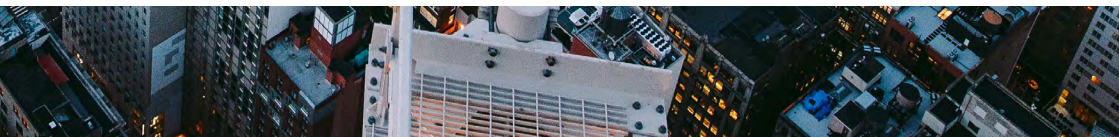
SHAPING THE METRO GAPS

METRO LAB 2017

SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN



Publication Directors
Gabriel Lanfranchi, Metro Lab Initiative Founder
David Gomez-Alvarez, Metro Lab Initiative Co-organizer

Edition and content coordination:
Gabriel Lanfranchi, Metro Lab Initiative Founder
David Gomez-Alvarez, Metro Lab Initiative Co-organizer
Mercedes Bidart (Argentina, MCP MIT 2019)

Language revision:
Brigitte Rajacic (United States, B.S. Management/International Business NYU)

Design:
Sandro Munari (MetroLab-UBA Argentina)
Ezequiel Basso (MetroLab-UBA Argentina)
Tommaso Cossu (Italy, M.Sc. in Architecture)

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Foreword:

About the Metro Lab Initiative

GABRIEL LANFRANCHI, *Metro Lab Initiative Founder and co-organizer*
DAVID GÓMEZ ÁLVAREZ, *Metro Lab Initiative co-organizer*

We are living in a metropolitan world. In 2016, there were 512 cities with at least 1 million inhabitants globally and by 2030, a projected 662 cities will have at least 1 million residents (UN Habitat, 2016). According to UN Habitat, 85% of urban agglomerations constitute metropolitan areas. The MetroLab Initiative seeks to address gaps in metropolitan theory and practice, helping new metropolitan practitioners be prepared to face pressing challenges, such as rapid urban expansion, climate change adaptation and uneven growth, in their future career path.

The METRO LAB INITIATIVE was founded by Gabriel Lanfranchi in 2015, under the MIT SPURS program -Special Program on Urban and Regional Studies-, when Gabriel was participating as a SPURS fellows himself. With the mission of generating applied knowledge to raise awareness on the metropolitan challenges, he ultimately seeked to bridge the gap between theory and practice for a better understanding of the metropolitan phenomenon. The first activities of the Metro Lab in 2015 were carried out with SPURS/Humphrey Fellows and DUSP students. David Gómez Álvarez joined Gabriel as co-organizer in mid 2016, when he started his Fellowship at the SPURS program.

In 2016 and 2017, the Metro Lab Initiative has been offered as a two-week IAP (Independent Activities Period) session at MIT. The Metro Lab Initiative consists in lectures and workshops that use peer learning methodology. The course allows participants to exchange experiences with outstanding academics, consultants and practitioners from different parts of the world. It has already brought together as participants more than 75 mid-term career practitioners from over 30 countries around the world (mainly from developing countries). These participants have been guided by 37 international experts acting as instructors and guest speakers who gracefully shared their time and knowledge throughout the courses.

The first two courses, in 2016 and 2017, were carried out in the context of the SPURS program with funds provided through MIT SUTD collaboration program. Gabriel Lanfranchi and David Gómez Álvarez wish to express their gratitude towards MIT Department of Urban Studies and Planning (DUSP) for the support in hosting this kind of learning opportunities, as well as to other institutions that have shown support and interest in the initiative, such as CIPPEC, AySA, UN-Habitat, the Inter-American Development Bank and the World Bank.

In 2017, the course sessions consisted in two modules: ‘Bridging the metro gaps” and “Shaping the new metropolitan discipline”. The first module’s objective was to identify solutions that bridge metropolitan gaps, in order to address metropolitan challenges with different sectoral perspectives, while learning from comparative case analysis. The second module’s objective was to discuss the specificities of the metropolitan phenomenon and its structure, focusing on how a new curricula could be shaped in order to contribute to the development of a metropolitan community of practice worldwide. This document has been created by participants, and it summarizes the content of lectures and discussions. It also makes an effort to organize metropolitan theory and practice into “dimensions” that explore issues of environment, society, wealth, governance and culture at a metropolitan scale. As such, the document does not express the opinions of MIT or any other partner institution, nor it constitutes a reflection of the experts themselves, but rather the result of collaborative interpretation of the participants. One of the challenges of the course is that most participants were not native English speakers. Even if language proficiency might have been a barrier for some, we want to acknowledge the willingness to participate of each and everyone, and we hope the reader of this document takes this element into account.

Contemporary urban planning and city managers face challenges that require much more than technical problem-solving skills. In academia, we can learn the best practices to improve transportation, to reduce CO2 emissions, and to design more resilient and even smarter cities. Nevertheless, we don’t know much about how to adjust and implement those practices in the wide variety of legal-institutional contexts those large-scale cities present.

Issues related to equity in access to public goods and services, efficiency of infrastructure, adaptation to climate change, active involvement of the citizenry, and unequal power of social actors are jeopardizing the government of metropolitan areas. How are we going to face these challenges? Is it feasible to replicate the lessons learned from others? Which methods are best to make use of what we have learned in different metropolitan contexts?

Universities can play a vital role in new processes of metropolitan planning—not as entities that bring answers to stakeholders, but as facilitators of joint inquiry. This departs from the traditional role of universities as expert consultants. Metro Lab Initiative envisions the university as an equal partner with a community (or a group of communities), sharing ideas, asking questions, and jointly coming to conclusions. Those who work at Metro Lab Initiative know that there is much work to be done and, at the same time, we are proud of these courses and knowledge-exchange opportunities we are committed to sustaining. A third MetroLab Initiative session will take place in 2018 at the MIT Environmental Solutions Initiative, and we expect results to continue enriching metropolitan theory and practice. As always, we welcome interested experts and new practitioners to contact us and join us.

Credit: Eric Fischer, Race and ethnicity map 2010, Atlanta

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Mike Kononov

INTRODUCTION

The metropolitan phenomenon

The course's general objective is to improve awareness and generate applied knowledge on the metropolitan challenges to ultimately bridge the gap between theory and practice for a better understanding of the metropolitan phenomenon.

At present, 50 percent of the world's population lives in cities and this figure increases by more than 0.5 percent each year. Demographic statistics confirm the almost logarithmic continuous growth of cities and their territories. This phenomenon of out-of-planning urbanization means not only a huge demographic shift, but also a political, economic and social problem related to climate change. In most metropolis, the social reality in urban environments is strongly polarized in terms of equality, with sectors that live in vulnerable conditions to the threats posed by extreme climate events.

According to the European Environment Agency, between 1900 and 2000 the growth of urban areas and associated infrastructures of Europe consumed more than 8,000 square kilometers of land. This area is equivalent to the entire territory of Luxembourg, or to the 0.25 percent of European agricultural and forestry soil. The direct consequence of high consumption of land is the proportional increase in energy consumption. The relationship between population density and the energy consumption is reciprocal. In the 21st century, if metropolis ceased to grow in terms of area in order to focus on its density instead, this could lead to better management of natural resources (land management, energy, water, food, waste, among others). Density is a key factor for architects and urbanists, and rethinking density can provide some solutions to the way we inhabite metropolises. For example, in a planned development with high density, the proportion of annual gasoline consumption is 50 percent less than that of a dispersed or low density area, according to the European Environment Agency.

Historically, the urbanization process began in regions with developed economies. In 1920, almost 30 percent of the population was urban or lived in metropolitan areas, and by 1950 more than half of the world population lived in urban areas. By 2050, in some regions of developed economies - such as Oceania and North America - 90 percent of the population is expected to be urban, while Europe's level of urbanization is projected to be less than

82 percent. At present, 96 percent of the population of Kuwait is urban and resides in Kuwait City or in its metropolitan environment.

The sustained increase in urban population combined with the sharp deceleration of rural population growth will result in a significant increase in urban land. In other words, metropolitan areas will have to increase their areas to accommodate new urban population. Globally, the level of urbanization is expected to increase from 52 percent in 2011 to 67 percent in 2050. In the same period, the more developed regions are expected to increase their urbanization rates from 78 to 86 percent. In less developed regions, the urban share is likely to increase from 47 percent in 2011 to 64 percent in 2050 (see Figure 1 below).

The urban world population is not evenly distributed in the territory. More than half of the 53.8 percent of the world urban population lives in cities with less than half a million inhabitants. Those smaller cities with less than half a million inhabitants account for 55 percent of the urban population in the more developed regions and 50.2 percent of those in the less developed regions.

Metropolises are experiencing different growth rates between different regions. In regions with advanced economies - Europe, Japan and the United States - growth is low if compared to metropolises in Africa, Lagos, Nigeria and Dhaka, which estimates the highest growth by 2050.

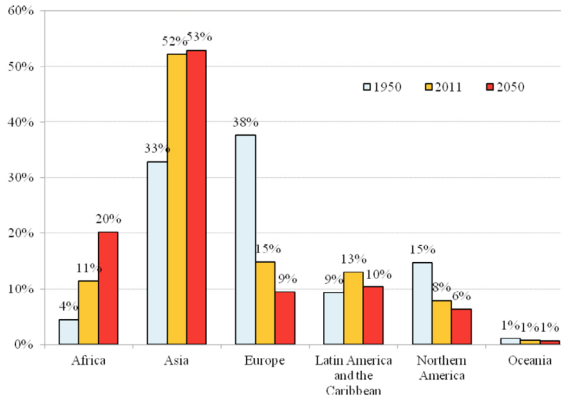


Figure 1. Global distribution of urban population in the main regions. Scenario for the years 2011, 2030 and 2050. *United Nations-Economic Social Affairs. World Urbanization Prospect, The 2011 revision. New York. Page 27.*

Metropolises of over 10 million inhabitants draw attention because of their enormous size and their geographical and territorial complexity. Such metropolises are the upper end of the population distribution in urban settings. They are followed by large cities with populations ranging from 5 million inhabitants to just under 10 million inhabitants, which in 2011 amounted to 40 cases, but their occurance is expected to increase to 59 large cities in 2025. More than three-quarters of those large cities or soon to be metropolises are found in developing countries and account for about 9 percent of the global urban population.

In 2011, there were 394 cities with one to 5 million inhabitants, and their number is expected to grow to 573 by 2025, representing 21 percent of urban population. The smallest cities, with populations ranging from 500,000 to one million inhabitants, are even more numerous: their number will increase from 525 in 2011 to 750 in 2025, yet they only represent 10 percent of global urban population.

The choice of (uncontrolled) growth of urban land use over reuse or densification of existing urban land has important soil / resource / climate change implications. The relationship between urban compactness, land development and mobility is a central issue for energy consumption, infrastructure management, and territorial and social cohesion.

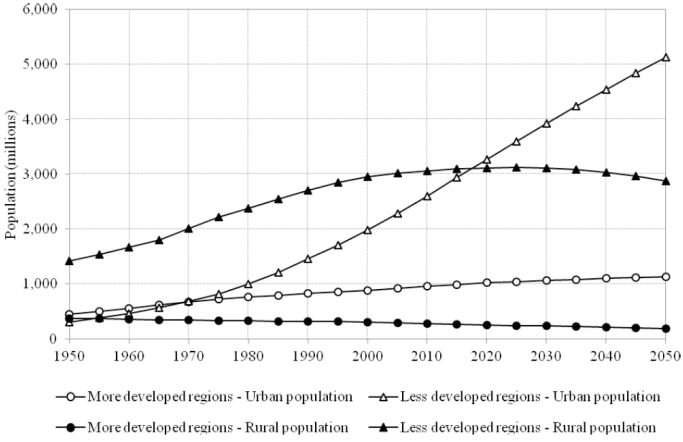


Figure 2. Estimate of rural and urban population (1950-2050) in developed regions and developing regions. *United Nations - Economic Social Affairs (9). World Urbanization Prospect, The 2011 revision. New York. Page 19.*

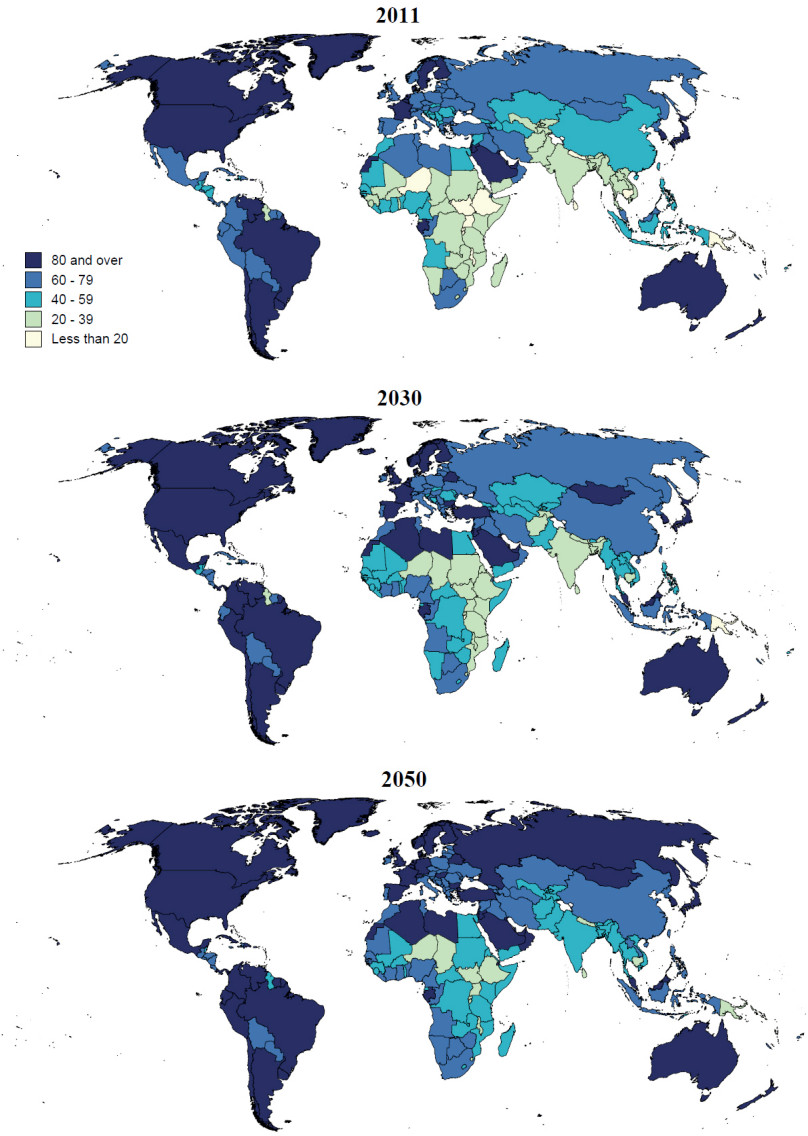


Figure 3. Percentage of population residing in urban areas. Scenarios year 2011, 2030 and 2050. *United Nations - Economic Social Affairs. World Urbanization Prospect, The 2011 revision. New York. Page 26.*

"The other disagreement arises from the different scales and concepts of urbanism that exist within architecture versus those in geography and planning, a real clash in the vision of what a city is. You describe in many ways the core architectural view when you said that a city consists of streets, roads and a built environment located within a vaguely defined "urban cloud." In this vision, the city becomes a collection of separate cells with built environments compacted together to form an urban mass. This view is radically different from the larger-scale spatial or regional vision of the city as an expansive urban system of movements and flows, of goods being produced and people living not just in built environments but in constructed geographies characterized by different patterns of income, unemployment, education levels, ethnic and racial cultures, housing and job densities, etc. All these things are often pushed aside in the obsession – sorry, the passionate concern – architects have for design. These constructed geographies get lost when the city is reduced entirely to a collection of built forms. As a result, architects either tend to see planning the city as their exclusive domain, as specialists in built form, or else they dissociate themselves entirely from the planning process, seeing it only as imposing constraints on their creativity. The city that the geographer looks at is much more than the built environment. What's being planned from the geographer's point of view is a very different kind of city. The emphasis is not on the built environment per se (although sometimes it is), but on a more variegated and larger-scale social environment. Architects aren't usually educated to think of the city in this way."

Edward Soja, Transurbanism, conversation with Arjen Mulder: *Restructuring the industrial Capitalist City. Nai Publishers. Rotterdam, 2002, p.90.*

The scenario of large metropolises, repeatedly discussed in the last decades, is already here, it is a reality. In the Kingdom of Kuwait, for example, 96 percent of its population lives in Kuwait City or in its metropolitan area. This same phenomenon is expected to occur in the cities of Dubai and Abu Dhabi and the entire region of the Persian Gulf countries - GCC.

In the Asian context, cities with populations ranging from about 5 million to over 20 million, continue to expand at rates that may well lead to a doubling of population and land for development in less than 20 years. The main sources of population growth and urbanization for these mega-region cities come from rural migration (in the case of Asia) and from international migration (in Oceania and North America), although Asian global cities are also beginning to experience international migration.

The future is here. *Should we continue to manage the cities just like 50 years ago? Has the exacerbated growth of urbanization in the last 30 years improved the living conditions of cities and their inhabitants?*


MODULE 1:

BRIDGING THE METROPOLITAN GAPS


DAY 1

From understanding the Metro Gaps to bridging metropolitan solutions

The topic of discussion was the reasons why metropolitan governance has become one of the main challenges to achieve equitable and sustainable growth of cities. Lessons learned during 2016 Metro Lab Initiative "Understanding the Metro Gaps" were the starting point of this discussion.

INSTRUCTORS:

Gabriel Lanfranchi, David Gómez-Alvarez, Pedro B. Ortiz, Matts Andersson

GUEST SPEAKERS:

Gabriella Carolini, Shobha Kumar, Erin Baumgartner

Credit : D Foto Z

The Art of Knowledge Exchange

SHOBHA KUMAR
WORLD BANK

At the heart of Knowledge Exchange are professionals, communities, and/or institutions motivated to connect with each other, and open to sharing their "knowledge" - experiences, know-how or skills with each other - as well as to learn from each other. Thus, Knowledge exchange has two sides:

Sharing and Learning.

Let's consider the Metro Lab as an activity. The participants, professionals, communities and institutions are all involved in the Metropolitan level of planning, governance, or other related activities. These people or institutions usually seek to:

a) improve processes or frameworks (either in method, relevance, or speed);

b) learn from case study examples (environmental, societal, design, governance, etc.); or

c) learn from real examples and issues, similar challenges, even ones that fail, because even the failures can teach us lessons.

These lessons can lead to new developments, based on the knowledge exchange, and as a result the knowledge exchange can improve the local situation that they are facing.

Knowledge exchange is a process that leverages collective knowledge for a greater collective outcome that can share, replicate, or scale up metropolitan solutions. It is a cost effective method for finding solutions to potentially "wicked" problems being faced by a metropolitan organization.

Knowledge exchange is a critical activity for the emerging discipline of Metropolitanism, and one that should be central to building a shared understanding of what is being achieved and where the leadership is taking the process of creating the discipline.

From Metro Gaps to Metropolitan Solutions

GABRIEL LANFRANCHI
METRO LAB INITIATIVE FOUNDER

In the next 15 years we will build as much urban area as in the last 6,000 years (UN Habitat). These urban areas are creating big metropolises that do not recognize the old jurisdictional boundaries. The metropolis presents some challenges and opportunities.

In general, they concentrate a large proportion of the GDP of the countries and are interconnected with other national and international agglomerations. For example, Athens represents 80% of GDP of Greece, or Tokyo 75% of GDP of Japan. In addition, the metropolises have improved the competitiveness of national economies and offer opportunities to improve the living conditions of the population. At the same time, they present big problems such as climate change effects and social inequality.

Although there is no consensus on how to define the metropolis, it is not a new concept because metropolises existed in ancient Rome and Greece. However, we are facing a redefinition of the concept. The new urban challenges should be faced with new governance methods and new institutional frameworks. The urgency to reduce inequalities and build resilient cities challenges us to think about new theoretical and institutional frameworks, and develop new tools that allow us to shape these frameworks.

