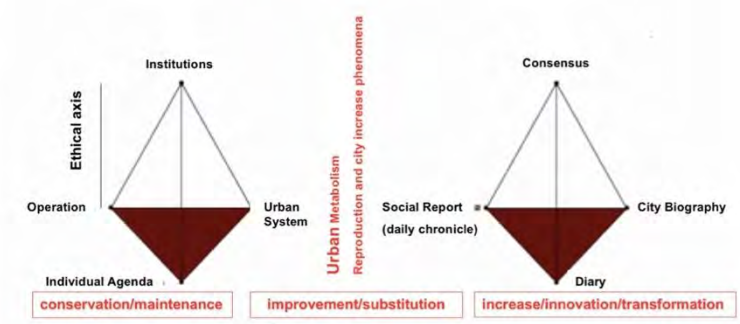
Urban Metabolism is more related to the project of developing a coordinated, interdisciplinary and changing territorial strategy to enlighten and manage spatial, social and economic dynamics, through a sustainable approach to metropolitan planning, connected to a better quality of life and accessible to all citizens. Metropolitan Citizens have the right to choose between different qualitative lives' offers corresponding in terms of temporal equivalence. That involves an incremental demand for space with low environmental impact and conscious choices between transformation, replacement and maintenance operations, linked to the development of the complex and heterogeneous European "metropolitan landscape" designed and restored through new tools for reading the current state, and its potential projection.

The Generic City and the Metabolic Approach

With the achievement of the bigness scale, theorised by Rem Koolhaas in the '90s, we passed from the paradigm of sustainability in the finite urban form to the question of how to define new metabolic sustainability that may lead to a model for urban growth. The emerging question allows us to consider the urban growth phenomena through critical thresholds and paradigmatic transformations, which remove and replace parts of the city by selecting the pre-existing structures that cannot support the new scale and complexity of the contemporary city and therefore might be abandoned. Nevertheless, today an intentional and naïve removal of the anthropological time in the physical space, that builds common sense and citizen participation, is a matter of fact. The irony seems that, in order to join the modern civilisation, it is necessary to take part in scientific, technical, and political rationality which very often requires the pure and straightforward abandon of a whole cultural past. It is a fact: every culture cannot sustain and absorb the shock of modern civilisation. That is the paradox: how to become modern and to return to sources, how to revive an old, dormant civilisation and take part in universal civilisation.

The recognition of the metropolis as a closely connected network of small, medium and large urban centres spread across vast regions, so that the Net-City definition demonstrates the necessity of shifting from the traditional urban study approach. The metropolitan centralities, or epicentres, and their infrastructural connections frame the 'hybrid territory' (McGee, 1999), where the traditional boundaries between city and countryside, formal and informal, culture and nature, are blurred into an amorphous in-between 'Body Space' (Shane,2005). It is necessary to re-conceptualise the in-between space the metropolitan nodes, understanding the physical and environmental characteristics of a local site to promote quality of life for the inhabitants.

Figure 5. Urban Metabolism Scheme based on The Prism of Sustainability Model (MSLab)



In our concern, Urban Metabolism (fig. 5) is an approach looking into the process of transformation, substitution, and maintenance of new urban territories. Metabolism related to the metropolis means understanding the incremental goal of a metropolitan work according to the relations between cultural, energetic and productive investments. That re-configures the urban system under the lens of sustainability. It implies considering the changes occurred to the typological and morphological paradigms of space and their impact both on private space and the variety of the public realm, and how the old part, the new part, and the neglected part of a territory can be integrated as a whole.

Nevertheless, it is critical thinking about a new language of composition, which refuses direct references to a pseudo–picturesque historicism. Thus, in particular, the metropolitan public realm requires the construction of narration, through the architecture, that can tell stories about who we are and what a metropolitan city wants to be. The metropolitan public realm introduces, above all, a new symbolic dimension that brings the architectural project to the use of formal archetypes, which are able to evoke a new meaning in the global culture. The new project is born, of course, from the local scale but now it could transcend to the global scale. It also means to understand the various necessities, desires, contributions, and relationships of inhabitants and their prosperity. The vast possibilities of institutional structures to accommodate these physical, social, economic diversity sets the Governance as the ethical axis of the transformation. That is an essential part of the metabolism.

The three metabolic operations

Regarding the growth, the issue of urban metabolism is linked to the evaluation of the city correct size: how big it can dream of becoming. That allows, even if in the progressive direction (i.e. towards a developing economy), to preserve the citizen's sense of belonging to a place. We have to define the sustainable incremental degree (δ) of soil consumption for every size, or, better, what is the scale upon which to test its appropriateness: home, town, city, metropolitan region? For every scale, there is a digit (minimal unit of intervention), which is also the element that citizen can understand and memorise in order to produce their mental map of the place. That is fundamental for rooting identity and belonging. Participation and consensus to the territory transformation, replacement or maintenance, which are necessary for the fulfilling of the life cycle, or urban biography, is mandatory. We test the ways of representation (Metropolitan Cartography) and interaction between Governance (at the different levels), the other metropolitan dimensions, physical, social, economy and citizens' participation, which will facilitate the comprehension of one of the most significant metropolitan phenomena linked with planning methodologies at the metropolitan scale: a verification of impact, from the urban metabolism perspective, of the great public works, on existing urbanised territories, transportation networks, residential city fabric and natural landscapes.

This phenomenon is recognisable with the economic and spatial growth linked to technological evolution. It can be conceptualised through the analysis of the impact of economic growth on the territory, can be checked through regulation tools, and explained to the citizens within open-source

cartography for a participated decision, towards the foundation of a new common sense. That means recognising that the participants to the new process of urbanisation have changed. Nevertheless, also the spatial and temporal measures of the city are changed; and its structure concerning metropolitan contexts and citizens. It must change the way to mark places and territories.

Many studies focus upon the sustainability of space demand – that is environmentally low-impact space – in metropolitan processes of anthropological, social, technological, economical and managerial development and transformation. The consumption of energy, materials and, above all, soil, is to be considered, thus, the consumption of a rare public good towards a metabolical approach stressing the ecological issues of the different parts involved. It becomes, therefore, relevant the temporal component of “metabolisation" seen as a project of the life cycle, concerning the spatial qualities linked to it, or even as a generational passage, through the different evaluations of the scale, according to which the mode of the manipulation necessary for development – through transformation, substitution, maintenance – can be decided, in terms of sustainability. For this, Governance is the expression of the culture of a world embodied in a City Form.

The three metabolic operations are:

- maintenance - restoration interventions, conservation;
- replacement - ordinary state of design and approval of the works;
- transformation - verification of compatibility, integration project concerning impact studies and the European Landscape Convention.

Urban Metabolism within the metabolic operations is a comprehensive and diversified concept, well beyond mere energy issues and matters of sustainable building practices to reduce energy consumption. It should instead be regarded as a model of land/ground use and development in a perspective of continuous growth, which would inevitably imply an impact on structures, mobility, lifestyles, institutions and use of limited-availability resources. The challenge would therefore be to make these structures of complex systems and balances work, respecting the essential human needs: quality of life and thus the quality of the environment in which life takes place (i.e. well-being, safety, harmony, privacy, progressivity and resources preservation). It is evident that in each territory the balance between resources and development ought necessarily to be: fair concerning social dynamics, sustainable about the safeguard of environmental resources, which are non-renewable, rare, and therefore precious. Today, we are not looking anymore for competitive concerning a network of cities at the same scale, because the goal of a metropolitan region is “to growth together”.

The proposed metropolitan model should therefore be systematic, creative and participative, facing issues of the social and physical sphere, both considered from the point of view of Urban Metabolism. Thus, the model will be read about the necessary economical/energetic resources. The result will be a shared, fair and sustainable model of development.

- We will name transformation (change) a structural change of the system and of its functioning, something that today takes place by nodal points, not necessarily linked by a systematic vision of a transformation of the whole system. Growth, linked to the scale jump and sometimes out of control, takes place in different ways and discretely, by hierarchically organised points, that will become strategic fulcra not only at the scale of the territory but also concerning historic urban centres. In the big and netted dimension of the exchange modes, our problem will be to make the obtuse quantities of the bigness space, energy and material released by the new scale, “civic", that is, sustainable, through a new symbolic organisation which will be accomplished utilising an integration of the sequences of new landmarks and landscapes. In a transformational perspective of a stable system, we will have, therefore, to determine the coefficient of possible modification, to outline a different balance between what will be preserved and will change (hence the issue of the ethical problem of landscape). That is an essential generational passage that must be safeguarded. In this line, then, the concept of decline is not comparable to that of crisis, which arises instead from an interpretation of the potential (Magnitudo) of a place requiring a new

project, that is, the enablement of competences and capabilities in a new configuration. It is then necessary to inscribe crisis in a trend of change even in its discursive formation (metaphors), which for human procedures constitutes the possibility of a paradigmatic morphogenetic invention. "Metaphors should tell us not only the growth but also the decline of a city, which is familiar to us as much as growth." (Lynch)

- We will name Substitution or Replacement an operation which is usually typical of dismissed areas, which implies a global rethinking of the structure and the outline of new premises, negating the old ones.
- We will name maintenance a keeping of the status quo, in daily life, i.e. an operation usually typical of historical centres which today is increasingly becoming applicable to extended a heterogeneous environmental context, and which permits the passage from use to the symbol. It is a wholly European way, ancient and conscious of its fading (such as letting the repertoire of historical-architectural highlights die, in order to make it even more symbolic in the eye of new generations).