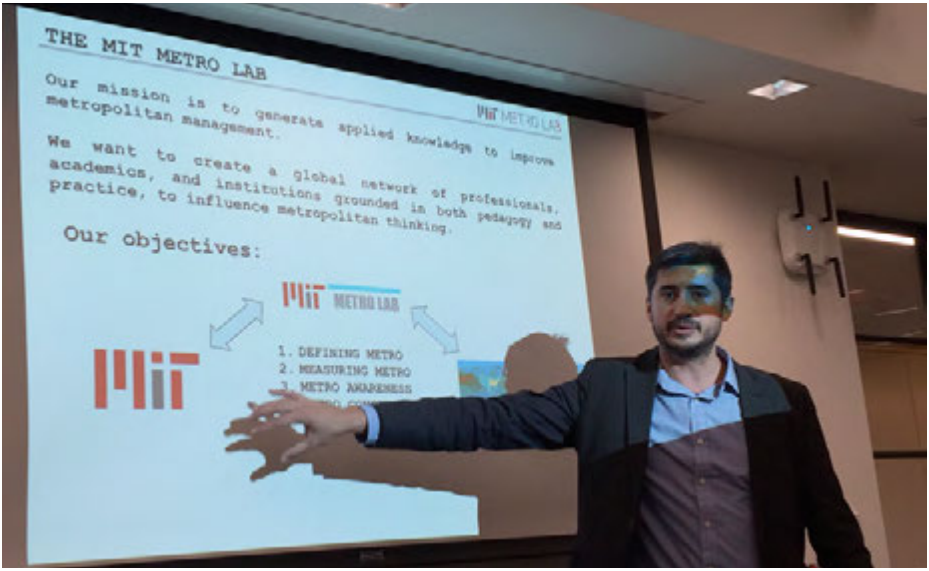
The metropolitan practice faces some gaps that need to be defined and filled with solutions. Metropolitan management is being recognized by many institutions such as Brookings Institution, IDB, World Bank, Ford Foundation, the SDGs and UN Habitat, among others, which are focusing on cities and metropolises to solve development problems.

Moreover, there are several documents published over the last few years that highlight the role of metropolises such as:

- “Strategic Guidelines for Buenos Aires Metro Region Oficina Metropolitana de Buenos Aires” (2006);
- In 2008 IADB published “Governing the Metropolis” (Edited by Eduardo Rojas, Cuadrado Roura and Fernandez Guell);

- In 2013 Bruce Katz, from the Brookings Institution, published The Metropolitan Revolution;
- In 2013 the Lincoln Institute of Land Policy published “Financing Metropolitan Governments in Developing Countries”, a book edited by Bahl, Linn and Wetzel;
- In 2013 the World Bank founded the WB MetroLab;
- In 2014 Pedro Ortiz wrote the book “The Art of Shaping the Metropolis”;
- In 2015 OCDE presented “The Metropolitan Century”; and
- In 2015 Habitat III published Montreal’s Declaration on Metropolitan Areas.

In this sense, the mission of the Metro Lab is to generate applied knowledge to improve metropolitan management. It seeks to create a global network of professionals, academics, and institutions grounded in both pedagogy and practice, to influence metropolitan thinking.



Lessons from the MIT SENSEable City Lab

RICARDO ALVAREZ
MIT SENSEABLE CITY LAB

The SENSEable City Laboratory's research focuses on studying how digital technology is radically transforming the way we describe, design, and occupy urban areas. The Lab's is characterized by an interdisciplinary holistic approach to urban design because the researchers come from various disciplines.

The new informational territory is the result of the hybridization of physical and virtual dimensions. Digital technology and big data can help us understand, describe and operate in diverse metropolitan scenarios. The informational condition is presented as an opportunity to make visible the invisible network of data, and to inform urban planners on how to describe, plan and reimage metropolitan systems towards sustainable development.

Big data leads planners to question themselves: *What is the role of technology? What are the possibilities of cities and metropolis in the future? How can big data inform the community and urban planners to bridge metropolitan gaps? Can big data help bridging social inequalities in the fragmented city? Should smart cities prioritize efficiency or humans?*

The SENSEable City Lab highlights that:

Big Data is Urban Data: It is not easy to define big data. However, we can agree that big data is produced in urban areas due to its high concentration of population, productivity and innovation. Therefore, big data is urban data.

Visualization and accessibility: Making visible the invisible (in strategic topics) is relevant. By making information visible, the information becomes accessible and understandable. Therefore, the community can make better decisions.

Smart Cities: Global and local dimension. Smart cities present homogeneous factors but certainly, there are particular characteristics that lie in the specific context of each city or metropolis. Therefore, a smart city in Rio de Janeiro is different from a smart city in Singapore.

Efficiency or humans: Currently under discussion in the metropolitan discipline, should digital technologies prioritize efficiency or humans? Ricardo Alvarez

made a point on this topic, asking what could happen in the near future if technology is reformulated by society.

Historically, we found a way for urban form and technologies to co-exist. For example, the car allowed cities to expand. However, today's technologies create a more complex synergy on a different scale. What are (and would be) the implications of the virtual layer in the construction of the metropolitan territory? There are several scales to consider (local, metropolitan, national, regional, and global).

Technology is being developed continuously and the different ways to generate data is increasing, the problem is that institutions are not prepared for the continuous evolution of technological options. For instance, some cities have cards for public transportation that are detected by a lector in the buses or buses stations, sending information that it's not being analyzed, losing data that can perfect the public transport service. The technology is there, but the institutions or governments are not taking advantage of it.

Big data can be generated with very little resources, but it is important to collect data through active and passive means for the convergence of digital information and the physical environment to be processed in a meaningful way. In the metropolis, data might have an impact in making the area more livable, integrated, efficient, sustainable and perhaps, more democratic.

The role of technology in the contemporary and future metropolis should be analyzed. Intentional strategies that promote digital technologies to benefit society should be a great contribution to the quality of life of the community. Furthermore, digital technologies could have an important role on improving, planning, and regenerating territorial processes.

DAY 2

Credit: S.Munari

Solutions to bridge territorial challenges

The main problems presented when managing metropolitan territories and spaces were introduced from theory and practice. Examples of successful solutions in metropolitan areas were discussed.

INSTRUCTORS:

Gabriel Lanfranchi, David Gómez-Álvarez, Pedro B. Ortiz, Matts Andersson, Marco Kamiya, Robin Rajack, and Janice Perlman

GUEST SPEAKERS:

Yu Hung Hong

Metropolitan infrastructure: Gray, blue and green

PEDRO B. ORTIZ
WORLD BANK SENIOR CONSULTANT

What are the elements and disciplines required for the planning and management of the metropolitan scale? The first element to consider in answering this question is scale. Ortiz believes we should avoid talking about the urban scale since the urban scale requires an intermediate discipline in between national, regional and local. To illustrate the level of complexity to plan and govern in metropolitan areas, Ortíz compared the urban scale to a checkers game – where each game piece has an equal value and the strategies are not that diverse – and the metropolitan scale to a chess game – where every game piece has a different role and one player has to be watching all its adversaries' moves before deciding their own strategy to win.

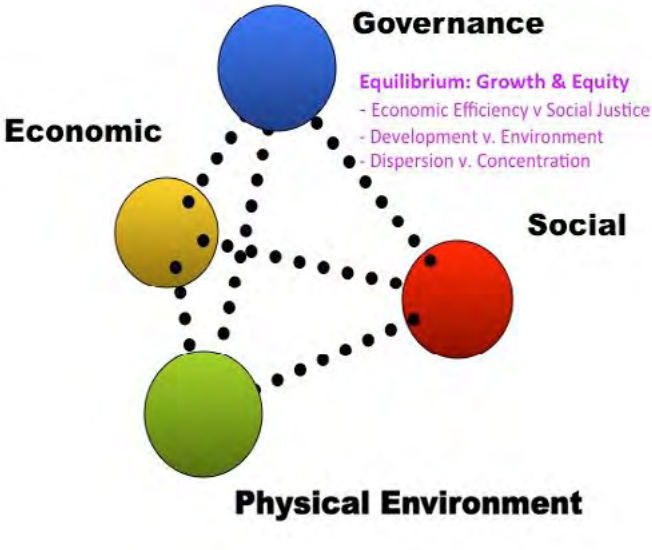
Thus, metropolitan planning consists of a dialogue in different scales. As in chess – where you have to pay attention to all pieces – so to in metropolitan planning you have to deal with another scale. A good example of that reality is metropolitan inter-modal transportation structures. The metropolitan transportation system is composed of different modals provided by different stakeholders and by different governmental levels. So, it is necessary to create a dialogue among all the scales involved in service provision to create an effective transportation system. Another good example of how metropolitan planning requires a dialogue between scales is the green infrastructure, e.g. a system of parks.

Indeed, transportation and environment are two sectors of the metropolitan discipline that are continuous, in other words, that require connectivity throughout the territory and are easily identified in a map. But there are three other metropolitan functions to consider in metropolitan planning that are discontinuous: housing, productivity and social services. Together with transportation and environment these are the five sectors that comprise the metropolitan scale. And why is that so? Because they are at the crossroads of local and national policy priorities and, when at the metropolitan scale, they require not only cross-sector interactions but also multi-level interactions.

The horizontal and vertical interactions required by metropolitan policy making create a new management model. Metropolitan management should derive from the idea that no policy should harm any other field of policy and its respective capitals. And if any harm happens, compensatory measures must

be implemented. Or the benefits should be greater than the harms caused to justify the policy. According to EOLSS and Spangenberg's approach to metropolitan management, equilibrium must be sought always among the different dimensions of the metropolitan scale. For Ortíz the dimensions are: economic, social, physical environment and governance.

These 4 indivisible dimensions would, thus, form a metropolitan atom in a pyramidal form where the governance is the top vertex orientating metropolitan policy in a balanced, equitable and sustainable way. Governance is the element that guides policy choices when dichotomies happen – economic efficiency x social justice; development x environment; or dispersion x concentration.



The Metropolitan Atom.
Pedro B. Ortiz - The Art of Shaping the Metropolis, Mc Graw Hill, 2014

As every choice is a political decision, one cannot say that a political decision is based on a rational analysis. Different ideological approaches can orientate political decisions. In this sense, governance would bring equilibrium to the interactions of the metropolitan atom dimensions. The governance dimension is even more important if we think how powerful metropolitan areas are in terms of concentration of economic, human, and environmental resources.

Ortiz highlighted that 46 out of the 100 wealthiest (in terms of GDP) territorial units in the world are metropolitan areas. As a matter of fact, in many countries the productivity of these metropolitan areas can account from major shares of the national GDP. And as in ecology, the larger the animal, the larger the efficiency. So, metropolitan areas are more efficient from an economic point of view because of three factors: (1) Creativity; (2) Hope; and (3) Economies of scale. Estimates show that if an urban area doubles it size, its efficiency can increase 15%. Metropolitan areas grow in two ways – by sprawling or by connecting to other metropolitan areas. However, there is a limit in this formula and it is the moment when congestion and gridlock prevents metropolitan productivity.

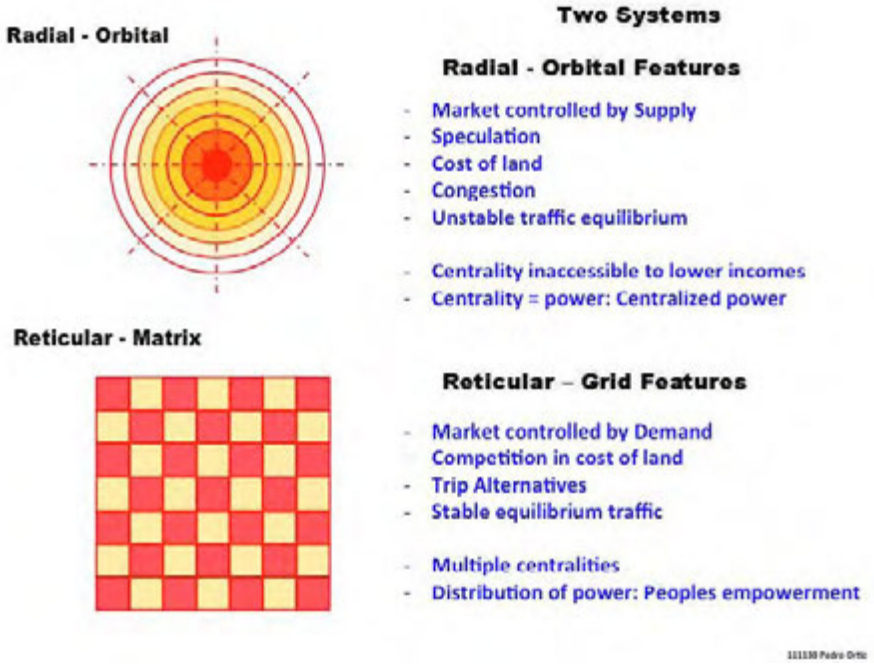
The solution to address these limits is to strengthen metropolitan financing and capacities. In this sense, the metropolitan areas that are successful are the metropolitan areas that have financial and human resources. It is a mix between the hard city – infrastructure, productivity, and environment – and the soft city – social capital and human resources. It is a continuum between knowledge and financing. The equilibrium between the hard and soft components is achieved by governance – which has as subcomponents public administration and social institutions.

Therefore, the models and formulas for metropolitan governance must consider this equilibrium. In this regard, it is important to distinguish metropolitan governance from urban governance. The latter is normally approached from a hierarchical perspective (with the mayor at the top of the system) whereas the former must be based in an inter-administrative and peer dialogue (where no single player can simply impose its will to another). Size matters, so metropolitan areas are to be tackled by more sophisticated governance practices. For Ortíz, metropolitan areas are much more similar to a country than to a city.

There are thousands of possible approaches to metropolitan governance. Ortíz focused on three main typologies: (1) a municipal confederation; (2) a federal metropolis; and (3) a central government model. For Ortíz, to be effective, a metropolis should be managed from a level where strategic decisions regarding its sectors can be made. In this sense, the municipal confederation model would be the least effective whereas a model with coordinated actions

defined as a central government model – like a metropolitan agency – could be the most effective.

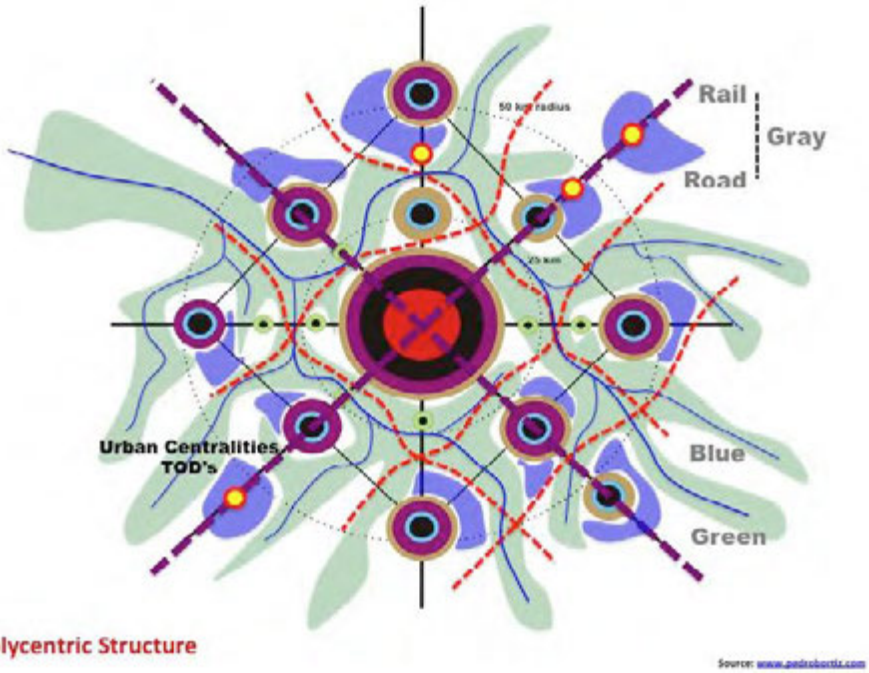
The most important takeaway in Ortiz's lecture is that the metropolitan scale is not an adding up of different scales but, a complex interaction between multiple scales. To illustrate this point, Ortíz explores the different dichotomies that are possible between the different vertexes of the metropolitan atom and how a metropolitan matrix based in a reticular and polycentric structure – and not in a monocentric round structure – could better reposition metropolitan planning and, consequently, metropolitan governance.



Radial/Orbital System vs Reticular/Matrix System.
Pedro B. Ortiz - The Art of Shaping the Metropolis, Mc Graw Hill, 2014

Beyond the classification, each city needs to develop its own role in the metropolitan area (Chess pieces metaphore). Hardly always there will be a main city, room and industrial ones for example. Every mayor would like to have an airport, a stadium and the best university. However, it s impossible, unnecessary and inefficient in a metro-area. That is why, metropolitan organization may be the art of negotiate and think from a cooperative and non-competitive point of view.

The optimal structure suggested by Ortiz is the Polycentric Structure in which we will find continuous environmental (green infrastructure) and transport systems (Grey Infraestructure) connecting various urban centers (characterized by TOD´s subsystems) giving good access to services and equipment (discontinuous systems) to the population.



Metropolitan Acupuncture Chart.
Pedro B. Ortiz - The Art of Shaping the Metropolis, Mc Graw Hill, 2014

Distinguished practices applied in territory organization

MATTS ANDERSON
UN HABITAT

Matts Anderson pointed out the need to consider how metropolitan governance, its legal and institutional frameworks, might vary from one context to another, considering different sectors and stakeholders. For instance, a metropolis in a developing country might consist of political fragmented groups and informal arrangements.

Anderson highlights that there are different case scenarios; regarding metropolitan governance there is no "One Size Fits All". It is important to focus mainly on the process of the institutional framework.

The possible steps to create an institutional framework could be as follows:

1. Inter-municipal Forum/Association of Municipalities (in a context of a politically fragmented group): There are many similar problems, current and future, among municipalities in the area that need to be addressed in a more coordinated manner. Example: public transport, solid waste disposal, natural disasters like flooding, etc. The lack of cooperation brings higher costs, lack of effectiveness and inequalities in the region.

Mayors can join together and start talking about their common issues, creating committees or commissions, leading to signed cooperation agreements, creating a horizontal collaborative framework and setting a common agenda with shared goals.

Also, they can share the costs of building a specific infrastructure project, like roads. This cost-sharing can also be done with the participation of a national or regional authority, creating a vertical cooperation. The coordination could bring more social benefits, less costs and economies of scales.

2. Creating a Metropolitan Authority or creating one or more sectorial metropolitan authorities.

In the case of establishing a broad-based metropolitan authority, to achieve an integral planning it should have a clear definition of its competences and scope of work. It should also have access to funding in order to be sustainable and have legitimacy in order to survive future political changes. The authority must work with transparency and frequently report to its constituencies.

Andersson emphasized the process and steps for a “Successful Metropolitan Governance reform process”; starting from identifying concrete metropolitan projects/challenges, building ownership and mental maps among stakeholders, achieving national government and political support, allocating and optimizing metropolitan funding, establishing incentives, enforcing and making the use of planning as a key long-term process, allowing the governance arrangement and its system to be flexible and to evolve.

In conclusion, there is an urgent need for creating and strengthening metropolitan governance especially in developing countries, starting from an integrated approach that will contain a shared and coordinated vision for the next 20-30 years of what is important for the region. Strategic decisions and development approaches for a metropolitan area can only be addressed in a collaborative manner across institutions and stakeholders.

Land-based public finances in relation to metropolitan infrastructure investment.

YU-HUNG HONG
MIT REAL ESTATE ENTREPENEURSHIP LAB

Conceptualizing and facilitating land-based revenue

Land value is the value of a piece of property, including both the value of the land itself as well as any improvements that have been made to it. Land values increase with different situations that we will describe later on, but especially when demand for land exceeds the supply of available land, or if a particular piece of land has intrinsic value greater than neighboring areas (e.g. oil can be found on the land, public investments in the area, etc..)

Owners of land use land value to determine how much to charge other parties for its use. For example, an individual who is renting out several acres of farmland, for use by ranchers for grazing cattle, will determine an amount to charge for its use by looking at the market value of the land compared to land taxes and the capitalization rate.

The fact of land-value sharing meets its sense of spreading value disaggregating the total space in small pieces distributed among diverse hands, making this value a distributive value that could be enjoyed and used by more than one person or entity. This is different to give people property titles, further than that, is giving them not only the title but the permit to take the chance to use or explore them in different ways: re-selling the land, investing in the land, building it, seed it, for example. Shared land value is a key situation to boost equity.

Therefore, the land value becomes revenue and this feature changes the concept of land in itself, adding the quality of revenue, business, rent, space of living, among others. We can affirm that land becomes an opportunity. Consequently, the land owner is the first figure to be able to change the reality of a territory. Land and persons are the two main subjects of a territory policy. Land takes a privileged position being the core space liable for any change. Whenever land becomes an opportunity of business or change, the land-value capture could come in with an aggressive form.

But what could be the hypothetical delineation of land-value assignment? We could enumerate the following ones:

1. Increases in land value due population growth and economic development:

This might be the most controversial one. The government, on behalf of the general public, should keep a portion of the land value. Here, different forces (private sector, investors, general public or ecologists) could be the main stakeholders with diverse interests acting on this land. Sometimes, the government's capacity of negotiation could be essential for protecting the added value land provoked by this two circumstances. The value created due to economic development would be interest of private sector or investment corporations to generate further benefits and the approach could be aggressive as many economic interest fly around. The population growth has a different connotation: demographic growth could become a social and economic problem as well as could generate monetary income, as more people will be seeking a place to live. Finding a balance between private interest and public need would be crucial to built better spaces to live in. It could avoid social problems as well as environmental ones. Government's role would determine living conditions within an specific area.

2. Increases in land value due to public investments in infrastructure and changes in land use law:

This option involves public sector (national or local governments) as well as strategic plans (could be supported by private sector or social communities). When a public investment in infrastructure will provide public services to a specific area, this action -well planned- would (in most cases) probably increase the land value as well as improve communities' quality of life. It has two direct benefits and indirect benefits too. Land owners could forecast public investments (subject of investors studies or privileged information) but there is always a risk assumed that cannot be controlled. A smart way to finance these public investments is offering a portion of the land to providers in order to benefit all parties. With this, providers would have an incentive to invest their money on public services which have a great value to the general public.

In case of land use law modifications, changes could benefit different stakeholders regulating the land use: adapting it to contemporary needs and improving the potential use and service that could make to the general public. Nevertheless, law changes could be influenced by particular interests and some decisions could provoke a positive effect on the treated area but a negative effect on closer areas. In the same way, potential benefits in law modifications could be subject of corruption and thus, could create social problems in the long-term.

3. Increases in land due to landowners investments:

This type of added value to the land comes from a private initiative that, in theory, could only profit landowners but also, could create an indirect benefit to closer communities which would enjoy the proximity of this restructured added value-land. A good example could be a private investment within a certain neighborhood (refurbishing old buildings, painting external facades, opening new business) that could increase the commercial value of the area, stimulating life in the area that could attract new investors and activities inexistent before. These type of actions depends on private revenues but could make a general public value.

4. Intrinsic land value:

When buyers and sellers exchange monetary amounts for the property rights of a land, it creates itself an added value to the land, especially after the years, land's portions increase its value due to inflation and other macroeconomic indicators or circumstances (as describe above, if we find oil in the land, it value could exponentially increase). It could exist the possibility of a land that decreases value due to external circumstances and landowner losses money.

In this regard, what happens when public investment reduces your value?

First, before analyzing the situation, we assume a full capitalization on public and private investment in land price. This is an intrinsic risk embed within the land: Circumstances (e.g. political decisions, natural phenomena) could decrease the value of the land and this will affect landowners and could provoke social problems. If it is the case of a political decision, that would have a political cost for the ruling government. This situation would have a controversial solution, not only for the politicians but also for the owner that loose the opportunity and the power that a piece of land extend itself to its owner.

There is also the possibility of irregular owners (especially in developing countries) in which the solution comes with a recognition of non-formal ways of tenancy, transforming the historical and cultural own-rights to a formal right. In this regard, a public investment that reduce the value of this informal landowners it is even worse in terms of social costs. Political decisions must be really careful with non-formally regulated territories.

How to facilitate land-based financing?

One key fact to facilitate financing is focus on the symmetry between land value creation and sharing. The creation of value is as important as visualize the sharing. This is a distributive way to increment the value of a portion of land and socially share the opportunity that a piece of land add to its owner.

Public and private institutions have the responsibility of facilitate financing tools for general public to optionally access a portion of land in property. These instruments must match supply and demand of all social classes. Further than facilitate financing, tools would bring equity distribution of land that will build a peaceful society living in a efficient territory. These financing tools could be tax-based, fee-based (both public tools with a fiscal burden) or incentive development-based (could be public or private tool with a profit burden). Property taxation and public leasehold are not mutually exclusive, so a mix tool could be a optimal solution. Some tools could be used for public infrastructure and other ones could be used for local initiatives. However, in a metropolitan scale is a double-edged sword, since free-riders emerge with particular interest. That is why the metropolitan planning is very important for an effective use of public and private funds, to make the payment and the benefit, closer to the general public.

To achieve it, public and private institutions have different options to create and finance this tools to improve the land access to general public: tax incrementing, which is very effective as well as very unpopular and a district business plan, well organized and publically financed with general budget and private contributions for a common goal.

Ultimately, the land plays a key role in societies. It must be regulated to profit its potential benefits and spread them among the general public, to use it as a vehicle for social equity and distribution in order to build a cohesive society. Land pops up this opportunity.

Nasa, Salt Lake City

DAY 3

Credit: S.Munari

Solutions to bridge socio-economic challenges

According to UN Habitat, two thirds of cities around the globe have become more unequal in the last two decades. Despite this, the OECD points that metropolitan areas are the major wealth and innovation generators of nations today. Solutions to some of these metropolitan challenges were discussed.

INSTRUCTORS:

Gabriel Lanfranchi, David Gómez Alvarez, Pedro Ortiz, Mats Andersson, Marco Kamiya, Robin Rajack, and Janice Perlman

GUEST SPEAKERS:

Gilberto E. Chona

Social Capital for metro management

JANICE PERLMAN
MEGA CITIES PROJECT

Favelas

Janice Perlman started her lecture talking about her research project on favelas from 1968-2016. The key argument of her research is that cities need to include and embrace those who are marginalized. She argues that in favelas she found vibrant and cohesive communities. Furthermore, she argues a city's social capital is their best asset and social capital has a lot to offer to its city.

To introduce her work, she addressed the rural to urban migration phenomenon situating it in the Brazilian context. She argued that the migration of communities from rural areas to the cities was based on a need to go "from dead end to wider choices". She also highlighted how those who decided to leave their rural hometowns were "the best and brightest that risked it all".

Moreover, she highlighted the importance of recognizing the intellectual capital of the informal sector population, including them in the cities and fostering their "eagerness to make a contribution". This idea seems particularly relevant for the Metro Lab when considering policies to promote the inclusion of marginalized and minority groups, especially those in informal settlements, in the metropolitan agenda.

Her research on favelas started in 1968 when she moved to the area of Catacumba in Brazil. Later she supplemented her research with additional research in Nova Brasilia and Caxias. Her main finding from that first encounter with the community was that they are not "marginal but marginalized". Moreover, she found that those who lived in that community are:

- Not socially disorganized but excluded;
- Not culturally backward but stigmatized;
- Not economically parasitic but exploited; and
- Not politically radical but repressed and manipulated.

Given the findings she argued that the implications for policy were that it was better to upgrade the communities on-site than implementing removals which were very common in Brazil during the 1970's. Furthermore, she showed

images of the poor conditions of some of the social housing projects of that decade in Brazil. These settlements were often built on the outskirts of the cities, with a serious lack of services and deficient connections to the urban settings often forcing habitants to seek their return to the favelas to regain their social networks. She stated that “they built houses in the middle of nowhere”. Consequently, she concluded the government’s policy leading to the creation of the social housing projects broke the social networks and connections that communities had within favelas and were ultimately a failure.

Through the more than 30 years between her first and last engagement with the communities she noticed that collaborative living is an asset within favelas. In this sense, by “moving outside from the favela they lack their best resource” that is social capital. Furthermore, she noticed that the stigmatization and the invisibility persists in some of the communities and that even though the access and quality of education has improved for the younger generations that did not translated fully into better jobs.

The longitudinal panel study she conducted had three phases:

Phase I: Exploratory Research

- Feasibility Study
- Contextual Research

Phase II: Multi-Generational Interviews

- Original study survivors
- Their children
- Their grandchildren

Phase III: Re-Study of 3 Favelas

- New Random and Leadership Samples

Finally, she shared some of her views in regards to social change. She argued that it is essential to work with a win-win approach that considers human psychology and the relationships with different stakeholders. Furthermore,

when addressing the role of academia in social change she affirmed that her intention through her work was to produce rigorous academic research to inform policy and practice. Perlman's views seem particularly relevant for the Metro Lab and its scope of influence to promote the metropolitan agenda.

Mega Cities Project

In the second part of her lecture, Perlman presented the Mega Cities Project, an initiative she founded in 1986 to foster shared knowledge between different metropolis, bridging the gap between innovative ideas and their implementation.

The initiative managed to establish a vision where a metropolis was encouraged to collect information and data about successful or innovative grassroots solutions that could serve as examples to other metropolis on how to handle certain issues. This was made through the use of incentives "to strengthen and replicate them through policy support" and a diverse representation of actors within each metropolis. Each city had a Mega Cities coordinator that had the support of representatives of business, academia, government, mass media, NGOs, and grassroots groups. This collaborative approach based on the creation of networks seems very relevant for the Metro Lab given the discussions on the necessity of pushing the metropolitan agenda forward and getting more stakeholders to join the debate of the current challenges facing metropolis.

Land readjustment: Instruments to develop land within metropolitan areas

ROBIN RAJACK
INTER-AMERICAN DEVELOPMENT BANK

Urbanization has outpaced institutions, making it difficult to properly plan for sustainable and efficient cities. One of the main effects of this phenomenon consists of resulting land use patterns most often the product of unplanned urban growth and urbanization, which in turn tend to be incongruent with metropolitan goals of quality of life, which include accessibility, competitiveness, sustainability, inclusion, safety, etc. The market forces or other isolated planning and financial metropolitan land use tools cannot fix these problems by themselves; however, an urgent solution is required in order to develop sustainable and congruent metropolitan development. A possible solution is land use readjustment, land readjustment, or LR, as a participatory and inclusive strategy for development.

The What & Who of Land Readjustment

Within the urban planning scope, Robin Rajack defines Land Readjustment as a "land assembly technique" in which diversely owned land parcels or built space are combined into a larger contiguous area for more efficient development. In this sense, Rajack explains, "a portion of the plots or built space can be sold for either commercial purposes or higher-income housing to recover part or all of the servicing cost or for the construction of low-income housing, infrastructure or public facilities". "The economic rationale", he continues, "is that the asset value of the area of land or built space received in return will be significantly higher than the original asset."

Worked this way, the administration of land use through Land Use Readjustment can help to better develop strategic areas within a city or metropolis and generate the income. Hence, the policy represents an important socially responsible approach that makes the most out of available resources (land, built environment) through land use planning instruments and mechanisms (coefficients, densities, type of land use, etc.).

At a metropolitan scale, Rajack explains that a Land Use Readjustment strategy can work as urban redevelopment operations with strategic impact on the metro area, most notably:

- As systematic peripheral expansions in anticipation of future population growth; and
- As transversal infrastructure investments such as transport corridors

In addition, a Land Use Readjustment strategy implies a series of key feasibility features within the strategy itself, as explained by Rajack, which consist of:

- Land assembly tool;
- Legal singularity;
- Incentive compliant; and
- Equitablity.

As a land assembly tool, Land Use Readjustment implies working with a plural "mosaic" of land and its owners in order to create an often new integrated mosaic of a more efficient land use scheme and community. Since Land Use Readjustment is usually based on a legal framework (zoning plan, laws, local normative or regulations), the second aspect, legal singularity, concentrates upon what a specific territorial regulation permits regarding land use policy and land use administration. This particular aspect implies another level of complexity being implemented in metropolitan areas, where, in many cases, abide by different (or sometimes similar) land use and zoning regulations.

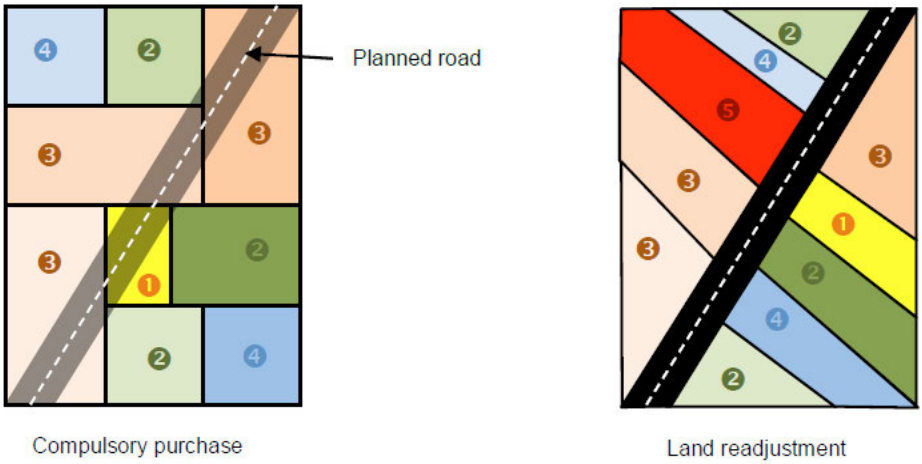
Incentive compliant involves the kind and amount of incentives involved for each particular section of readjusted land and owners and the agreements implied in such process. Since this particular feature can often imply the underscoring of individual benefits, common benefits should prevail over these processes and strategies. As an equitable feature, Land Use Readjustment should consider the different ways in which it can promote equity for every actor involved; that is, all participants should be granted the same amount of benefits (directly or proportional speaking depending on each particular section of readjust land) through a participatory approach. In this sense, a Land Use Readjustment Strategy is an integral policy, aimed at directly improving a metropolis structure and its inhabitants´ lives.

Implementation actors

Rajack explains that a Land Use Readjustment Strategy can be implemented at several scales depending on the nature of the strategy and the legal framework for doing such i.e. national and local governments, cooperative associations of landowners or private land owners. There are several important cases implemented at different scales worldwide.

What problems can LR solve?

Rajack explains that this strategy can help solve an unbalanced or mismatched supply and demand of serviced plots or built space; redevelop inner cities, marginal areas or disaster zones; scale up limited public funds, involving a risk sharing for land development; litigation-prone use of eminent domain; limited scope of direct public intervention when private land ownership dominates; and incompatibility between Master Plan vision and current shapes and sizes of plots.



Conceptual Explanation on Land Use Readjustment Equity.
Sourcebook on Participatory and Inclusive LR, UNHABITAT, forthcoming

Operational Details of Land Readjustment

Equity Issues that can arise. Upon returning to the latter aspect of Equity, or Equitability, it is important to establish a clear balance between the amounts of land contributed to the proportion of land owners agreeing to a Land Use Readjustment Scheme, how will costs be recovered, and the way low-income access is promoted. Although legislation exists in the countries that have implemented Land Use Readjustments strategies at different scales, Rajack states the following considerations:

- Amount of Land Contribution: if set too low, it is difficult to achieve cost-recovery through surplus plots, an alternative is land value based contribution, however, it requires reliable valuation;
- Proportion of Landowners to agree: in practice, seldom enforced against a sizable minority, however, requiring too high a proportion, such as the 100% required by the initial law in Bhutan will surely promote inaction for the strategy;
- How are costs recovered: most commonly by sale and auction of surplus plots; other alternatives include betterment levies and land tax increments; however, equity issues may arise if land owners are asked to pay when the government is investing in other areas; and
- How is Low-Income Access Promoted: there are several strategies that can include the sale of surplus plots on concessionary terms to housing agencies cross-subsidized by market price sales of other surplus plots; RFPs for private sector to construct low-income housing on surplus plots; direct construction of low-income apartments that may be cross-subsidized by other surplus plot sales; landowners constructing rooms/ apartments for rent.

The Case of Vertical Land Readjustment

Rajack states that the main difference between the latter approach, consists of participants trading floor space and development rights instead of plots. The key ingredient for this strategy relies on the surplus FAR (floor area ratio) which is defined as the buildable floor space permitted by regulation i.e. existing floor space already built, which translates into the developer's profit. A particular case with a deep social scope relies, as presented by Rajack, on participatory urban upgrading project in Nagpur (in central India) where a land use readjustment strategy was used to move families from single story to three-floor apartment buildings in the same location and with enhanced infrastructure provisions.

Applying at Scale: Gujarat, India

As stated in a former section, Land Use Readjustment can be implemented within different urban and metropolitan scales. Several metropolis around the globe have implemented this strategy at a scale level, such as Seoul, Korea; Tokyo, Japan; Madrid, Spain; Washington, D.C. and Gujarat, India. Ahmebadad presents a most interesting case because it was entirely developed through a Land Use Readjustment approach, consisting of the TPS strategy (Town Planning Scheme), with a ratio of 31.0% of its land destined to public infrastructure and utilities, affordable housing, public and open space, and land bank or for sale land. Comparatively, 68.4% of the total area was privately owned as Final Plot. Quite significantly, the city's road ring infrastructure was developed under a TPS.

Another case study which used the TPS approach though specific groups consisted of Test and Control Groups in Post-2001 Earthquake Gujarat:

- Bhuj (Test Group): infrastructure rehabilitation and land use planning interventions with land readjustment in city center;
- Mandvi (Control Group 1): some infrastructure investments without significant land use planning interventions or land readjustment; and
- Rapar (Control Group 2): infrastructure rehabilitation and limited expansion plus comprehensive land use planning interventions without land readjustment.

In conclusion, the difference in the rate of change in real estate prices in Bhuj was less than the rate of change in the control groups; additionally, real estate prices in Bhuj grew at less than half the rate at which national incomes grew over the same time period – implying that shelter became more affordable in Bhuj, hence, showcasing the financial benefits of Land Use Readjustment schemes for the poor.

Inequality, Urban Sprawl and Urban Sustainability in LAC

GILBERTO CHONA
INTER-AMERICAN DEVELOPMENT BANK

Metro areas are growing at incredible speeds all over the world. Population growth and urban sprawl are putting additional pressure on metropolitan governments to fulfill the basic needs of these ever-growing metro areas. Building metropolitan gray infrastructure can become an insurmountable activity for many cities and metropolitan areas in Latin America (and throughout the world); therefore there is a need to put all the knowledge we have to try to find a solution for these problems.

One such approach is to be able to account for all the potential expenses in gray infrastructure that metropolitan areas would need to undertake in order to meet the needs of their inhabitants. The Inter-American Development Bank developed one tool aiming at that goal by systematizing the estimated costs of gray infrastructure within an accounting tool. This tool is based on the balance between "attraction" and "expel" features in a metropolis, which would invite people to move in, or move out depending on the desirability of those features. Using it, the tool develops a grid across the metropolitan area identifying areas that are likely to gain population, and the areas that are likely to lose population.

Once the basic metropolitan grid of attraction is in place, the tool considers the average costs of building gray infrastructure based on local prices of all kinds, as well as geographical features that might affect these costs. The tool considers network infrastructure only, such as costs of building roads, water and sewage piping, power grid, etc.