As mentioned above, space consumption is thus linked to the development of reform of urban structure. It is a structure that changing its outlook provides itself of the conditions to change the modes of production and consumption. The conversion of structure and production invests the several fields of know-how and living and behavioural styles, each of them representable on new maps capable of make knowledge evident, and, through the development and diffusion of measured potentials, will make metropolitan urban structure attractive. However, the problems of consensus and participation are linked to the psychological dimension of individual judgement, choosing between diversity acceptation or change and identity loss. It is also linked to the problem of globalisation and the necessity of homogenising spaces, uses and values, which put the individual self into crisis, in a scenario of distant places colliding together in short times (in places of intermodal exchange), substantiating contemporary two-fold increase in spatial dilatation/contraction of temporal dimensions.

General Objectives: multilevel finalities

Finally, the aim of the Metropolitan Architecture project is, therefore, to develop innovative interdisciplinary coordinated and performative strategies to fit Urban Metabolism with social and spatial dynamics, and, thus, through new metropolitan planning and design sustainable approach, which directs governance practices, for a higher European and Global life quality: the decoupling of the impact of resource use from economic development, the reduction of materials and energy consumption, and also the minimisation of environmental and socio-economic impacts.

That involves an incremental demand for environmentally low-impact space. That need, thus, forces political decision-makers, administrative officials, investors, to make coordinate and implementable evaluations of the choices between the operations of transformation, substitution and maintenance of the complex and heterogeneous European urban landscape. That can occur at the three scales (Metropolitan, which in the project will be called LARGE SCALE; Urban, which in the project will be called MEDIUM SCALE; Local, which in the project will be called SMALL SCALE). Every evaluation should be coherent with the indications derived from field exploration, elaboration, experimenting and from the synthetic evaluation of the complex factors that urban metabolism implies.

Metropolitan Architecture Projects have, therefore, to face the task of contributing to the development of a sustainable vision of urban transformation for better life quality, through:

- identification of key-points, which will interpret in a critical and inventive the synchronic relationship between real and virtual networks at diversified scales (networks of small, medium and large cities, networks of exchanges and infrastructural/immaterial communications) and of their links with local and geographical/territorial contexts. The nodes within each of these networks and between them will identify "structure articulation points", "land/ground markers",

"symbolic mediators" (big-box buildings and multi-modal interchange buildings) which in turn will clarify the articulations of "attraction basins";

- development of urban structure reformation, which is made urgent by production and consumption changes, which in turn cause knowledge and recognisance changes, and thus changes of usage, towards the definition of new possible attractivity, and also different "behavioural styles", wherein "landscape" becomes the "body space" of the scale of the one-to-one relationship, towards a new "citizenship project";
- a renewed “operational geography”, which will be structured by the comparative and inventive analyses of the conflict between urban development (i.e. sprawl/polycentric development) and environmental preservation. It will concern methodological and spatial more than political/administrative value. Thus, it will derive a new mapping transcription operation into “facts/actions”, which will interpret and select the places, delineating new “scalar gradients” between history/place/structure and geography/territory.

Such a synthesis is not the simplification of the complexity of the involved elements. Instead, is a sophisticated interpretation-reworking of these, communicable and exchangeable. It will be the result of comparisons between the multi-various cultural, geographical and modus agendi ambits, all aimed at producing a common vocabulary and shareable keywords. The new mapping, using some interdisciplinary translations, regards to subjects dealing with urban sustainability (sociology, architecture, planning, economics, energy), in terms of creativity and adaptability, and it will be open to the rapidity of the continuous transformations characterising contemporary age.

The cartography will provide indications, which will be directed to the elaboration of new instruments for reading and rendering the state of the matters and its potential projections (diagnostic and dynamic maps, interactive diagrams, performable schemes, sustainability indicators). However, above all, it will suggest a system of actions aimed at direct governance choices, addressed to citizenship, which has to be capable of understanding, and thus to recognise and approve, the alternative strategies of transformation – substitution – maintenance, within the life cycle (U.M.) of their city and territory.

At a time when a “landscape ecology” cannot be delayed much longer, we propose a biological/cultural system approach involved in the several spatial/temporal scales of the cross-relations between human activities, spatial configurations, processes and transformations. The definition and activating assessment of territorial and landscape/environmental systems management strategies should be useful, even in terms of ecosystems biodiversity preservation, for all their being strongly bonded to the relationship man/nature.