Finally, the tool estimates some scenarios about the expected costs that would result should the metropolitan area follow one of at least two paths. The first path is the "Business as Usual" scenario, where no relevant urban policy is implemented, and the metropolitan area is just allowed to grow freely following no structure, and a no order pattern or development around the transportation corridors. This growth is very extended, disconnected, leaving patches of unused land, and forgoes improving metropolitan efficiency. The second scenario is the "Smart Growth" or "ideal" model where the metropolis follows a compact model, based on the idea of taking advantage of the already existing networks, where only relatively small additions are required. The result is a comparison between the forecasted costs of the "Business as Usual" and

“Smart Growth” models, where the smart growth model would outperform the business as usual model, making a strong case for a smart, compact metropolitan model.

The relevance of this tool is that it is provides a fairly accurate estimation of the costs of providing gray infrastructure for an uncontrolled metropolitan area that faces no public intervention to shape it in a more efficient way. Even for governments with no interest in metropolitan problems, this tool would provide a very strong incentive for them to work toward a more efficient model of the metropolitan area, since it will strongly restrict their available funds for all kinds of work.

A Metropolitan Approach to "Economic Foundations for Sustainable Urbanization and Three Pronged Approach": Finance for City Leaders handbook

MARCO KAMIYA
UN HABITAT

Failures of Urbanization and Potential Causes

Kamiya noted that existing legal frameworks and ways of planning cause inequality in many countries. He questioned whether we should follow national or regional planning while we are at the same time lacking coordination and feasibility studies. In actuality we have no cost-benefit analysis to question property rights, titling, or immigration.

Urban Growth with Unsustainable Expansion

The 'Atlas of Urban Expansion' is a tool which shows historical urban growth. The graphs show a trend of urban sprawl during the last decades around the world. For instance, urban expansion in Buenos Aires described the added area which is a total of 31,666 hectares of built-up area between 2001 and 2014. Of that added built-up area, 46% was Infill, 37% was Extension, 0% was Leapfrog, and 18% was Inclusion. A total of 16,628 hectars of built-up area was added to the urban extent between 1989 and 2001. Of that added built-up area, 48% was Infill, 30% was Extension, 2% was Leapfrog, and 20% was Inclusion. Roads average width in Buenos Aires 1990-2014 within the expansion areas was 5.91 meters, compared to 9.17 meters in its pre-1990 area. The share of built-up area in occupied by roads between 1990-2014 was 15%, compared to 22% in the pre-1990 area.

Kamiya stressed the fact that informal settlements are increasing in cities, and block sizes increased taking the space of roads in Latin America. Unsustainable Urbanization lead to the following problems: (1) Planned Areas are decreasing, 80% before 1990, less than 50% in 1990-2015; (2) Informal new areas are almost 30% in 1990-2015; (3) 40% of cities have less than 20% land allocated to streets; (4) Average block size has increased dramatically in

all regions; (5) In low income cities 26% of residents are informal; (6) In middle income cities 15% of residents are informal; (7) Between 1990 and 2015 urban areas in the less-developed world doubled in population but grew in size by a factor of 3.5, with urban sprawl and growth; (8) In African cities only 16% of land is dedicated to roads when 40% is the ideal.

Three Pronged Approach for Better Productivity

Urban economy and finance is about how to increase value. Kamiya proposes there are two main ways to increase value and therefore incomes of metropolitan residents. One way is to promote productivity by supporting cluster and value chains, as well as innovation. And the second way is interconnected with the first, which is land value capture. One example is when landowners agree to reorganize lands with public sector, just by doing that land value can increase more than 30% this method benefits everybody, landowners, citizens and the public sector.

The Three Pronged Approach for better productivity is: (1) Good Urban planning for extension, and Successful implementation of plans; (2) Financial factors, framework and governance taking into account expenditure and revenue; and (3) The legal framework. The formula for these factors is as follows:

- Productivity = f (Good planning+ Successful implementation);
- Good planning= f (Planning variables); and
- Successful implementation = f (Legal variables + Financial variables).

The necessary trinity of urban planning implies that legal framework, financial framework, and planning city extensions have to improve all together, not one before the other.

Municipal / Metropolitan Finance

Problems facing Municipal / Metropolitan Finance include: (1) Persistent absence of an economic plan for the economic impacts of urban projects at a city level; (2) No accounting of the public costs of private urban projects (i.e. Privatization of gains; Socialization of costs); (3) Absence of fiscal instruments for local authorities; (4) Persistent restraint of the power of local authorities with lower or unpredictable transfers; and (5) Lack of financial information and networked eGovernment systems.

Kamiya elaborated that we should focus first on indigenous revenues. Tax Revenues as Percent of GDP, for example, are different between High Income Countries reaching 34% of GDP and in Low Income Countries reaching only 13% of GDP. For example, Municipal Tax Revenue in Raleigh, South Carolina per kilometer varied between different uses and investments ranging between 500,000 $/ km^2 and 27,300,000$ / km^2 in 2011.

The relationship between density and services has been proven to be highly related. The literature is very rich in this field, since the seminal work carried out by Newman and Kenworthy in the late 1980s that documented the impact of residential density on infrastructure costs per capita. In other words, the higher the residential density, the lower the infrastructure costs, in terms of street network, water network, and waste water network. Therefore, from the per capita infrastructure cost, we can conclude easily the infrastructure costs per km^2 with regard to residential density.

Furthermore, productivity is higher and costs are lower when productivity and costs are concentrated within 2-3 km radius. This has been tested to show that gross value added by infrastructure within lower distance. In conclusion, the cost per km^2 increases per capita with further distances and lower densities.

Planned City Extensions have many issues that need to be addressed

Many problems exist: (1) The Case for Planned City Extension Low appreciation of the contribution of urban planning and design to quality of urbanization; (2) No clear understanding of the linkage between urban planning and urban value generation; (3) Short-term thinking in local and national political scenarios; (4) The permanent search of rapid return on real estate investments; (5) Urban planning only effectively used for economic zoning (Short-term guarantee of value for urban investment); (6) Perceived as an instrument of the economic elites; and (7) Alternative emergence of the legitimacy of informality as a last resort.

Therefore, Principles of Good Planning are:

- Principle 1: Open space and street networks which should be at least 30% of land for roads and open space.
- Principle 2: High Density which should be at least 15,000 people / km^2.
- Principle 3: Mixed Land Use which should be at least 40% must be allocated to economic use, and at least 30% of area must be allocated to residential use.
- Principle 4: Social Mix which should be no more than 50% for single tenure residential area and at least 20% to 50% for affordable housing residential area.
- Principle 5: Limit specialization like single function block area per neighborhood should be no more than 10%.

Walkability Index is another important principle, e.g. Non walkable area in the a Parisian suburb, with walkability index is 0.2, due to cul-de-sacs and street network disconnection, but in Paris itself there is a highly walkable area which rates a relatively high Walkability Index of 0.9. Number of Jobs accessible by transit is also a key factor for urban design, which can be translated to a gross value added by job density and job output.

Legal Framework and Governance

The Case for Legal Framework and Governance has many problems to be addressed too, like: (1) The national legal framework is not designed to address the basic conditions for quality urbanization; (2) Provision for acquisition of public land, other than expropriation at market price e.g. Streets, parks, etc.; (3) Urban design is not legally enforced; (4) Weak implementation capacity of legislation, rules and regulations; (5) Systemically low capacity of local authorities, including financial weakness because there is a fear of empowering local authorities; (6) No effective instruments to avoid systematic free-riding; and (7) Weak social commitment because there is a perception that local government legitimacy is weak i.e. Systematic perception of corruption and collusion of private/public deals.

A combination of some or all of the problems listed above creates situations where slums, business districts, and residential districts coexist in many cities.

The evolution of urban planning is imperative to urban productivity and adapting to new economic conditions. The financial and legal frameworks are key factors in this process of evolution, as they can either support and foster, or block this evolution.

For example, in Manhattan the original plot subdivision, which dates back to 1811, as evolved over time, from a very repetitive pattern to a diversified pattern.

The legal framework indeed allows for consolidation or division of plots. Very rapidly, under market forces, and because of the diversity of investors, plots can consolidate, and in extreme cases lead to only two plots in a block.

A Legal framework supporting plot consolidation managed to raise plot size in Manhattan, New York. In the original plot subdivision in 1811 the average plot size was 205 m^2 for residential use, and in some cases the average plot size grew to an intermediary plot consolidation of 255 m^2 for mixed use. Finally, there was an extreme plot consolidation with average plot size of 6,100 m^2 for large businesses.

That does not mean that all the plots will consolidate over time. But it creates room to evolve based on a change of circumstances. 40% of the plots around Madison Square have kept the original plotting, while the other 60% have consolidated to larger sizes, which allows for larger investors to enter the market, notably for business and commercial activities.

On the other hand, land use market in Brooklyn is still mostly residential. Although both plotting systems where identical, they have not consolidated in the same way. In more residential Brooklyn, 80% of the plot sizes date back to early 19th century.

The South African plotting system within townships is also made up of the repetition of small plots. The original plot in Soweto is 200m^2 on average, and dates back to the beginning of the 20th century. So the modern South African plotting is pretty much the same as the original plotting in New York from two centuries ago.

In contrast to New York, however, a series of financial, regulatory and fiscal barriers have prevented the consolidation and subdivision processes, and prevent the emergence of a sustainable and efficient land market. The legal and financial frameworks do not support diversification. A feedback loop is then created where the absence of an efficient land market prevents the emergence of a diversified plotting scheme, which in return does not support land market.

Regulations regarding block and street have been modified in many cases three (3) times or less after 1811 i.e. the original commissioner plan of New York. In conclusion, Kamiya recommended the following:

1. Implement Large Metro/Regional urban projects instead of small urban projects;
2. The pendulum needs to swing again towards large scale urban interventions (Urbanization is growing too fast);
3. Challenge the oligopolistic position of real estate business sector but let them build; and
4. Embed 3PA in metropolitan management, and in dialogues with central governments.


DAY 4

Cross-cutting systems to bridge metropolitan gaps

In socioeconomic and institutional terms, metropolitan solutions require the development of integrated mechanisms of planning, financing and evaluating for the metropolis as whole. Being able to monitor and evaluate metropolitan policies is essential. This validation will attract public and private funds to projects at a metropolitan scale. The instruments that allow us to foster these types of cross-cutting systems were discussed.

INSTRUCTORS:

Gabriel Lanfranchi, David Gómez-Álvarez, Pedro B. Ortiz, Marco Kamiya, and Patricia Mc Cartney

GUEST SPEAKERS:

Pablo Bereciertua and José Luis Inglese

Metropolitan Finance

MARCO KAMIYA
UN HABITAT

Marco Kamiya drew the principle components of understanding of present and future gaps in urban strategies and delineated scientific methodology for developing and managing urban space, setting a legal and institutional framework, prioritizing investments and assessing the impact of long-term public policy.

In this framework, a cross cutting approach to metropolitan finance was the focal point of Kamiya's lecture, divided into three parts:

- Introduction of the current gaps and limits that limit Urban and Metropolitan finance;
- Explanation of the Three-Pronged Approach as a strategic process that allows cities to shape a common shared vision of their development; and
- Recommendations to promote urban planning agenda among policy makers, urban managers and experts.

According to what UN-Habitat calls the *Three-Pronged Approach* included into the book *"Economic Foundations for Sustainable Urbanization"*, Kamiya detailed the method to support planned city extensions, efficient municipal finance and an effective legal framework.

Kamiya's lecture provided evidence that the successful components for planning, driving and managing the Metropolitan area are:

- Urban Design;
- Financial Management; and
- Rules and Regulations.

The topics Kamiya highlighted during his lecture, emphasized the importance of fostering a comprehensive, integrated and interconnected approach to support a methodology for developing and managing both formal and informal settlements; strengthening financial governance that eventually lead to infrastructure investments; and boost the creation of legal and institutional frameworks.

From an economic point of view, Kamiya's lecture provided evidence of future challenges faced by Metropolitan areas around the world, underlining the importance of developing a strict union between the improvement of regulations and the implementation of financial tools.

The tools would be used to implement the Three-Pronged Approach which refers to both the traditional urban finance tools (e.g. property taxes, user fees, etc.) and additional tools such as PPPs and municipal bonds. In these terms, it is worth mentioning the importance private developers' play in achieving outstanding public policy goals and in filling in the increasing gap between Metropolitan needs and the limited financial resources of Metropolises.

In this framework, financial governance will drive the capacity of the Metropolitan area to finance and monitor infrastructure delivery and plans; to raise revenue; and to manage risk.

How Metropolises obtain and spend money for Metropolitan needs, will depend on how financial governance can make cities more productive, equitable and sustainable by using six paradigms that shape the framework emphasized by Kamiya:

1. Economic Efficiency;
2. Accountability;
3. Adequacy and Stability;
4. Fairness;
5. Autonomy; and
6. Ease and Cost of Administration.

In conclusion, Kamiya's lecture provided evidence on the correlation between the urbanization phenomena and economic development. This correlation takes into account the scale and dimensions unique to Metropolises and the multiple level of analysis needed to achieve the challenges faced by metropolises, which will require new solutions and actions for achieving the Metropolitan goals.

A successful approach will focus on the capacity to understand the local context and applying multidisciplinary solutions locally oriented by an integrated approach that incorporates the metropolitan dimension/scale, financial management, rules and regulation under the guidance of a persistent dialogue between Public and Private stakeholders i.e. Governance.

Measuring urban performance and quality of life at a metropolitan scale

PATRICIA MC CARTNEY
WORLD COUNCIL ON CITY DATA

City planning is a comprehensive operation defining the demands of various actors, goals, policies and implementations in urban scale, regarding the current and future condition of city. Each stage in the planning has its own unique method considering several criteria based on urban information. Urban information is obtained from natural, physical, social, political and also moral environment in a complex system of a city.

When such large-scale and multi-criteria decisions are made for a city, location-based information systems are in need of the analyses of the current situation, storing and managing data, generating new data and, creating and visualizing the output data. However, creating and establishing information system for city data is bringing some challenges. Professor McCarney summarized these challenges as followed:

- Unrecorded informal service provision
- Unregistered land titles (no addresses)
- Undocumented citizens, incomes, employment
- Boundaries – No Conformity
- City data often collected nationally – Not locally
- No Standardized definitions on what to measure
- No Standardized methodologies on how to measure
- Weak or nonexistent baseline data in cities
- No mechanism for data and knowledge sharing across cities

All these challenges arise from lacking of the standardization as a fundamental problem for city data collection and sharing. Even if the data are in existence, interoperability is the biggest problem to use the data efficiently which were gathered from different sources. In a widespread manner for data collection in cities is that every department or institute collects data in their own way. Furthermore, who is going to collect data, what to measure and how to measure are not well defined to deal with these challenges, as well as no mechanism for data sharing across sectors, cities and countries.

Standardization of data and indicators is a vital issue to create efficient and sustainable information system for a holistic and integrated approach in

planning, while taking into account the complex system of the city. For this purpose, World Council on City Data (WWCD) is developing ISO for city's data standard. Recently they revealed the new international (ISO 37120 sustainable development of communities, indicators for city services and quality of life) standard created by cities for cities to: measure performance management of city services and quality of life over time; learn from one another by allowing comparison across a wide range of performance measures; and share best practices. Standardized data facilities can provide basis for city to city learning, encourages city solutions to travel globally and fosters smart city innovation.

ISO 37120 includes 100 indicators (46 core and 54 supporting), which are structured around 17 themes namely economy, education, energy, environment, finance, fire & emergency response, governance, health, recreation, safety, shelter, solid waste, telecommunications, transportation, urban planning, wastewater and water & sanitation. Thus, the standard brings consistent or comparable data over time or across cities, interoperability for different source data in a city and supports data inspired goals, data informed target and data driven result for future cities as smart, sustainable, resilient, prosperous and inclusive. Due to the fact that the world will build 10,000 new cities over the next 30 years, we also need to define standard city data in order to track and monitor progress on city performance considering the whole city system.

Consequently, urban life is turning into a logistics platform for information systems in order to monitor, evaluate, manage and develop cities. For instance, smart economic development and trade, measuring urban performance or quality of life at a metropolitan scale. This data platform should be an open city data portal to make the information accessible for everyone, so that it can bring more transparency to governance, encourage participants of city actors and provide high quality city data for a holistic approach to planning for metropolitan scale.

Water resources planning and governance, argentina´s water plan.

PABLO BERECIARTUA, JOSÉ LUIS INGLESE
SUBSECRETARÍA DE RECURSOS HÍDRICOS, AGUA Y SANEAMIENTOS ARGENTINOS

José Luis Inglese is the Chairman of the Board Agua y Saneamientos Argentinos S.A. (AySA). AySA is the company in charge of providing the water and sewage network of all the Buenos Aires metropolitan area.

Taking Rome as an example, Inglese stated that to provide waterworks to a big metropolitan area some key aspects are needed:

- The Government will to have an adequate infrastructure to provide to all the society with basic services and keep it cohesive.
- The development of the civil engineering to be able to perform works in a more effective, efficient and lasting way .
- The institutionalization of rights and obligations: authorities of regulatory bodies must be integrated by capable professionals, with deep knowledge of the field and independency and probity. Procurement systems should ensure wide suppliers range, transparency and auditability. The regulation of rates and prices of the services provided, must be equitable for all parts involved: owners, contractors, operators, customers and taxpayers, keeping that equanimity along the time.

He presented the situation of the water an sewage provision at that moment (2017) and the plans for the future. The population already served by piped water: 9,3 M (86%), the population to be added up to 2019: 1,7 M (100%). This needs an investment of USD1.900 M.

Regarding sewage networks, the population already served is 7,2 M (67%), the people to be added up to 2019 will be 1,8 M (83%). The investment needed is USD 2.100 million.

After José Luis Inglese, made his presentation Pablo Bereciartua, the Argentina's Secretary for Water Resources. He remarks that Water is a key issue to achieve economic growth and we need a more integrated approach on how we deal with water. If a country do not have enough water, it can not be competitive. He stated that we need to move into policy, how to deliver the agreements made on water acces. The water is an strategic resource, of the biotecology and other economic and industrial areas.

The National Water Plan in Argentina, started in 2015 and puts the water in the center. It is based on four key dimensions: preservation of the hidric resources, capacity building, innovation and participation of different sectors.

The plan consists on four phases:

The first one consists in increasing to 100% the access to potable water and 75% of sanitation network across the country. This part of the plan will cost USD21.000 M.

The second phase consists on the adaptation to climate change. One of the technologic developments will be the creation of climate effects alarms, mitigation of floodings and access to water. The cost of this phase will be of USD10.000 M.

The third axis of the plan is building multiproposit infrastructre. An example is an irrigation machine on a valley in the south of argentina that will be useful for agriculture, controlling floodings over a valley, creation of energy etc. This infrastuctures will cost USD10.000 M

The fourth axis is to develop new big irrigation areas. The focus of the plan is to add 1 million of irrigaiton hectareas. The scheme of creation of the irrigaiton areas will be through public private partnerwhip. The investment will be mainly by private sector capitals.

The Water Plan have already achieved some goals as: the Buenos Aires Metropolitan water table, which main operators of the system, buenos aires province, argentina national government and buenos aires city officials and the creation of four watershed comitees to deal with the basins challenges.

DAY 5

Governance solutions for metropolitan areas

Metropolitan governance is a fundamental issue, which varies from metropolis to metropolis, where each metropolitan city has developed its own mechanisms and practices, either formal or informal. This workshop sought to identify the most successful models and means to generate cooperation mechanisms between municipalities; between different government levels; and between multiple stakeholders from the metropolitan ecosystem.

INSTRUCTORS:

Gabriel Lanfranchi, David Gomez-Alvarez, Pedro B Ortiz, Marco Kamiya, Patricia Mc Cartney and Antonella Contin

GUEST SPEAKERS:

Christopher Zegras

Beyond Metropolitan governance

PEDRO B. ORTIZ
WORLD BANK SENIOR CONSULTANT

"If you can't explain it simply, you don't understand it well enough."
Albert Einstein

The starting point of Ortiz's lecture was Cedric Price's analogy of an egg and the city. Price's analogy shows the ancient cities were shaped like a hard-boiled eggs (defined borders, unique and solid nucleus), the 17th to 19th century cities were like a fried egg structure (fringed borders, but still a precise center) and finally modern cities Price likened to scrambled eggs. Ortiz continued this metaphor for the contemporary metropolis, which is a mass of scrambled eggs, but it also features other ingredients which represent social and productive facilities, education and health systems as well as commerce, leisure, and so on. Everybody can dress the scrambled eggs as they prefer so to the metropolis, which features are always different from local context to local context.

As the metropolitan scale reaches greater dimensions and complexity, Ortiz envisages future metropolises will need a backbone to hold it together. Continuing with Price's analogy, this means metropolitan governance will need to put toasted bread slices under the scrambled eggs to support the scrambled eggs. Transportation networks link all the different cities, or units, forming the metropolis (so they are bacon slices touching multiple slices). All of these ingredients (or elements) are placed on a common support system: it can be considered a green salad, as it is the Green Infrastructure. Ortiz underlined the fact that every culture produces its metropolis, and still, it is comparable to the way of assembling ingredients which is different from place to place.

Ortiz described the systems that form a metropolis is in the shape of a pyramid. At the base of the pyramid you find the economic, the social, and the physical environment. At the top and the narrowest part of the pyramid you find the institutional and the governance frameworks. This is how the CiTi Method (Chess on a Tripod) is shaped. An important point to note is that whenever one of these elements is missing, its place is occupied by a shadow (informal) clone.

\Ortiz highlighted that every metropolis has its needs and introduced the analogy of Hollywood / Bollywood / Nollywood. Different audience, different

budget, correspond to a different product. The tools needed change from time to time to correspond to a different product: if the goal is to place a screw, you can use a high-tech Black&Decker or a screwdriver, but if you want to place a nail, you have to choose the hammer.

Prof. Ortiz presented the five metropolitan subsystems and the Ikea Toolkit: they are divided in two continuous systems (Green and Grey infrastructures) and three discontinuous ones (Housing, Social and Productive facilities). The continuous systems are the base for shaping the Metro Matrix, which later embed the discontinuous elements. But metropolitan planning needs also to be wisely configured through time. Ortiz suggests an approach based on both synchronic and diachronic consensus, which envisages a long time span planning that has to be checked, tested, and if not correct, changed constantly; so that the plan shifts over time towards what Ortiz called a sliding horizon.

After a quick recap of the importance of geography for the location of a city and the geometrical shift from a centered to a grid structure (from darts to chess), Ortiz explain how different cities act as different pieces on a chessboard: everyone, or every chess piece, has a strategic role which is related to its features and its position.

Ortiz showed how the grid is not a new approach to the city planning, but every time period had its own measures, which are measures of time: it got wider as the movement within the city became quicker.

Metropolitan architecture

ANTONELLA CONTIN
POLITECNICO DI MILANO

From the perspective of an architect and a planner, the aim of planning in a different scale is to order the roles of design by tangible and physical tools to provide for public civil robustness; as Kevin Lynch says to be not only adaptable but also resistible in terms of image and identity.

The expansion of urban areas because of globalization creates a complex pattern of formal and informal settlements resulting in the existence of slums. New metropolitan planning approaches are trying to design new guidelines to overcome the impacts of the extreme urbanization that leads to slums. For that, defining an average scale to mediate between local needs and global scale is fundamental.

The introduction of ecological urbanism in developing countries by having a low carbon perspective is an example that reminds us that the metro vision requires the management of the complexity of being modern while keeping the identity itself as a beauty of the metro design.

In this case the introduction of a model by rational rules would be helpful. From this perspective, the megacity network and grids allows us to define the fundamental definitions for planning in the area; such as, formality and informality, common spaces and public spaces, and the interconnection between gray and green infrastructure, and all the elements that provide the DNA of each metro area. This model also helps us to define the main points in the model the physical context of the metro area to decide whether to conserve or develop or allowing growth like in an acupuncture point on a human body. This model would be comprehensive if the model is used to consider the impact before any action is taken. Another important factor in urban planning is too merge the local and global scales by the studying the gray and green infrastructure of an urbanized area.

In conclusion, each metropolis has its own elements that provide information to be captured from its own local context that can provide case studies for other metropolises. Contin provided several examples. Meidan was cited as an example of continues centrality of urbanized area. A Qanat was cited as an example of a reliable supply of water for human settlements used to capture and guide the water in Tehran or the Darosalam that considers environmental issues. Contin pointed out that formal and informal settlements in different dimensions are the most important aspects that must be considered as useful tools and identity of each city.

An identity of a city can be captured by innovative methods in an organized and logical way that can then be used as a tool for planning and managing the metropolitan area.

Metropolitan Transport and Mobility

CHRISTOPHER ZEGRAS
MIT DUSP

The rapid pace of urbanization trends surpassed the states and municipalities. The extensive interactions within the region demand urgent policies to facilitate the economic and social activities found in metropolises.

The discussion during the presentation “Metropolitan transport and mobility” recognized that the lack of coordination might be imposing high costs that hinder sustainable development. Some case studies were briefly presented to prove the different coordination needs and approaches, from the more holistic to some others that only focused on one issue, either water, transport or solid waste management. This module focused mainly on the commuting patterns in some metropolitan areas where over half of the population enters the center of the metropolitan region every day to access jobs, education, or other services.

An analysis of the existing mobility profile of the Mexico City Metropolitan Area was presented as well as the policies that have been implemented in recent years, to demonstrate the need to detonate changes in the current urban mobility policies to achieve a continuous integration of transportation modes, accessibility improvement, affordable mobility for all, and the transformation of the urban landscape through people-oriented policies.

The main proposal was to develop sustainable metropolitan mobility policies where developing sustainable urban transportation policies to improve mobility, manage congestion, reduce pollution, decrease commuting time, reduce the use of fossil fuels, and promote non-motorized transportation. In this regard, it became relevant the recognition that the transactions, interactions, and social and economic activities, and impacts in the city exceed the municipal sphere by far. Therefore, an explicit need for metropolitan coordination emerges to assure the inhabitants, material, goods, services, and information flows in a pleasant space.

The current coordination attempts are insufficient due to diverse reasons, such as: the lack of mechanisms, lack of common budget, lack of accountability, competing political interests, the number of entities per governmental level, and the number of jurisdictions involved.

Transportation and land use policies should be framed in a long-term plan designed by professional and technical experts, citizens' participation, firms, and universities involvement.

A technical metropolitan agency for transportation and land use legally empowered to plan, implement, and evaluate a mobility plan financed by a metropolitan entity could comprehensively elaborate a Complete Plan for Sustainable Metropolitan Mobility in many metropolitan areas.

In addition, greater legitimization of the agency could be achieved, as well as, better information shared with various stakeholders if citizens and governments had a participatory mechanism and could audit the agency programs, costs, and investments. Moreover, it would provide greater legal certainty due to the homogenization of the legal framework in the Metropolitan area.

Zegras mentioned the idea of governance as being the "actions and institutions within an urban region":

- COMMUNICATION: sharing information;
- COOPERATION: conflict avoidance;
- COORDINATION: coordinated actions and decisions; and
- NTEGRATION: single integrated policy and action.

Source: Rayle & Zegras, 2012

MODULE 2:

Credit : Jeff Turner

SHAPING THE NEW METROPOLITAN DISCIPLINE


DAY 1

Reasons for a new metropolitan discipline

Practitioners and academics alike are starting to think about the emergence of a new metropolitan discipline that could respond to the challenges and opportunities presented by the scale and scope of a metropolis. With the world becoming more and more urbanized, it is important to develop an academic corpus of knowledge around the metropolitan phenomenon and to develop the methods and instruments to manage the metropolis.

INSTRUCTORS:

Gabriel Lanfranchi, David Gómez-Alvarez, Pedro B. Ortiz, Victor Vergara, Antonella Contin, Francisca Rojas, Federico Bervejillo, and Remy Sietchiping

Towards a new Metropolitan Discipline

ANTONELLA CONTIN
POLITECNICO DI MILANO

Contin investigated the possibility that Metropolitan studies can be defined as a discipline, with its own fundamentals and curriculum. To begin her exploration Contin starts with the definition of 'discipline', which is defined as 'the art of instructing', but also 'the ordered way of behaving'. Contin concludes that the art and standard combined produces a 'standard of living'. Contin follows three steps to draw her conclusion: she defines the history and the theories related to the metropolitan question and the models provided through time; then she explains the interpretative maps as a competence needed to address the metropolitan question, and finally she defines the metropolitan discipline.

During her studies, Contin built a specific bibliography that is obviously not universal, rather she selected authors that could enrich the concept of the metropolitan discipline. Since the metropolitan concept is a modern concept, the authors that Contin references initially wrote during the second half of the 20th century. From K. Lynch's article "A Theory of Urban Form" (1958), continuing on to his famous "The Image of the City" (1960) until one of his final books, "A Theory of Good Urban Form" (1981), the bibliography includes readings from F. Choay, M. Castells and K. Frampton, as well as A. Rossi, E.N. Rogers and E. D'Alfonso. One important topic discussed is the role of the ground as a geographical, historical, technical support: so, the suggested authors are V. Gregotti, B. Secchi, L. Pollak and H. Lefebvre. This is just a sample of the bibliography that includes T. McGee, D. Gouverneur, R. Koolhaas, C. Rowe, and still many others. Why such a deep dive into literature? Because these authors offer us a rich background of thinkers that developed models since ancient times that can be used today to develop the modern models of a metropolis. Leon Battista Alberti wrote a treatise in 1450, "De Re Aedificatoria" which was based on Vitruvio's "De Architectura" (thought to be written between 30 and 15 BC) that implemented a sociological function for architecture and it lead to the concept of the public realm. The city exists also because of its relationship with the territory that she controls and she is fed by. P. Geddes showed in his diagram of acts-facts-thoughts-deeds and in his model, how the whole environment is subjected to our perception and use, and vice versa how our lives are shaped in this environment.

The growth of a city in ancient times followed two rules: (1) the rule of the form, as the cities were shaped by the walls that were designed to protect the inhabitants from external threats, and these walls followed a geometrical

rule, or (2) the rule of the model, that shaped the Anglo-Saxons' cities (and some of the Teutonic's) like the Großstadt, the Garden City, of W. Christaller's Place Theory. For modern city growth, Contin envisages the use of P. Ortiz's Metro Matrix to define the metropolitan elements and create order for the metropolitan digits. The matter comes from Hilberseimer's plans, located on an amorphous support, passing through F.L. Wright's Broadacre City, which was the first attempt to link a rigid structure with the natural environment, and finally coming to the criticism of Venturi, which probably inspired R. Koolhaas question about the bigness or scale: the metropolis as an anomaly of the city, thus necessitating a breakdown of the theory. This discontinuity is found in the de-structuralization of the metropolis, following the principles of C. Price and the update of Price's principles from D.G. Shane, envisaging the evolution of the city from a net-city (between grids and archipelagos) to a tele-city (working on virtual networks). The goal is to produce a sense of identity through the design of public/common spaces, minding the environmental issue of the 'space in-between' and the definition of new heterotopias (described as hyper-local centralities). Contin teach us the importance of the relations between different scales, and the relation between the scales of a metropolis and the ground the metropolis rests on.

The second part of the lecture focused on the competence of a "metropolitanist", and Contin showed a set of projects made by the MS Lab, located in many different metropolises around the world. These cultural projects are comprised of maps that work at all scales revealing the role of every element in relation to any scale, identifying a structural quality of the field of action. These maps are called interpretative maps. They are qualitative maps that show the impact of the transformations occurring in territories involved in the metropolitan dynamic. The maps aim to define the geographical hold points, in order to envision a ground project with a strong image that defines a centrality, thus showing a hinge point within the network. The aim is to provide a mental map that gathers and re-builds a set of figures and images that form the metropolitan identity. Contin provided a rich set of examples of maps as tools for reading the metropolis, but she also showed her audience how to interact with and narrate the maps to establish an interscale dialogue.

The lecture ended with a proposal for the practice of a Metropolitan Discipline that suggests a new way of interpreting citizenship. And introduces a new way for citizens' perceptions and expectations in the context of the explosive growth not only of the city but also of inequality, poverty and harm to the territory in the city. Contin defined the "Right to the City" as well as the "Right to Landscape", but also the "Right to Lifestyle". Thus, introducing the need of a new anthropological dimension. Contin concluded her presentation suggesting new interdisciplinary courses and workshops are needed to focus on the metropolitan phenomenon.


DAY 2

Fundamentals of the new Discipline

Substantial arguments to discuss the need for a new metropolitan discipline were presented. A proposal for a metropolitan curricula as a base for further courses and research agendas was started.

INSTRUCTORS:

Gabriel Lanfranchi, David Gómez-Alvarez, Pedro B. Ortiz, Antonella Contin, Francisca Rojas, Federico Bervejillo, Remy Sietchiping, and Eduardo Rojas

GUEST SPEAKERS:

Sarah Williams and Bruno Verdini Trejo

Fundamentals for a Metropolitan Curriculum

PEDRO B. ORTIZ
WORLD BANK SENIOR CONSULTANT

The epistemological process is a reductionist process and nowadays tends to the specialization rather than the generalization of knowledge. The recent history of science and technology shows that the disciplines studied by human kind evolve according to the needs that social changes imposes, and the problems that arise by optimizing, as much as possible, the use of resources to make a living more comfortable. However, the time passed since a set of practices becomes a field of knowledge, and the time when such knowledge begins to be formally taught in universities, is not usually short.A clear example of this reality is urbanism, a practice that was even used in ancient Rome and in the Athens of Hippodamus of Miletus (5th century B.C.), but which, until less than a century ago, was understood as a formal discipline of advanced studies. In fact, in some Latin American countries it is still strange to find urbanism as an option for undergraduate studies, although it is more usual to find specialization or mastery programs related to urban management, territorial planning and regional development.

Planning and metropolitan development are, without a doubt, problems that must be solved. As a result of rapid urbanization in recent years has left large metropolises facing countless challenges from the economic, social and political dimensions. In that sense, the practices that have been developed to this point in history to address these challenges have become key elements of study and have led to the creation of successful models of management.A set of methods and techniques to approach the metropolitan phenomenon begins to consolidate internationally, among them we find the set of concepts and tools that conform the Metro-Matrix Theory of Pedro Ortiz, a framework that comes from the practice of metropolitan planning and is currently one of the few scientific approaches in the subject.In this regard, Ortiz's proposal on the curriculum of a future Metropolitan Discipline is diverse and complex. Its first characteristic is the coexistence of conceptual elements, tools and practical instruments, and experiences that have proven to be successful. Second, the curriculum proposed by Ortiz recovers some of the typical knowledge of urbanism related to topics such as transportation, housing, and economic productivity, among others. Finally, the curriculum introduces brainshops, a

new form of workshops that propose the interaction between sectoral experts for a multidisciplinary approach to metropolitan projects.

With Ortiz's proposal, a debate about the kind of knowledge and skills that a metropolitan manager should have is set in motion. The options range from a general set of skills in fields such as governance, social cohesion, and territorial development, to a specific set of knowledge about elements of urbanism such as infrastructure financing or mass transportation planning.

It is likely it will take some time before we can find in most universities' formal programs on development and metropolitan management the kind of multidisciplinary approach Ortiz favors. For this kind of approach to be adopted, Ortiz issues us the invitation and responsibility to build a mass of critical thinking that favors a multidisciplinary approach that eschew traditional silo thinking. The growth of metropolises in the world is an irreversible process. Attempts to shape a metropolitan discipline should be as well.

Theory of metropolitan planning and the new discipline

FEDERICO BERVEJILLO
ORT UNIVERSITY

Before discussing the need of a metropolitan discipline, we should specify the knowledge about spatial structure and dynamics of the metropolitan scale related with the context, possibilities and characteristics of planning processes. Knowledge and theory in planning is based on a mix of knowledge from professional planners, decision makers and social actors, whom are also learning from the planning process experience.

The mix knowledge of professional planners originates in their own reflexive experience and what had been acquired during formal education. Planning is an interdisciplinary field of knowledge production and practice. It integrates knowledge from different sciences, such as social sciences, architecture, engineering, ecology and geography. In its most generic meaning, planning theory refers to all the endogenous or exogenous theories that planners use reflexively to define their work, study their object, interact with political and social actors, and elaborate proposals. The theoretical core of planning consists in an integrated spatial and multi scalar approach to the analysis of the cities and regions, the exploration of possible and desirable futures, and the definition of spatially integrated policies, strategies and plans for their

Figure 1. Matrix of the field of studies that are relevant for planning, including their object and approach.

transformation in the context of governance. As a consequence, the object of knowledge for planning is:

a) The spatial integrated structures and processes of cities and regions considering different scales and temporal horizons, and

b) The processes, structural conditions and agency of planning as a practice that is both technical and political (see Figure 1).

The types of discourse in planning knowledge and ideas are local theories & cultures (LTC), methods, guides & models (GUI), formal theories- academic (THE), epistemology – metatheories (EPI). In addition, social and political ideologies have an impact on planning as well. Epistemology discourse is a core followed by theory, guides and local theory (Figure 2). If we located the discourses one by one, the intersection of objects and approaches with territory and planning, the schemes that we obtain are the ones represented in Figures 3, 4, 5 and 6 (see below).

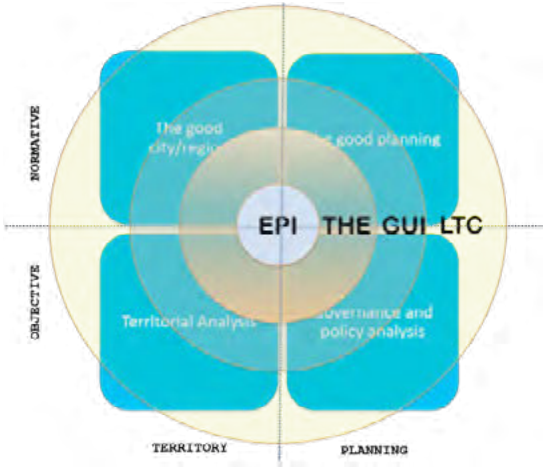


Figure 2: Intersection of matrix and discourse types in the planning knowledge

Another issue to be considered is the reinvention of "territory" as a concept, which brings along some challenges for citizens and planners:

- For cognitive (new knowledge) dimension: Renovation of paradigms: the complexity approach; new concepts of territory in social sciences and ecology; production of new pertinent knowledge.
- For Socio-Political dimension: New forms of territorial governance; new spatialities of the collective project; territorial foresight and new strategies.
- For technological- organization (new management) dimension: A mutation in the technologies of spatial management; a new paradigm for best practice in organizations.