Also, regarding the economic and social perspective, the Metropolitan Architecture project lies down several aims: The first aim of this project is to understand how, the creative management of the definition of a new metropolitan system could affect the multiscale system of a regional territory, and how region sustainability can be enhanced by the development of its "social and spatial capital".

A second aim is to define a methodology for embedding in the multi-scale of a territory, the nature of changing social and economic events together with built forms which are emerging interdependently with them; including the new building types, many of which are giants: land use clusters, high-speed corridors of movement.

A third aim is to understand the claimed emergence of new types of "public realm", in the social and spatial sense of that term, and to relate it to the new forms of citizenship.

Urban Biography and Metabolism as Metropolitan Principles

We consider our discourse to be scientific because it is based on explicit or explicit assumptions.

Our scientificity is in having set our assumptions. In doing so, we have reversed the pyramid of knowledge: it is not the process from data to information and knowledge that makes us wise. However, vice versa, we need to be wise to be able to explain the reasons why choosing the data we can illuminate the complex processes that impact on the metropolitan territory. Through the assumptions of sustainability, we interpret the metropolitan region dynamics producing the groundlessness that our metropolitan architecture project must heal.

Every discourse has assumptions; scientific discourse has many implicit assumptions. The TELLme method in defining the field of action of metropolitan architecture planning and design has extracted, clarified and highlighted them. We called these assumptions "Principles" and included them within the Metropolitan General Principle and Issues. The Principle is not a vision of a static "good city". We have identified through the MGPI Glossary software the keywords and relative concepts that identify the structural elements of the territorial dimension in its four dimensions. Then, through the Metropolitan Cartography tool, we interpret the data by the realisation of two sets of synthetic maps: Protocol and Dynamics maps.

Our maps are all exhibitions, - "what it shows"- of the Principles that we have set out as conditions that allow us to interpret the territory and that can always be discussed. As an academy, we believe we have to enunciate our assumptions and to be the curators of the maps, as an assumption of responsibility. On this basis, we will then be able to open a dialogue with the other agents of the contemporary city.

Based on our assumptions, the maps illuminate the problems of the real city. Unlike standard GIS analysis systems, Metropolitan Cartography produces a set of synthetic, non-thematic maps that represent the territory through the combination of its structural elements. From the reading of this first set of Protocol maps, it will then be possible for each expert to define his or her perspective. By selecting a different composition of elements, Cartography can illustrate the issue of the unsustainability of the metropolitan territory in the light of the assumptions of different disciplines. We have called maps of dynamics, the synthesis of different perspectives.

With these tools, then it will be possible to define a meta-project as a basis for negotiation between the different metropolitan agents, which will lead to consensus for the definition of a sustainable project for the real city. In this way, concerning Spangenberg's Prism of Sustainability, which includes the dimensions of the metropolitan space: physical, social and economic, Governance will represent the ethical axis capable of shaping the metropolitan city we have in mind.

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Part III

The rules of metropolitan shape

Rules of metropolitan quality and beauty[72]

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Currently, the metropolitan issue is fragmented into sectorial visions. The new dimension of the city requires the creation of a new interdisciplinary field to integrate numerous facts and data from architecture, infrastructure, energy, economy, ecology, sociology, law and other disciplines. Since facing the Metropolitan problems is considered crucial for the future of the urban balance worldwide, we have to find a synthesis. We would like to investigate the "art" of shaping and re-shaping the metropolis focusing on spatial, social, productive and participatory innovations.

One of the questions of Metropolitan Architecture regards how it is possible that a building or an urban area is designated to sensitively respond to its physical content and at the same time, it is able to distinguish from it, because it is a global/local landmark. It is necessary to think about a new compositional language which refuses direct references to a pseudo –picturesque historicism. Thus, the public realm requires the construction of a narrativity, through our architecture, that is able to tell stories about who we are, and what a city wants to be. It introduces above all a symbolic dimension that brings the architectural project to the use of formal archetypes, which are able to evoke a new meaning in the global culture. The new project was born of course, wthin the local scale, but now it transcends the local towards a global one too.

So, "What is the role of Architecture role?" is the question of our research, and the goal is to be able to produce urbanity at the new metropolitan scale. The metropolis has the possibility to use the Arts (the muses) as a medium able to have a synthetic and not only functional vision about how to act as architects and urban designer inside the current city, that we named: The City of Muses.