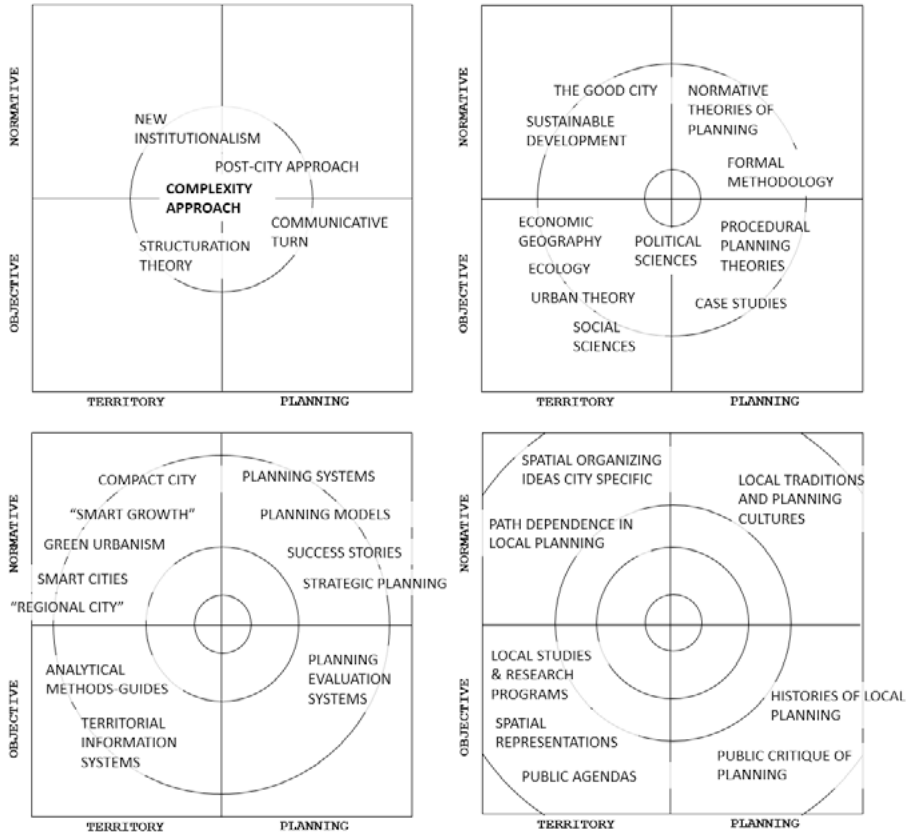


Figure 3: Epistemology. Figure 4: Formal Theory.
Figure 5: Methods, Guides & Models. Figure 6: Local Theories & Cultures

As it is understood, “the objects leave their place to the systems. Instead of substances and essentialities, organization; Instead of simple and elemental unities, complex unities” (Morin, 1993: 148). The complexity approach is the systems instead of objects as emergent realities, micro-emergencies within systems, relations of recursivity -like structure and agency and programmed action versus strategic action-. Furthermore, territory, city, region, development, governance and planning refer to emergent systems in complex concepts.

This new approach as a new paradigm integrates flexibility and speed, decentralized integration and permanent learning. In addition, we need to specify the necessity of academic disciplines:

- a particular object of research (eg: politics, society, human behavior)
- a structure of accumulated specialist knowledge referring to their object of research
- theories and concepts that can organize the accumulated specialist knowledge effectively
- usage of specific terminologies or specific languages adjusted to their research objects
- developed specific research methods according to their specific research requirements.
- It must have some institutional manifestation in the form of subjects taught at colleges or universities. It means a discipline will have academic departments and professional associations connected to it.

Moreover, we need to answer the following questions: *Once we go beyond the city and try to elucidate the metropolis, is there an upper limit in scale for our indagation or “discipline”? Can we stop before reaching the scale of megacities, mega urban regions, etc? Is there a specific territorial form and process that we can call metropolitan and stop there? If we answer no, then the metro discipline has to embrace a multiscale definition of its object. And we should go to a radical post-city paradigm that perhaps is also post-metropolitan?*

Lastly, one question that needs to be asked is whether metropolises are an old concept or not? Initially “metropolis” refers to scale, and to functional and political hierarchy. In the 19th and part of 20th century, metropolises were big compact cities or monocentric agglomerations. Today we seem to ascribe to “metropolis” another meaning: a discontinuous and fragmented spatial system that is functionally integrated, and may be poli-centric instead of monocentric. But this last meaning refers also to realities that we don’t call metropolis such as Megalopolis (Gottman, 1961), Regional city (Calthorpe, and Fulton, 2001), Mega cities or mega regions, Urban superorganisms,

"Friedmann's Contributions" (Sassen, 2016) and Planetary urbanization (Brenner, 2014)

Professor Bervejillo ended his presentation highlighting "the need for a new synthesis of physical and socio-economic planning" (Sanyal 1998). The planner should consider at the same time some sense of broader 'spatiality' (including an intuitive understanding of economy, society and polity in the territory) and specialized knowledge on economy, society and polity.

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Credit: S.Munari

MIT Civic Data Design Lab

SARAH WILLIAMS
MIT CIVIC DATA DESIGN LAB

The lecture deals with mapping and data visualization, reporting the case of an applied research in Nairobi. This experience had the aim to analyse, map, rationalize and improve the systems of informal transport. Like in other countries, especially African, the system was already available and managed by locals, who run privately owned minibuses, responding to the needs of inhabitants and covering the whole metropolitan area.

The work was developed through a campaign of data collection, a collaborative and inclusive approach with the interaction between researcher, local user and public actors, the production of a digital map and the release of an app for smartphones.

The campaign of data collection was based on:

- Recording routes and stops, using devices able to record gps information (GPS trackers and mobile phones) so to collect data in GTFS (General Transif Feed Specification) format
- Recording of density of users through Facebook check-ins and other social networks;
- Meetings with users, runners of minibuses, public actors.

The information have been collected so to be accessible and shared by users and developers and the results have been released for public use through the app ma3route (*www.ma3route.com)*.

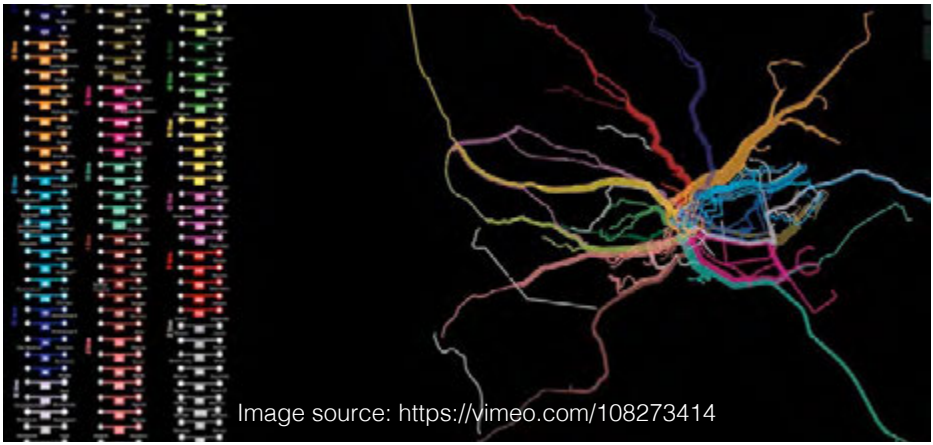


Image source: https://vimeo.com/108273414

The platform used for developing the map is mapbox www.mapbox.com , an open source tool to create maps.

Maps becomes crucial because they – playing with words and their meanings - give form to informal- information. The map has the power to be immediately (without mediation) readable and, if well designed, also in its graphic qualities, is more effective than any figure with data sets.

But, mostly, the map can itself produce spatial effects, to give a more structured form to the city and a clearer hierarchy to the city's components such as streets, public places in correspondence to the network stops. The map is not only a report of the actual situation, but it has also the power to consolidate the main urban structures and even produce new urban forms, corresponding to the real and potential uses of the inhabitants.

To achieve these processes, it is important that data are not only collected but also made visible in an effective way, through maps and app, so to become of public utility.

One key feature of the research work is that the method and its results can be repeated and implemented also in other cities. In this sense it would be of particular interest to study cases of metropolises with different forms: not only radiocentric or focused on big cities with their metropolitan area, but extending the research approach also in the in complex networks of multipolar territories, especially if less dense and located in between main centers.

Another key concept that could be helpful for metropolitan understanding and management is to give a broader consideration of flows as drivers of urban form: related as we have seen to the mobility of people, to a broader consideration of natural flows (green and blue ecologic corridors) but also to the role of intangible flows of information that define behaviours and cultural environments with their "mental" maps and that support (more strongly than we think) the metropolitan form of a city.

In metropolitan areas flows are only barely influenced by administrative borders and they are most relevant to define the actual area in a more effective way, fact that is fundamental to understand processes and set government and design policies.

The Importance of Negotiation Skills

BRUNO VERDINI TREJO
MIT-HARVARD NEGOTIAZION PROGRAM

There is a common misunderstanding about what negotiation entails. People usually believe that negotiation is a zero-sum game, i.e. a process where the winnings of one party equals the losses of the other. Based on this vision, many people approach negotiation by showing their extreme requirements along with a slam on the table (see the Donald for example, and his misleading and ill-conceived negotiation strategies). Other approaches see negotiation as a realist power-based argument, where the most powerful party sits on the table in order to impose their demands upon the other participants. However, these approaches miss a key part of any negotiation, which is that such process does not occur inside a vacuum and it usually takes place repeatedly over time.

Extreme-position, or power-based approaches are doomed to collapse after a few exercises (if not sooner), therefore they are not sustainable over time. In addition, they tend to create animadversion between parties, which precludes the ability to attain any kind of understanding between them, other than the unwanted imposition of the outcome. And this is why alternative approaches are required, and this is what Bruno at the Harvard Negotiation program advocates for.

Under his approach, a negotiation is not a zero-sum game, which means that it is possible to find win-win situations, where every party is satisfied (or at least not upset by the outcome) and where negotiations may be sustained over time, providing lasting benefits to the participants. The core idea behind this approach is that it is key to be open to share the expectations and the issues that are common ground to all parties. Such openness should be coupled with the intent to build an interpersonal relationship, in such way that the parties are not only defending their own positions, but they are also understanding the position of the counterpart. This acknowledgement of the other's position legitimacy is probably the determining factor between successful and failed negotiations.

When compared to the traditional views of negotiation, this approach may seem to be counterproductive, since it puts forward the strengths but also the weaknesses of each party. However, such transparency is precisely what makes it robust, since it allows for all parties involved to understand each other, and to realize how they could benefit not only from their own requirements,

but also from fulfilling others' which would in turn open the door for more negotiations, and potentially more benefits.

Of course, this is not panacea and will not always be successful. For a negotiation under this approach to work, it is required a substantial level of openness from all parties. This means, that they all need to understand what is going on beyond the positions and words that are being exchanged, which in turn means that they all need to possess the basic negotiation skills, which otherwise would prevent them from meeting the ideal stage of interpersonal understanding and exchange. This in itself is a relevant obstacle for negotiation, and this is the main reason to advocate for a better understanding of the negotiation process.

When we discuss the metropolitan issues, it is clear that one of the most important obstacles (if not the most important) is the metropolitan dialogue: governance, coordination, scale and common well-being. Therefore, knowing how to negotiate, with whom, what to negotiate, and under which conditions has the potential for shifting the way we understand the metropolitan problems. Understanding the win-win relationship between multiple jurisdictions and multiple actors, which would also translate into political success, and having the human capital within those jurisdictions should be one clear goal to pursue within the metropolitan practice.


DAY 3
Paris
Bordeaux
Marseille
Barcelona
Sardinia
(Sardegna)
Majorca
(Mallorca)
Mediterrane
Bay of
Biscay

Lessons learned from practice

Cases of metropolitan development in different contexts were presented by UN Habitat. Similarly, the Inter American Development Bank presented the results of a regional metropolitan development project. Eduardo Rojas then conducted the workshop where lessons from practice and cases were discussed as part of an applied research agenda.

INSTRUCTORS:
Gabriel Lanfranchi, David Gómez-Alvarez, Pedro B. Ortiz, Antonella Contin, Francisca Rojas, Federico Bervejillo, Remy Sietchiping and Eduardo Rojas.

GUEST SPEAKERS:
Erich Plosky and Nora Libertun de Duren.

Building Metropolitan Governance in Argentina

FRANCISCA ROJAS
IADB

Francisca Rojas presented the DAMI program which is a current example of building a metropolitan agenda that various regions around the world can learn from. The program is oriented to support the metropolitan development projects in Argentina through investments in urban infrastructures and services, which have to have a metropolitan impact. Through a “learn by doing” method, the program introduced an innovative and incremental tool to identify problems and challenges that a metropolitan area faces. The aim was not to define the entire agenda from the beginning, but to work incrementally to create the basis for consensus among the multiple actors involved, and the different levels of government. The DAMI model is composed of five main steps. The first step is to identify and recognize the lack of coordination among the metropolitan area stakeholders. Next the various stakeholders are encouraged to raise their voices. After they raise their voices so the other stakeholders hear each other, the parties construct political legitimacy, functional legitimacy and operational legitimacy in an incremental way. In each step, they identify the obstacles and DAMI model identify actions to move forward past the obstacles.

The program targets eight Municipalities, of more than 600,000 inhabitants. The region is functionally interconnected, forming a complex metropolitan area. The eligibility criterion for the investment was: an agreement needed to be negotiated between jurisdictions to coordinate in the design and management of the project; a basic institutional development to carry out that coordination; and the creation a plan of action that was technically, economically and environmentally feasible.

The process started with analyzing factors such as sprawl, spatial segregation, public investment, flood risk, watersheds, water, and sewer provisions. The main challenge the program faced was to manage the complexity with the objectives of providing provision and quality of urban services, affecting the efficiency to places where the services are delivered, and determining how the costs should be distributed between jurisdictions.

To illustrate the complexity of the project, Rojas provided an example of the metropolitan park project. It is a continuous waterfront green system starting as a snow ball process. In order to deal with the political complexity that involved

different actors to work together, they introduced recreation as a systemic strategy. The process started with a project that demonstrated the potential continuity in order to involve other municipalities in the future. The metropolitan park is used as a multifunctional infrastructure in this case to leverage the metropolitan project. A historic example of this approach is the Olmsted Park in Boston that showed how a project expanded and was implemented into the city planning structure. It not only expanded as a green space in Boston but also addressed various issues as planning evolved over time. Nowadays, the park is part of a resilient system dealing with environmental management, transportation, and recreational space.

Assessing a metropolitan issue in incremental stages is an effective strategy to show municipalities how the changes can eventually bring benefits not only to one jurisdiction but the entire metropolitan area. It also sets an example for the individual municipalities to think about investments on a metropolitan scale that can cause a strong effect in both local and metropolitan dimensions.

Lessons from the New Urban Agenda

REMY SIETCHIPING
UN HABITAT

The New Urban Agenda includes aspects that serve the metropolitan practice, such as:

- Urban poverty
- Sustainable and inclusive economies
- Safety and resilience
- Better coordination between different levels of government.
- A holistic view about planning
- Participation and social inclusion
- Mix use of land
- Environment preservation
-

The New Urban Agenda poses a set of commitments related to the mentioned aspects that need to be implemented effectively. For this purpose, Sietchping commented on the relevance of "building the urban governance structure with a supportive framework" and of "planning and managing urban spatial development".

Moreover, the Art. 90 of the New Urban Agenda addresses metropolitan multilevel governance, participation in decision making and capacity building and Art. 115 addressing on the wider benefits of metropolitan schemes.

Furthermore, the Montreal Declaration on Metropolitan Areas published in 2015. Highlighting recommendations on the areas of:

- Democratic decision making
- Inter and intra coordination strategies
- Governance and solid institutional framework
- Metropolitan cooperation partnerships (MMCPs)
- Multi-stakeholder partnerships that include citizen participation, access to information, transparency and accountability.

Sietchiping also shared some examples of the work that UN Habitat have been doing to promote networks for metropolis. One is that of the Panamerican

Network of Metropolitan Areas with metropolis from Mexico, Colombia and Brazil that supports the creation of frameworks on a national and local level.

Lessons on metropolitan Growth

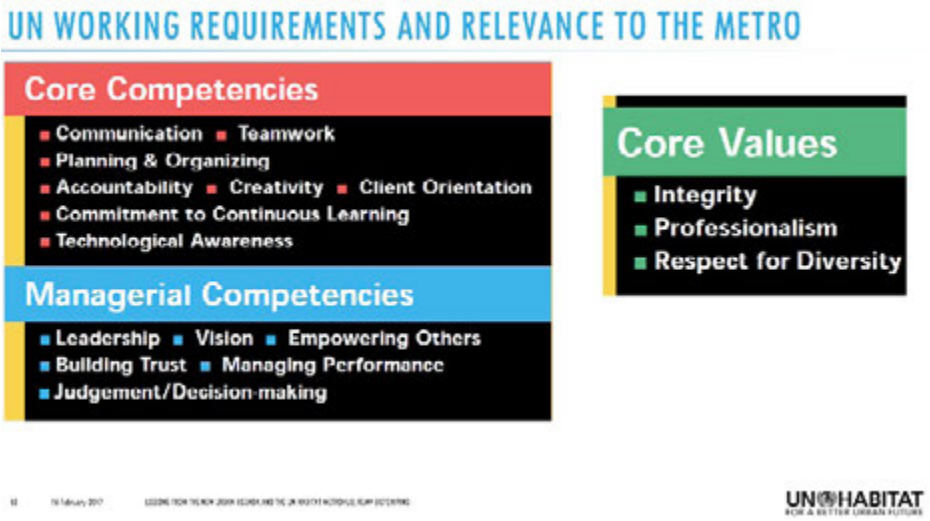
Sietchiping, addressed examples of growing metropolis specially in Africa. In this regard, he highlighted three main lessons from metropolitan growth:

1. Compactness and planning:
    - Working with natural systems and avoiding spatial fragmentation
    - Defining roles and functions of human settlements to build a metropolitan system of cities
    - Locating and making room for structural infrastructure and services like airports or ports.
    - Allowing room for appropriate city extensions such as housing and services delivery
2. Transportation as key
    - Minding the transformative power to shape urban forms and spaces and thus trigger urban prosperity and livability
    - Transportation as the backbone of the city/metropolitan infrastructure
3. Connectivity
    - Minding road grid and the mass transit corridors
    - Establishing a hierarchy of the transport network and nodes that its widely understood.
    - Promoting transit oriented development
    - Ensuring effective connectivity of structural infrastructure and services with the transport network (e.g. airports and cities). The collaboration between a metropolitan authority and the airports could benefit the metropolis by creating cross-cutting collaboration to have better planning, spatial integration, improved security, better transportation and overall metropolitan development.

Moreover, he addressed some of the challenges of the metropolitan agenda:

1. Their scale and complexity
2. The jurisdictional and functional challenges
3. The need for vertical and horizontal coordination
4. Cross-sectoral and cross-disciplinary thinking.
5. Improved dialogue between different stakeholders
6. Lack of coordination on land use policies or plans for strategic investments
7. Lack of tools for metropolitan planners.

And some of the skills and capacities needed for someone working in metropolitan issues at the UN:



Growing Resources for Growing Cities

NORA LIBERTUN DE DUREN
INTER-AMERICAN DEVELOPMENT BANK

Libertun examined three questions in regard to the provision of basic services to metropolitan areas:

1. Why should we care about density and the cost of provision?
2. How does density relate to expenditure?
3. What can we do?

Nora Libertun, as well as other instructors, made clear that cities are expanding at faster and faster rates, just as its density is dropping due to its sprawling natures. Libertun and other speakers point out, the calls by the key National/Provincial/City Governments and International Development NGOs is for a densification policy agenda.

One positive aspect of this presentation was that it outlined the pros and cons of density, and referenced some of the key papers in this area. Perhaps, as the presenter pointed out towards the end of the presentation, there is a point where density changes from being good to bad, and generates more problems than it solves. Thus, cost of basic services is not the only factor that needs to be taken into account. However, it was pointed out that the impact of density on the cost of provision of services (expenditures) is still unclear as far as the majority of research to date is concerned. Different researchers have found that density has:

a. No Impact;
b. A reducing effect;
c. An increasing effect; and
d. Conditional impact on expenditures.

In this regard, Libertun presented some of her own research, based on 18,000 observations across four countries and two censuses. The data clearly showed that there is a correlation between provision and density, in that low density places have a low level of coverage, whilst higher density places have a higher level of coverage, across such basic services as water, sanitation, and waste collection. However, it was also noted that there came a point where the cost of provision increased, but this varied between scales of places. It was surmised from the research that there is a sweet spot of approximately 9,000 people per square kilometer. Therefore, density and the cost of provision is beneficial.

Public Sector´s role in transportation

ERIC PLOSKY
U.S. DOT - VOLPE CENTER

1. Are cities markets? If cities are markets, what is the federal government's role in these city markets? The answer is that it depends on the type of role a government plays within a country, leading to the next question, is your government centralized or decentralized. For example, the most centralized federal governments in the world are in France, Japan and China. In the alternative, one of the most de-centralized federal governments in the world is the America.

2. How do you think of a metropolis within the system of government that exists in your country?

In America, the Department of Transportation (DOT) establishes the rules for metropolitan transportation. On October 15, 19662, an act of congress created the DOT. Its mission is to *"Serve the United States by ensuring a fast, safe, efficient, accessible and convenient transportation system that meets our vital national interests and enhances the quality of life of the American people, today and into the future."* Thus, a legal framework created an institutional framework to sustainably manage transportation in America.

However, the creation of the DOT brought about its own challenges one of which is what should be the role of government within the context of transportation? Should the public sector provide experts and its expertise? In his opinion, people do not want experts.

3. How does DOT balance a leadership role vs. a representative role? The answer may depend on the scale and sector. The different scales are: micropolitan to metropolitan to megaregion to national. Different sectors develop different systems over time.

4. How do you view transportation?
   - Transportation moves people or stuff
   - Transportation provides people access to stuff like healthcare, schools, etc.

5. What role does government play in the economy? Does it promote the health of the private sector?

In America, the federal government wants cities to be city markets so the populations in the cities can work. However, the government also has a role in

correcting market imbalances. These two roles the government plays creates a delicate balancing act.

6. What tools are in the government toolbox that can lead to government action?

    1. own and operate transportation;
    2. create regulations to legislate and create policy to regulate business practices;
    3. financial incentives and disincentives e.g. subsidies and penalties;
    4. rights – e.g. property rights, permission to do different things on a property;

       and
    5. information – e.g. basic research/data (this is the cheapest but the most complicated).

In conclusion, the public sector's role in transportation in a metropolis depends on a country's government and the role the government plays in the economy

DAY 4

Lessons learned from the academia

“A new urban agenda requires a new urban practice”, said Michael Cohen in Habitat III. The Metro Lab Initiative strongly believes that a new practice requires a new disciplinary corpus. Ways in which we can conceptualize and structure the new discipline into an academic program and develop a curriculum were discussed.

INSTRUCTORS:

Gabriel Lanfranchi, David Gómez-Alvarez, Pedro B. Ortiz, Antonella Contin, Remy Sietchiping, Eduardo Rojas and Michael Cohen.

GUEST SPEAKERS:

Diane Davis and John Fernandez.

New approach from an economic perspective

MICHAEL COHEN
NEW SCHOOL UNIVERSITY

"The New Urban Agenda is a disaster". With this rather provocative opening, Professor Michael Cohen from the New School University invited participants at the Metro Lab to reconsider how participants were thinking and producing knowledge about metropolises. If on one side, the New Urban Agenda brought unprecedented attention to cities in the international arena, on the other side, the engagement that brought countries together towards more equal and sustainable cities lacks priorities, ethical foundations, and theories. The main question that Cohen wanted answer during his talk was "If during the past two decades progressive countries all over world were advancing policies towards more equity in urban development, why is inequality still going up in our cities?"

The preparation for the 2030 Agenda for Sustainable Development, the New Urban Agenda ("NUA") and all the Habitat III-related events were the result of collaboration between governments, academia, experts, and many other professionals. However, as Cohen pointed out, there have been many discussions about 'WHAT' to do rather than 'HOW' to take action. As a result, the NUA has been written in a way that is too general and does not include ethical foundations such as equity and social justice principles.

Along with the New Urban Agenda, the Agenda 2030 was celebrated as a result of a long negotiation process. However, for Cohen, Sustainable Development Goal ("SDG") 11 – the commitment to cities – is far from being a great achievement. It is a broad goal, with no specific content – not to mention that it does not set important targets for the elimination of poverty, elimination of inequality, or the increase in productivity. Those are issues covered by other SDGs and this is the very argument that many of the advocates of SDG 11 use to justify such an omission.

Indeed, international recognition of the urban issue is an important advancement. But what we should be really focusing on is how we can promote a more multisectorial approach and engage in a broader debate on cities. As a matter of fact, the label urban cannot be a label per se but rather a cross-cutting and integrated way to frame the problems we face in cities. And currently there is no school curriculum teaching its students to think that way.

The urban agenda debate has focused much more on the “WHAT” and has been silent on the “HOW”. According to Cohen, we should be talking about whether the “HOW” matters and even to what extent it impacts urban policy. For instance, during the Habitat III process, there was no official effort from the United Nations to evaluate the fulfillment of commitments made in 1996. Seeing a need, Cohen led the creation of the Habitat Commitment Index in the scope of the New School Global Urban Futures Program.

Among the main findings he and his team discovered that more than half of the countries made no improvement in urban well-being despite experiencing periods of significant economic development. Developing countries – those with the highest growth rates – did not advance in urban well-being. So, the question to be answered is: what are the other factors – beside economic development - that are necessary for improving quality of life in cities? The answer again requires focusing on the “HOW” factor.

For example, the HOW factor matters a lot if we are talking about inclusion. In theory, inclusion should be thought from a multidimensional perspective and consider issues like poverty, inequality, productivity, and discriminations. However, in urban practice people are put into categories: formal vs. informal; legal vs. illegal; urban vs. rural; inside the jurisdiction vs. outside of the jurisdiction; and urban vs. metropolitan.

Indeed, the metropolitan issue, for a long time, was mostly discussed in terms of jurisdictions without caring about other important questions like culture, identity, and space. We are still keeping different people apart instead of putting them together and differences are being strengthened in a lot of ways. So we should be thinking on our practices, which mean: thinking about the ways we frame an issue (definition); the institutions involved in that process (structure); and the allocation of resources (decisions).

While looking more deeply into the design process of urban policy, we should also consider two other important factors: participation (and how we think of participation) and the assessment on how decisions are made in a particular context. Sometimes, a project can be considered a failure in a given context but a success if we analyze it later. Two points were made on this argument:

(1) we have to distinguish outputs from outcomes; and (2) perspective matters in the evaluation of projects.

To summarize, we are not framing the urban question in the correct way and we are not evaluating it well either. Commitments are being made but, still, we do not know how well we are doing in this quest. So, to conclude his lecture, Professor Cohen made five suggestions to Metro Lab participants:

1. We have to think about urban design in a larger and cross-cutting way, involving different sectors in the conversation.
2. The monitoring exercise of the New Urban Agenda has to focus at the local assessment of practices; in individual cities instead of countries. There is a need to create a monitoring system that is helpful to local communities so these communities can better make a proper diagnose and prescription to get better results.
3. We have to enhance the conversation in a forum that puts all the important stakeholders together: local organizations, businesses, communities, and governments. These stakeholders have to exchange information more and in a better way so they can find out what they are doing and appropriate the global commitments by defining outcomes that are owned collectively and locally.
4. We need a massive reform in our curriculum, in the way we train people to think about the things we care about. Professionals who cannot come to an integrated and crosscutting way of thinking will, in the future, be considered handicapped.
5. Communication is a crucial aspect of urban policy and we have to find another language of communication with people to talk about what is happening in this world. And more importantly: how can we work with instead of work for people?

Credit: Jose Morcillo Valenciano

New Approach from Urban Planning

EDUARDO ROJAS
UNIVERSITY OF PENNSYLVANIA

Eduardo Rojas structured his presentation through the following conceptual units:

- Problem
- Knowledge
- Supporting Framework
- Sum

In his lecture, Rojas proposed an innovative approach involving the participants in an active role. He formulated questions and participants were asked to write down their answers or reflections in a tweet format, summarizing the concept in 140 characters or less. Some concepts were exposed during the lecture, which encouraged a subsequent general discussion and knowledge co-production.

Problem

In the first conceptual section of his lecture, Rojas stated that managing the metropolis poses a governance challenge. The metropolitan phenomenon overflows the city dynamics by scale and complexity. As stated in his book "Governing the Metropolis": the management of metropolitan areas falls under the jurisdiction of several local authorities and other central government entities, and faces problems with the inter-jurisdictional coordination of functions and resources. The good governance of metropolitan areas is critical for the economic and social progress of countries. However, each metropolitan area must find its own path to governance in accordance to its local characteristics. Furthermore, Rojas affirmed that urban governance is a political activity supported by knowledge and support frameworks.

Knowledge

Regarding Knowledge, he divided the concept into categories, scientific and practical.

- Scientific Knowledge

He defined scientific knowledge as all the relevant fields of scientific enquire in the natural and social sciences. Subsequently, Rojas continued with a question to the participants based on the Metro Lab findings:

What are the shortages of scientific knowledge that limits the understanding of the metropolitan phenomena and can we justify a renewed effort by academic and research institutions to improve metropolitan governance?

Some of the discussions between the participants were about the problem of thinking fragmentally in silos. For metropolitan thinking, an interdisciplinary body of knowledge from different disciplines and a holistic approach is required.

- Practical Knowledge

Rojas exposed several challenges regarding three dimensions of practical knowledge: planning methods, implementation procedures, and negotiation skills. Regarding planning methods, Rojas stated that metropolitan planning faces significant challenges in applying practical knowledge because it operates on a very complex open and morphogenetic system with a high uncertainty future. Furthermore, there are deficient mechanisms in place for negotiating agreements among diverse stakeholders. Concerning implementation procedures, Rojas explained that they are fragmented and they lack full set of responsibilities. Lastly, Rojas exposed the problem of defective mechanisms to negotiate agreements among diverse stakeholders.

Rojas continued with the following statement: “Practitioners learn by analyzing and evaluating the results of their actions” (Schon,1983). To conclude the section of practical knowledge, a question was posed to the participants: Based on your experience, how can practitioners improve the practice of planning the metropolis?

Participants discussed cases illustrating accepting and communicating mistakes in order to learn from them. Furthermore, the need for social communication, awareness and leadership was discussed with an emphasis on the importance of listening to community demands.

Supporting Framework

In the third section, Rojas proposed the following components for supporting framework: information, finance, and institutions. Subsequently, each subcomponent was explained. Regarding institutions, Rojas stated that practitioners would play different roles in supporting the process of building the institutional supporting framework.Afterwards, Rojas asked the last question: What are the key skills required in a metropolitan management team to fulfill these functions?

To conclude his presentation, Rojas stated that “metropolitan studies is a discipline of practice” (Lawrence Susskind) which needs strong support from the related scientific disciplines and learning from concrete cases and practices. Finally, he added that organizing this process of learning is the core of a metropolitan discipline.

Building Better Cities with Strategic Investment in Social Housing

DIANE DAVIS
HARVARD UNIVERSITY

Davis' presentation encouraged the participants to think of the metropolitan discipline through the lens of a particular sector. Her presentation focused on the sector of social housing in Mexico. The conclusion of Davis' research project was as follows:

PROCESS + OUTCOME = DEFENSIBLE URBANISM

- Mixed-criteria, avoiding predetermined formulas that are likely to lead to projects that are buildable but that are unlikely to have the desired results;
- Discussion and debate over social housing goals must follow a process that contributes to citizen and professional knowledge creation which is valuable unto itself;
- By sharing, examining, and critiquing a wide range of proposals and projects, actors will benefit from exposure to new ideas, strategies, and examples which they might adapt to their particular context; and
- Together, the combination of a representative process and locally-relevant housing objectives produces defensible urbanism.
- She came to these conclusions after conducting research in Mexico's social housing scheme.

She gathered quantitative evidence in seven urban centers in Mexico and identified the principal challenges in her research. The challenges Infonavit faced were: (1) defaulted loans; (2) abandoned housing; and (3) dependence on federal housing subsidies. The challenge faced by the credit holders were: (1) high costs of transportation; (2) insufficient and inadequate services; and (3) low quality housing. In general, the challenges faced by the cities in the project were (1) sprawl; (2) high costs of service delivery; and (3) unsustainable urbanization patterns.

Her overall research objectives were to:

(1) Explore and document challenges related to the production of affordable housing in Mexico, with a special focus on locational impacts, inter- agency coordination, and longer- term implications for fiscal and urban sustainability.

(2) Recommendations include new ideas for improving incentives, policies, and plans that can enhance urban value and better urban quality of life through housing densification or other related programs and priorities.

Her main findings were:

(1) One Size Does Not Fit All

- Significant local variations in fostering densification;
- Different cities operate under different spatial dynamics;
- Same subsidy programs did not produce the same results because of variations in employment and poverty; and
- Size of developer affects outcomes.

(2) Coordination Remains Elusive

- Coordination among key or diverse stakeholders is rare;
- Opportunities for connecting authorities and resources at different scales of governance were differentially distributed across various cities; and
- Where Delegados actively intervened, coordination was more likely to be successful.

As a result her findings led her to the following conclusions about the problems:

(1) BIGGEST BARRIERS TO DENSIFICATION

- Planning strategies are insufficient to advance dense and sustainable social housing;
- Planning institutions face a lack of capacity and legislative authority to act;
- Planning institutional capacity greatly varies across states and local governments;
- Prioritizing volume over quality is fiscally short-sighted, if not unsustainable;
- High volumes of social housing production in peripheral locations exacerbate urban dysfunction;
- Negative externalities of peripheral mass housing models ultimately outweigh immediate gains; and
- Mass housing production model challenges opportunities for better located, accessible, and well-serviced housing.

(2) BETTER INTER-AGENCY COORDINATION AS A PRIORITY

(but easier said than done)

- Fragmented institutional context in which municipalities have varying degrees of influence on urban development;

- Coordination capacity depends on state/municipal configurations (number of municipalities matter) as well as topography;
- Balance of power varies by municipality (i.e. developer size, relations between industry and real estate, degree of civil society activism, etc.);
- Local market contexts mediate matching of housing supply and customer demand (average wages, seasonal employment, migration, etc.); and
- Political turf battles abound (horizontally and vertically).

Her recommendation to solve the problem is: URBAN VALUE CREATION PLATFORM (UVC PLATFORM) INSTITUTIONAL DESIGN AND OPERATIONAL DYNAMICS OF THE UVC PLATFORM

(1) Pre-convening Data Collection Phase

(2) Discussion Phase

(3) Strategic Planning Phase

(4) Post-Deliberation Phase

The UVC Platform places individual and community urban value creation at the centerpiece of future social housing credit allocations, accommodating different priorities for participating actors.

A platform allows for the participation in a multiplicity of actors involved in housing production, bringing in their strengths and perspectives for the development of feasibility.

Logic: thinking through strategic sectorial investments (in housing) can bring more stakeholders together than trying to generate wide-ranging political support for metropolitan institutions.

PILOTING A NEW STRATEGY

(1) Problem definition must speak to the particularities of the place:

- To avoid negative externalities of the housing production system;
- Re-conceptualizing housing to prioritize “defensible urbanism” rather than densification per se; and
- Institutional arrangements must be flexible to diverse densification aims.

(2) Decision making must be rescaled to better address the tasks at hand:

- Institutional redesign will be as important as changing subsidy programs or creating new lines of credit; and
- Infonavit delegates should be empowered to incentivize and enable more cross-agency coordination, thus providing a decentralized capacity to deal with urban specificities.

PROJECTS NOT PLANS

(1) Projects convene coordination more effectively than policy:

- Moving beyond densification and
- Urban Value Creation Platform (UVCP) can link local delegados to Infonavit's national policy aims while aligning with local conditions.

(2) Thinking strategically about specific sites and investments:

- Leveraging resources from multiple scales of actors to ensure adequate location and quality of housing and
- Maximizes the value of housing investments urban for homeowners, developers, communities and cities.

To implement her recommendations Davis summarizes the four key principles needed are:

- Access...to existing economic opportunities, public services, and social networks within the larger urban context. These important resources change on long time-frames. Social housing should respond by considering how adequate siting and existing mobility can ease access.
- Integration...of the city and social housing, of socio-economic classes within developments, of retail and commercial uses within residential communities and of various household types (single, elderly, nuclear) within the same community.
- Provision...of basic amenities and services to social housing residents. Particularly services that must be provided directly to the physical home/ neighborhood (sewage, open space) and those that benefit from proximity to the home (schools, hospitals, etc.)
- Collective Value...for the urban population at large. Housing and urban development can create or diminish urban value. Social housing should seek to maximize the creation of urban value for everyone in the city.

Urban Metabolism and a Discipline of Urban Resources

JOHN FERNANDEZ
MIT ENVIRONMENTAL SOLUTIONS INITIATIVE

Urban Metabolism started 10 years ago to mix multi-systems in order to create a discipline that is able to find what we should know in terms of political, financial, and many other aspects. And to think about a city that includes everything.He distinguished between two different perspectives, 'urban ecology' and 'urban metabolism'. 'Urban ecology' is the study of the flora and fauna within the context of cities including: evolution, ecosystems, habitats, biome, populations, and species. While 'urban metabolism' is the study of the material and energy flows associated with cities including: resources, material flow analysis, inputs and outputs, and stocks.

Prof. John Fernandez emphasized that the discipline of 'urban metabolism' requires interdisciplinary studies that bridge between planning, geography, environmental engineering and sciences, economics, and industrial ecology. He suggested that the key experts needed in urban metabolism include:

- Earth systems – climate, biogeochemical cycles - nature-human interface;
- Resources – natural capital, flows, dynamics – management; and
- Data - processing and statistics, visualization, spatial and temporal, uncertainty and generation,

Ferenandez also made a clear observation regarding the modern understanding of economic planning indicating it does not work anymore. Therefore, planning without resource awareness is irresponsible. However, when following a moral socio-environmental economic perspective, political boundaries should never be used except for population censuses. Therefore, two points should be addressed:

1. Temporal and spatial disconnect between economy and biogeochemical flows and
2. As a result, notions of value do not consider physical realities (Knox-Hayes Geoforum 2015).

Fernandez added that value has spatial and temporal characteristics. By recognizing the spatial and temporal dynamics of value, this will lead to a new

means of resource valuation, such as extending the time-frame of instruments and changing the nature of privatization.

The main problem is that the value is increasing in terms of action and demand while the wealth is much less now. No government decided this but that is what happened intentionally, everybody wants to be richer with fewer resources. And climate change is having a more and more impact on this valuation.

For example, the relation between density and transport is vital to control energy consumption which will be less in the future based on the projected population growth in Africa specifically and in the whole globe in general. Given the fact that Africa contains 9 of 15 of the fastest growing national economies in the world, by 2050, African urban population wwill exceed 1.2 billion. This increase is equivalent of 786 million urban residents. By 2050 global urban population will reach 3.2 billion. By 2050 global urban population will reach 6.4 billion. Though in total urban energy may be reduced to only 540 EJ (-) 190 EJ.

Therefore, if density is carefully accompanied with decarbonized transportation planning, the 29% of Africa and Middle East energy needed should be decreased to only 6%.

The lecturer added that the relation between urban population and resources are clearly defined in the two diagrams below, since 900 AD rural population began to decrease while urban population has increased until they became equal in 2008. Since then, urban population has maintained its growth leaving rural areas with less population than urban areas.

This change was accompanied with a resources shift. Dependency on renewable resources has been decreasing while dependency on nonrenewable resources has increased. Nonrenewable resources became more important or needed since the 1960s especial fossil fuels. Anglo convergence between GIS and planning studies, geography, biodiversity, and energy studies now act on this and obviously differ from planning in the 1950s and 1960s. If we look at Saudi Arabia in the Middle East it will be unpopulated within 20 years. This poses the question of 'What is the role of planners?

Fernandez implied that it is useful to frame the extraction and consumption of resources at the very large temporal scale of one century (20th) and global spatial.

From studies recently conducted it is clear that the 20th Century was unprecedented in the amount and type of resources consumed.

Fernandez made two main observations:

1. Huge increase in overall resource consumption; and
2. Dramatic shift from renewable to nonrenewable resources.

There is a direct consequence of the building of cities driven by the increase in urban population; scholars attempted to conceptualize this consumption in terms of three stages: foundation, growth, and stabilization of the urban form.

Material consumption increases and reaches a plateau, energy consumption generally continues to increase albeit at a slower rate as the city matures and the rate of spatial extension slows.