We proposed an analogical approach that it's possible if we interpret the city as the City of the Muses, where the arts, related to our senses, live and work. In fact, only if we refer to the Muses (the arts) we can understand the deep meanings of the space, transforming them in a value for the citizens. To refer to the muses means draw a world of words and figures that considers the image not purely tied to a consumer, but to a symbolic identity. Each image becomes a reactivating symbolic reference that allows us to build a wider scene for the Metropolis: the scene of a Baroque Theatre. This allows us to link, through a mental perception, a place to an event. This reactivated symbolic value of the image can be referred also to archaeology. It can finally regain a precise place in the construction of the urban scene. This is the traditional approach of the Milanese School.

The Practice of Metropolitan Discipline as tool in this direction, is a mapping project able to represent the new metropolitan dimension of the city, which is mandatory. Maps that can represent space

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composed by relevant points, with a deep knowledge of the metropolitan structure and the relationships that tie the points of the map to the instants of a temporal interval of the metropolitan life of citizens. Therefore, these new maps are able to show how every metropolitan phenomenon is constituted by a series of feelings related to the intense experience of a place. Therefore, Art is the key to build memorable places.

The metropolitan citizen is a reflective individual

The Metropolitan Architecture approach starts from a critique of the concept of the user as a normotype that must conform to a pre-established program, and continues by identifying which approaches can, on the contrary, produce an original appropriation of the project by a reflective subject who expresses her/his status as a person by inscribing the time-event marked by the Metropolitan Architecture project within her/his own wider individual narrative. The Metropolitan Architecture project is a catalyst for temporal events. It is an art and a technique informed by the relationship between the real and the mental map, and the relationship between the social and the individual space-temporal projects. The innovation introduced by our approach consist in placing the citizen at the centre of our concern in regard to the metropolitan transformation. Metropolitan citizens who supported today by new technologies, can plan their schedule and are always self-centred in all the sizes and territorial scales, so that they are becoming reflexive individuals (Giddens, 1991) with expectations that the contemporary city does not know how to please.

This process of appropriation requires the subjects to intervene directly as mediators between themself and their environment through activities of interpretation and imagination that, by slowing down perception, slow down also the consumption of the project and consequently these multiply its significance. Interpretation and imagination, as capabilities that draw on the personal sphere, are the instruments of a mediation that, freed from cultural and physiological schematism, applies directly to the environmental data provided by the Metropolitan Project, determining a restart of the subjects in the line of their individual trajectory.

In this way the project, through an operation at perceptional level, produces a leap of life form in the subject towards more reflective forms that allow metropolitan citizens to relate to the built environment in a critical way and, consequently, to make it their own. The project of Metropolitan Architecture becomes a processor of quality of place, and its inhabitants are who can choose the grahidient or tonality of that quality as the horizon towards which to make the events of their life happen.

The new technology issues

In particular, we are dealing with the new technology issue. In fact, new devices define a part of a city that has been designated such as a metaspace (Bunschoten, 2006). The Metropolis becomes an Urban Gallery, a fluid form of public realm that evolves in time, generating several definitions of public space and therefore several ways of participating in it. These definitions yield "floors" into the spatial structure of the urban gallery. Metaspaces make it possible to bring the dynamic structure of the scenarios into the flows of the second skin. A metaspace in the second skin is a public space, a public matrix, that we name Metacity (Shane, 2005).

We critically reflect on the exploitation of digital technologies and media as specific tools for the collection, organization and interpretation of data that converge into an architectural composition. But, on the other hand aesthetics is here proposed as a language across different disciplines, a tool

able to support creative and innovative ways of designing and ruling the future stages of development of the city. Metropolitan Architecture project within the other arts can be a way to configure a different vision of the contemporary metropolis and diverge society: it is a project instrument to reactivate some part of the city. The City of the Muses is the true “city as a museum” (Rowe, 1984) due to the fact that the museum is the place where the muses reign and inspire. The Muses mean re-activation and renewal of a profound identity, cluster of interactive poetical images, which create an invisible net of feelings and associations for the citizens, using new devices nowadays.

The aesthetic-affective dimension of the project

Each project of Metropolitan Architecture must accompany the trajectory of development of the reflective citizen through two possible types of project:

1. the "acted" project: which is the one suitable to the development of a person;
2. the “conditioning” project: which diverts the persons from their trajectory.

The approach is, therefore, not affirmative but open to doubt. The action of the metropolitan expert is placed primarily in a "in between zone", which while keeping in mind the main goals of the metropolitan action, keeps open a broad spectrum of values to share. We start from the hypothesis that the female vision is placed in the perspective of listening to the different instances, in the definition of a mode of "taking care" through an approach that identifies the leader in a guide and not in a boss. We want to pursue the idea of the metropolitan place as an “affective” place, so we want to promote the role of women in the training and implementation of the Metropolitan Discipline.

Metropolitan Architecture project is not anymore, the final product towards which the instruments – technology – are used as a means to an end, but it becomes a mean in itself. Eventually even architecture is not any longer made for durability, for remaining the same independently from whom produced and use it, to construct the World; architecture becomes part of the vital cycle, and it is planned according to the needs of the human being understood as individual subject. Thus, the ideal of usefulness permeating a society, of craftsmen like the ideal of comfort in a society of laborers, or the ideal of acquisition ruling commercial societies, is actually no longer a matter of utility but of meaning (Arendt, The Human Condition, 1998, p.154).

What are the instruments of conception and what are the indexes of measurement of an affective space (if possible)? It is a space of a reflective subject that can express what the situation requires. This is not a space that allows to normo-typise the subject. It cannot be measured with a hit map or simulation tools that usually identify the characteristics of the space that flatten citizens to a norm type, so we have to detect which tool allows to identify the characteristics of the space that stimulate our criticality and reflexivity. It is not possible to apply the normalizing model to a civic space because it is impossible to typify the reflective individual. It is not a question of requirements of a program but of range of qualities, and values.

From a formal point of view, the new plasticity of Metropolitan Architecture project has been appreciated for its immersive, intimate value, the architectural equivalent of the emotional turning point. In any case, not all affective approaches to architecture threaten the critical capacity of the subjects. The problem is not affection against cognition, because no representation can exist without sensation. The problem is whether the senses are the term of a direct experience or its intermediary to cognition, because in the first case, the subjects will be governed by external forces, while in the latter they will be able to critically evaluate them and act accordingly.

In this regard, the new Metropolitan Discipline raises the research question in placing the issue of values. The objective of Metropolitan Discipline is not to teach something but rather it is a support factor in learning how to integrate the point of view of several disciplines, of the different components,

scales and interests of a metropolis. Consequently, it enhances the quality of the comprehension of the potential of the local value in a long-term perspective. Therefore, the fundamental aspect of the negotiation rises from the theoretical and pragmatic processing.

In 1966 Vittorio Gregotti, brought up the issue of “architectural decadence”, taking into consideration a dual condition of crisis. On one hand, it is determined by discontinuity of the creative process as a linear complementary method between form/ function and analysis/synthesis. Such process is also defined in Architecture by the Modern Movement. On the other hand, he mentions an architectural “matter” that after the emergence of the post-war reconstruction, could no longer recognize itself into the simple building operation. Paul Ricoeur in 1961, recalled by Frampton in 1983, wrote about the question of a difficult whole between an ethical-mythical nucleus that formed the identity of the places and the phenomenon of universalization typical of the metropolitan explosion. Ultimately, Lynch in 1960 established the failure of the ecological city.

Gregotti, identifies two figures: the planner and the planning designer. The planner is a specialist of the location on the basis of policy objectives. The planning designer, meaning the professional able to define different spatial models, considered as physical reality, which must be organized according to a common goal, the form of the territory.

If the planners make decisions on their own about various urban disciplines, the designer will share the leadership with all the disciplines involved into the definition of the metropolitan form. Several disciplines in fact converge in determining this form, and these share a common goal. The disciplinary behaviour of the designer, according to Gregotti, is creative/inventive which means a more adaptive form producer, and he should generate “a figural -value- that is the structural aims within the spatial implementation of services in the context". We can reach, in fact, the goal of shaping the metropolitan dimension only if it gives meaning to the project. This meaning is the quality of living that must be conveyed through a figure/ image as aesthetic operation, which aims to create a significant landscape and therefore it’s memorable.

This is the role of the Metropolitan Architecture Project: at the scale of the geography and its geometric rationalization models, it detects the geographic support of the territory; at the local scale it shapes the context through a physical intervention related to the needs and values of the society.

Compared to the local scale, the task of the metro discipline is to make this meaningful intervention possible. Consequently, what is decided at the metropolitan scale, has to find its necessary figure at the local one. Because of this, it is crucial to define reading tools of the indices of transformation and the minimum operating unit at the Metro-scale (its field of action). This minimum digit is not an organizational technical element. In fact, according to Gregotti, it cannot be the product of a functional program definition, but it must take into account natural marks and history, - formal and circumscribed sets that we call Figural Unit of Landscape or Balanced Developed Unit (Ortiz, 2014), - as key elements for the definition of the structure of the typical image of the territory (E.N. Rogers, 1958). This can form landscape, identity and citizenship also at the metropolitan scale.

The city of muses

In the imaginary, therefore, there are two tracks for the project: a paradigmatic and syntactic one, linked to reality; and a figurative characterological one, which illustrates the way in which the several actors enter the space of the scene, which determines a certain situation.

In Metropolitan Architecture project, then, lies a sociological dimension and an anthropological one no longer linked to a subjective psychology, but to an interpretation of the spirit of time that passes from the objective subjectivity of the “artist.” The symbolic reacts to a precise place, specifies the sociological dimension, is linked to a city or theatral scene, and becomes a sign of the spirit of the times shared by an entire community. The symbolic image is therefore the appearance of a new

shared cosmopolitan image with which a world becomes visible, that is not linked only to the behaviour of the residents of a place and that prior to this had an obscure iconophany.

The symbolic image has its own time, its own story, which crosses the "facts" of the city, disrupting their sequence, organizing them in another sense, and in which the opposites can coexist. Like the mask, the great image of the metropolitan city not only hides, but also must reveal a face that is a complex and profound identity. It is a complex sign, an intersection, in which several images coexist. It is an image that has the capacity to refer to reality and to express a sense and a direction for the growth. It includes the difference, the metaphor and the heterogeneous, and it absorbs a plural and real temporality.

It is therefore necessary to recover some of those "neglected values", as Lynch defines them (Lynch, 1960), such as the quality of the symbolic or sensory experience of the city, but without descending back into the field of utopias and utopians (Fourier, Howard, Wright), who give modest attention to the physical and spatial dimension of the environment. Seeing it only as a background, they proposed a symbolic expression of the perfection of the new society, limiting their field of research to social relations and annulling the power of the physical dimension of the city.

However, this new ability to strike the senses through sensual and memorable images (Lynch,1960) should not be understood with the propagandistic spirit typical of the Baroque period, but as a creative image of multiple links and processes, social, economic, political, historical, affective.

"People learn to know what surrounds them through their senses and to perceive places through actions [...]. Other arts - theatre, poetry, music, sculpture - refine this consciousness and make the landscape sound. Stories and poems develop the meaning of a place; paintings and photographs make people see it in new ways [...]. We intervene on light, movement, sound, and odours to make places permeate the senses". (Lynch,1960)

At the scale of the space of flows, Roger Simmonds and Alan Reeve (2000) introduced the idea of the public sphere (public realm) as a movie set for the representation of the figures of multiple self-actors in the different circumstances. Within these they appear in the execution of different programs conceived in the era of the artificial space of flows. The theme of this constitutive situation of belonging to the metropolitan city is the identification of places as fitting to the different gradients of scale from the largest of the networks of the metropolitan infrastructure, to the smallest armatures of the local space. The inner space of these new spaces is like a set that emphasizes in the very use of the term, the visual dramaturgy of the theatricality of an event, which keeps strong the suggestion that the monument is not only the scaffolding that carries cultural artifacts, but it also frames the crowd and its processions, rituals and behaviours: it is the place of the body, construction of the conditions of life and citizens' agenda, and creates room for wonder and imagination. The tectonic figuration of these places determines the concrete possibility of rituals and encounters, revealing the simultaneity of internal and external spaces and in a very different way from post-modern scenography, does not consider architecture only as a sign or a text (Hartoonian, 1997).

In a set the consumption is very rapid. The consumption of scenarios, of metropolitan sets that Shane called Heterotopias of Illusion (Shane, 2005), means being able to meet and choose different lifestyles in a short period of time, being able to become a citizen everywhere without necessarily having to have assimilated all the deepest traditions (genius loci). It is a condition determinate by the mass use of new media of representation such as photography and television, which transforms into icons all the significant images of a known place, but also the lifestyle that is determined there. This in the era of globalization is a chance and a problem.

In this regard, it should be noted that the identification of metropolitan citizens with a place happens on the basis of the interaction between at least four ways of determining the character of a place: the name, the icon, the location in a mental map or temporal space and in a cartographic representation.

This theatrical vision determines a city full of inspiration for those who live and enjoy it, a new metropolitan city, the kingdom of the Muses. We are obviously referring to Hesiod who in his Theogony lists nine of them, also considering Muses the repositories of memory and knowledge as daughters of Zeus.

The metropolis as a diffuse museum

With the new social behaviours and with the perceptive changes linked to the development of metropolitan mobility, many places and facilities of the historical city are emptied of functions and meaning, while other spaces in which the greatest flows converge, become much more significant.

In the spirit of the new character of heterotopic metropolitan space, born from a process that develops in parallel in other urban institutions, we see the fall of barriers and the general tendency to conform to a total availability of the territory to transformation, indifferent to the danger of a uniforming globalization. The consequences for architecture are notable in that the need for correspondence between architecture and the character and needs of places is abolished, and a new "general" architecture is born: an undifferentiated space open to all uses and a liberation of form that affirms itself as an autonomous, autopoietic value. Metropolitan Architecture project, which has as its deep structure the geographical-historical armour, that we called green-grey infrastructure, considers the protection of scarce resources of the environment its most important objective. Against the homologating globalization, then, it recovers at the metropolitan scale the value of places, which for this purpose must not be dispersers. The ground, then, ceases to be a background and is also considered an element intimately linked to the morphological process of architecture that no longer invests only in a point but also into the vast field. The city is contaminated by art. The nine Muses of Heraclitus are transformed into many occasions for the poetic appropriation of the metropolitan city as shared design objects:

Erato_ singing: aesthetics and beauty
Polymnia_pantomime: space and soil
Urania_astronomy: visual plan and city skyline
Talia_ theatre: stage, urban green
Melpomene_tragedy: new celebration spaces
Tersicore_ dance: space, movement and musicality
Euterpe_ music: sounds of places
Calliope_ epic poetry: memory of the city
Clio_ history of the city.

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About the partners

Politecnico di Milano - DAStU - MSLab

The Measures and Scales of the contemporary city Lab (MSLab) is a Research Unit in the Department of Architecture and Urban Studies (DAStU) at the Politecnico di Milano. The MSLab has been developing and sharing the idea of 'Metropolitan Approach to Complexity' and 'Practice of the Metropolitan Discipline', emphasizing the methodology and process of constructing novel urban and architectural forms that shape the territory at the metropolitan dimension.

Fondazione Politecnico di Milano

Fondazione Politecnico di Milano (FPM) is the University Foundation of Politecnico di Milano. FPM supports innovation processes in education and training and promotes continuous skill and competence development as essential to build a knowledge-based economy enabling critical professional and organizational changes.

Universidad de Sevilla

Universidad de Sevilla is a public university established in 1505 in Seville (Spain). It currently has more than 70,900 students. It is structured in 32 university centres and 134 departments. The Higher Technical School of Architecture (ETSA) was founded in 1960 and is the third-largest architecture school in Spain. The TELLme team originates from the Master in Sustainable City and Architecture, an official postgraduate degree distinguished by transdisciplinary training in sustainability, its cultural and reflective framework and a pioneering technical offer.

DOBA

DOBA Faculty of Applied Business and Social Studies is a private business school in Maribor, Slovenia. Founded in 2003, DOBA Faculty offers undergraduate and graduate programmes in economics, business management, marketing, and lifelong education management. While educational programmes and certifications are constantly expanding, DOBA offers four Bachelor's programmes and four Master's programmes, including the Smart City Management programme and a doctoral school on innovation and sustainable business in the digital society. A 15-year tradition in online learning makes DOBA one of the leading online business schools in Europe.

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Universidad Nacional de Cuyo (UNCuyo) is a national public university which provides teaching services, research activities and transfers its services to the community. Founded in 1939, it attends more than 47.900 students with an academic staff of 4.030 professors. It offers 117 undergraduate and graduate careers and 94 postgraduate courses in humanities, social sciences, engineering, basic sciences, medical and fine arts fields. About research, 624 projects are developed.

Universidad Autónoma Metropolitana

The Universidad Autónoma Metropolitana (UAM) is a Mexican public university founded in 1974. Born with the idea of innovation and social commitment, it arises from establishing a new university in the metropolitan area of Mexico City and it currently consists of five decentralized academic units. For the quality of its programmes, the UAM is ranked among the best Higher Education Institutions in Mexico and Latin America.

Universidad de Guadalajara

The Universidad de Guadalajara (UdeG) is a public institution of upper-middle and higher education that is based in the Metropolitan Area of Guadalajara and one of the oldest universities in the Americas. Since 1994, UdeG operates through a network made up of 15 university centres (campuses), a Virtual University System, a Higher Secondary Education System and the General Administration of the institution.

CNR-IREA

The mission of the Institute for Electromagnetic Sensing of the Environment at the Italian National Research Council (CNR-IREA) is the development, in the fields of optical and microwave remote sensing and in situ diagnostics of methodologies and technologies for acquisition, processing, fusion and interpretation of images and data obtained by electromagnetic sensors and the dissemination of the extracted information for monitoring the environment and the territory. Methodologies and technologies are also developed for the construction of infrastructures for geospatial data and biomedical applications of electromagnetic fields.

ESTà

Economia e Sostenibilità (Economy and Sustainability, ESTà) is an independent non-profit research, training and consultancy centre that acts as a bridge between scientific knowledge, public and private policies and active citizenship. ESTà promotes innovation in environmental, socio-economic and cultural systems to imagine and create a more sustainable and inclusive society.

CIPPEC

CIPPEC is an independent non-profit organization that works on building better public policies. We promote policies that would make Argentina more developed, more equal, with the same opportunities for all and solid and efficient public institutions. We want a fair, democratic and inclusive society, where everyone has the possibility to grow.

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