An MIT team spent 10 years studying green buildings, until they decided to shift to a larger scale and began to study green cities. So we can't say energy problems did not exist but we know little about green cities. Most conferences negotiations are held in term of cities not indicating migration. Urban population will double in coming decades, 90% in developing regions

Today Cities account for 2/3 of global energy and 3/4 carbon emissions, between 2005-2050 urban energy will be trebled as well as urban land area.

Therefore a new approach followed to analyze cities in order to design green cities, 'Urban Metabolism' (UM) is the study of the physical flows required to serve the urban economy. Urban systems boundary equation includes: what goes in? how does it work? and what goes out?

The question now is: what are the disciplinary assumptions? For example, what is the regional assessment of transportation?

The MIT team suggested in order to assess how cities created and grew this agenda the following three indicators should be monitored:

1. Climate science and earth system;
2. Cities and infrastructure; and
3. Sustainable society and economy.

Fernandez noted that cities succeeded and failed in a human way, because without having sustainable production and economy this will be the expected result.

The next figure shown below is a demo found on www.urbmet.org. This recent product of the group is the development of an online urban resource calculator found at www.urbmet.org. Fernandez encouraged participants to visit this site and then send in any comments.

Fernandez alos suggested a platform called “coUrbanization”, which is a civic engagement platform for urban development projects. Residents use “coUrbanization” to learn about real estate and planning projects and share their input. Real estate developers and municipalities list projects on “coUrbanization” to share information and gather broder resident feedback to supplement the in-person meeting process.

Finally, Fernandez described ESI research at MIT focusing on environmental solutions, which discusses climate science and earth systems, cities and infrastructure, and A Sustainable Society and Economy. This research has an annual hackthon for climate about nature-based solutions, to bring new solutions and ideas about climate change.

UN Habitat Metro Hub

REMY SIETCHIPING
UN HABITAT

The Metro Hub is UN-Habitat's new tool to support metropolitan development worldwide. The initiative is intended to inspire metropolitan entities to think big and think long-term. The initiative is hosted by UN-Habitat and supported by a core group of partners and is intended to enhance the ability of key metropolitan players to address the challenges presented by rapidly growing urban areas and support the systems of fast growing smaller cities which transform into metropolitan areas. The initiative will provide support in the following areas:

- Planning;
- Governance;
- Finance;
- Acupuncture projects; and
- Capacity development.

In October 2016, the New Urban Agenda, an international agreement, was adopted by Member States and the major aspects of the implementation of the Agenda are urban planning, governance, and finance. To support the implementation of the new agreement, MetroHUB aims to foster the capacity of metropolitan and regional authorities, institutions, civil society organization, the private sector and other stakeholders, to address the new urbanization challenges at the metropolitan scale by providing a methodology that covers all five above mentioned elements and focus on an integrated territorial vision.

The MetroHUB aims to develop, share, learn, apply, and disseminate best practices and knowledge on metropolitan development, challenges, and strategies to implement the New Urban Agenda. At the metropolitan level, this can be achieved by enhancing inter-institutional and inter-sectorial approaches on urban development and metropolitan projects.

The main elements that are being developed with the MetroHUB initiative are:

- Tool-kits to provide training materials for metropolitan development;
- A MetroHUB platform intended to promote peer-to-peer learning; and
- Workshops that will include a capacity assessment, teaching methodology, field visits and follow-up phase.

The objectives of MetroHUB are as follows:

1. Developing and sharing information as well as enhancing capacity development and learning (including peer-to-peer and learning exchange; exchange visit, bench-marking, and metropolitan profiling);
2. Establishing a strong partnership with relevant networks and the creation of a platform to link various networks;
3. Developing and gathering practical tools and case studies (best practices), from interested partners, with special reference to governance, planning, and finance aspects;
4. Building up a dialogue among the diverse actors such as professionals/ civil servants of relevant sectors and of different authorities, academia, civil society, and private sector firms of a metropolis or system of cities and municipalities by taking into account (metropolitan) governance, planning, and finance aspects;
5. Promoting a shared vision and consensus on crucial projects for the metropolitan development to be developed and implemented to nurture consensual financing decisions among key actors; and
6. Fostering vertical and horizontal collaboration among institutions and all relevant stakeholders to improve metropolitan development and institutional dialogue and ensure a participatory approach for decision making by including civil society and especially vulnerable groups such as women, youth, and disabled persons.

The MetroHUB platform will officially launch in June 2017. However, a preliminary website is available here:

https://spark.adobe.com/page/uTskVOFhXy55q/


DAY 5

Results and the metropolitan agenda

Four metropolitan areas presented their vision about the issues that emerge from the practice. Finally, the students presented the outcomes of the workshops, summarizing the analyses and discussions of the course, synthetizing the arguments and rationales for shaping a new metropolitan discipline.

INSTRUCTORS:

Gabriel Lanfranchi, David Gómez-Alvarez, Pedro B. Ortiz, Antonella Contin, Remy Sietchiping, Eduardo Rojas and Michael Cohen.

GUEST SPEAKERS:

Tom Wright, Eric Huybrechts, Marc Draisen, Naussica Pezzoni.

Metropolitan authorities

TOM WRIGHT
NY REGIONAL PLANNING ASSOCIATION

In 1922 a non-governmental organization was launched to survey, analyze and plan the future growth of the metropolitan region. This was the first initiative to recognize a New York metropolitan region that included New Jersey and Connecticut. It eventually became a leading urban research and advocacy organization. RPA defines the tri-state region as 3 states (NY, NJ and Conn), 31 counties, 782 towns and cities, and 23 million residents.

Since the 1920s, RPA has developed long-range plans to guide the growth of the New York metropolitan area. To date RPA has issued three regional plans, the first in 1929, the second in the 1960's and the third regional plan in 1996. Ideas and recommendations put forth in these plans have led to the establishment of some of the New York metropolitan region's most significant infrastructure, open space and economic development projects, including new bridges and roadways, improvements to transit network, the preservation of vital open space and the renewed emphasis on creating sustainable communities centered around jobs and transit.

RPA conducts research and provides guidance and urban plans in the following sectors: community design, economic development, energy, environment, housing, national issues, transit- oriented development and transportation. By creating expertise in these various sectors the RPA can offer a multisectorial approach to urban planning as needed in a metropolis the size and scale of New York.In 2013, the RPA began work on its fourth regional plan entitled "A Region Transformed" and expects to publish it this year, 2017. The top trends the report has observed are as follow:

- Economic Development
  - Job growth has been much weaker in smaller cities and the suburbs than in New York City;
  - Median incomes have dropped since 1990 for more than three-quarters of the region's households;
- Environment
  - 2.2 million people in the region will be at high risk of flooding by 2050;

- Governance
    - The number of governmental jurisdictions creates inefficiencies and make it difficult to reach decisions.

The main questions the plan seeks to answer are as follows:

- How much growth should we plan for?
- Where should we grow?

The final part of the report will list a series of recommendations.

- Infrastructure
    - Create walkable, affordable neighborhoods in the urban core;
    - Transform public transportation;
    - Modernize streets & roadways;
    - Connect the region to other cities;
- Environment
    - Reduce the region's vulnerability to climate change;
    - Reduce our carbon footprint;
    - Protect and enhance the region's natural environment
- Economic development
    - Revitalize struggling cities and neighborhoods;
    - Reinvent the suburbs.

In conclusion, unlike some of the other Metropolitan Authorities that presented at the workshop (Boston, Milan and Paris) the RPA is not a government entity. It is a non-governmental organization that has had great success in its nearly one hundred years of existence by providing research and developing urban plans backed by data that policy makers can and do use as evidenced by the measurable influence the RPA's regional plans have on the physical developments eventually adopted by metropolitan New York.

Source: *http://www.rpa.org/about/history*

Boston Metropolitan Area Council

MARC DRAISEN
BOSTON METROPOLITAN AREA COUNCIL

In 1963 the Metropolitan Area Planning Council is established as a state agency by the Massachusetts Legislature to respond to the need for a regional planning perspective.

The MAPC region contains 101 cities and towns in Greater Boston, including coastal communities, older industrial centers, rural towns and modern cities. The mission of MAPC is to promote smart growth and regional collaboration. The Council works toward sound municipal management, sustainable land use, protection of natural resources, efficient and affordable transportation, a diverse housing stock, public safety, economic development, clean energy, healthy communities, an informed public, and equity and opportunity among people of all backgrounds.

In 2000 MAPC establishes the Metro Mayors Coalition, a group of 13 cities in Greater Boston, which acts as an effective vehicle to address common issues confronting urban core governments. In 2006 the MetroBoston DataCommon launches. The MetroBoston DataCommon is an interactive data portal and online mapping tool that is free to the public, is launched through a partnership between MAPC and the Boston Indicators Project at the Boston Foundation. In 2007 MetroFuture is adopted. The MetroFuture is a 30 year plan for the region, adopted after extensive participation with thousands of residents, municipal officials, state agencies, businesses, community-based organizations, and institutional partners. In 2009, MAPC creates a Clean Energy division to give clean energy technical assistance and long range planning guidance to communities. In 2010 Hubway Bikeshare launches in Boston. The Hubway system launches with 600 bicycles and 60 stations throughout Boston. Within 10 weeks Hubway bikes had logged more than 100,000 rides. An Strategic Plan was adopted on October 29, 2014 till 2020. The Plan has four priorities:

1. Encourage development and preservation consistent with smart growth principles.
2. Partner with Boston cities and towns to promote regional collaboration, enhance effectiveness, and increase efficiency.
3. Play a leading role in helping the region to achieve greater equity.
4. Help the region reduce greenhouse gas emissions and adapt to the physical, environmental, and social impacts of climate change and natural hazards.

Milan - Paris/Île-de-France Metropolitan Areas

ERIC HUYBRECHTS
INSTITUT D'AMÉNAGEMENT ET D'URBANISME D'ÎLE-DE-FRANCE
NAUSICAA PEZZONI
METROPOLITAN CITY AUTHORITY OF MILAN

Milan and Paris/Ile-De-France Metropolitan areas development case studies were presented by Dr. Nausicaa Pezzoni of Milan Metropolitan Region and Mr. Eric Huybrechts of Institut d'Aménagement et d'Urbanisme (IAU) and d'Île-de-France. Both Nausicaa and Eric are architects and urbanist with academic roles, providing personal insight as leaders on those Metropolitan development teams.

Each Metropolitan plan has strong ambitions to expand housing opportunities, generated economic growth, environmental sustainability and expand mobility and transit. Environment, Society, Wealth and Governance dimensions of both Metropolitan areas, recognises multiple actors, governments and institutions contributing to the development of a range of projects from local cultural-spatial improvements to larger polycentric nodes or regions. Paris benefits from has a long tradition of realisation of the Grand Projects from Haussmann to more recently Mitterrand through Sarkozy on shaping Paris in addition to common practice of design competitions for commission. This tradition could risk repeating mistakes by the dominance of experts in the field. So, in expanding Grand Projects addressing larger territory, Paris introduced new processes to inform the Metropolitan Vision. Milan sees city history, nature and man informing the Metropolitan equally to the needs of transport which often dominates Metropolitan approach such as in New York. Milan unpacks qualities of human activities, actors and occupation, develops open language of 'habitation', describes our shared values and is inclusive. Both Metropolitan areas are part of a national visions for Metropolitan regions, sharing resources more equitably across each country's regions.

To summarize the lectures, I will focus on two key questions, concluding with future ambitions for the Lab.

- What are the visions for the Metropolitan areas and how did these visions evolve?
- What distinct methods or structure introduced into Metropolitan processes address discipline gaps, differentiating it from normal urban or planning processes?

Metropolitan Visions

Both Metropolis express multi-dimensional narratives and visions to local, national and global audiences. Milan was considered a transversal city, representing an insurgent urban condition connecting territories between the two airports of Milan, Malpensa to the west and Linate to the east. Milan's first strategic Metropolitan plan, 'Città di Città', recognizes ten distinct polycentric poles of attraction where infrastructural networks converge. The strategic project moves Milan from a mono-centric city to polycentric regions, inscribing interpretative descriptions for each of the ten nodes, orienting the use of the resources already existing on the territories, working effectively and symbolically on these "cities." Representation of each pole or city of the urban region, discovers the discontinuity of Milan landscape, reading the plurality of its environment through more articulated visions. After the initial research strategy, the project has moved to the next phase focusing on the development of the plan through government territorial instruments and demonstration projects such as the national competition 'Metropolitan Welfare and urban regeneration, overcoming emergencies and plan new spaces of cohesion and welcoming' (2016).

Metropolitan visions for Paris/ Ile-De-France is firstly as a global city addressing three challenges: 1) 'acting for a better and more united region; 2) anticipating environmental changes and; 3) reinforcing Ile-de-France attractiveness and supporting the ecological conversion and social economy.' Visions are mobilized at a regional scale engaging citizens, professionals and local governments through a range of consultations including meetings, conferences, brainstorming sessions and surveys. Objectives of the Metropolitan visions is to build 70,000 dwellings a year, to improve the existing stock and to solve the housing crisis; create 28,000 new jobs per year, to improve the mixed-used development of housing and employment, to ensure accessibility to amenities and quality public services, design transportation for a less car-dependent way of life and to dimprove the urban space and its natural environment and resource management. The Metropolitan spatial project structures polycentrism as the heart of regional development, building density and links between transport and town planning, making the river network the unifying element of regional development. The Metropolitan 2030 plan defines five elements; Challenges,

territorial regulations, environmental assessment, implementation proposal and the regional visions showing Ile-De-France before and in the future.

Both Metropolitan Milan and Paris/ Ile-De-France demonstrate plurality in visions development, recognizes different scales and audiences of the Metropolitan region, and constructs a common vision that is inclusive to all.

Metropolitan Gaps

Environment, Society, Wealth and Governance dimensions of the Metropolitan are engaged within each vision. For Milan, dimensions aim to a more inclusive society, defining 'habitation' through six different meanings: 1) residing (stable and temporary); 2) moving and breathing; 3) public and private space sharing; 4) making culture and using it; 5) promoting a new local welfare and; 6) innovating and making enterprise. This use of language itself is open, interdisciplinary and inclusive, decentring and expanding traditional understanding of 'to house', and positing a method of public and private scale of the home to city. Culture is a driver in Città with new drawing tools such as the 'nautical map' technique to draw 'City of Music'. Metropolitan gaps of inequality, community, welfare address the complexity of needs expressed by the different territories, in a logic of an open network, towards a territorial and social infrastructure to build a new liveability of the metropolitan suburbs.

For Metropolitan of Paris/ Ile-De-France, experience with transformative, ambitious, grand projects moves partially away from this vision alone with 1,600 large urban projects throughout the region and TOD around 69 new railway stations. This 'acupuncture' throughout the region has three key pillars with 'equality' a key gap addressed across Environment, Society, Wealth and Governance dimensions.

1. "Relier-Structurer" aims to build a more connected and sustainable region. After the identification of transport basins to organize and optimize, a system of transport meshed by networks was designed but also by nodes of connections, large entrance gates of the Île-de-France (ports, stations TGV, airports) and internal connection nodes.
2. "Polarize-balance" defines a more diverse and more attractive region based on the optimization of all Ile-de-France fabrics. Thus, all territories are contributory, i.e. all territories contribute to the attractiveness of the Region, but also that all territories must also contribute to regional efforts in terms of housing, in terms of reception, Equipment, services, etc. Regional development must be based on the heart of metropolitan France and be structured around polarities of different levels, from the level of life to the regional level. The connectors generating intensification

are hooking points essential to this development, articulating potential of urbanization, potential of services and potential of mobility.

3. “Preserve-value” carries the will of a region more alive and greener. It is about protecting and valuing natural areas. Rural territories or “green” territories contribute to regional attractiveness. It is therefore necessary to set limits to urbanization with urban fronts of regional interest. It is also necessary to reduce the deficiencies in green spaces in conjunction with densification. Finally, the PNR system needs to be strengthened and complemented.

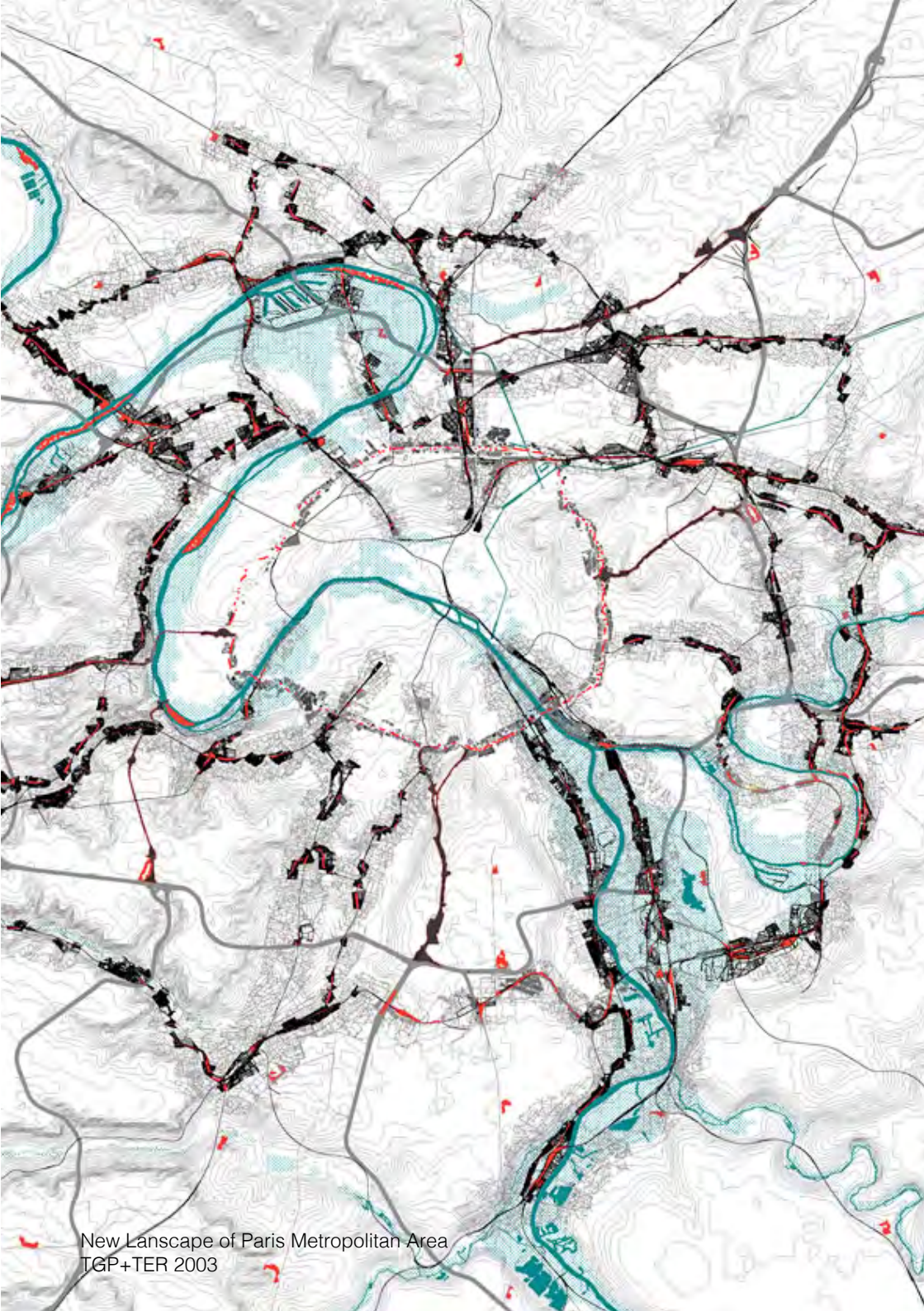
Next Steps

Milan and Paris/ Metropolitan areas are massive in scale, complexity and population. Both Metropolitan strategies posit a strong ambition towards social equality and inclusiveness, utilize distributed grids, polycentric nodes, networked transit systems and engagement with strong links to nature. Both Metropolitans should be engaged for curriculum development.

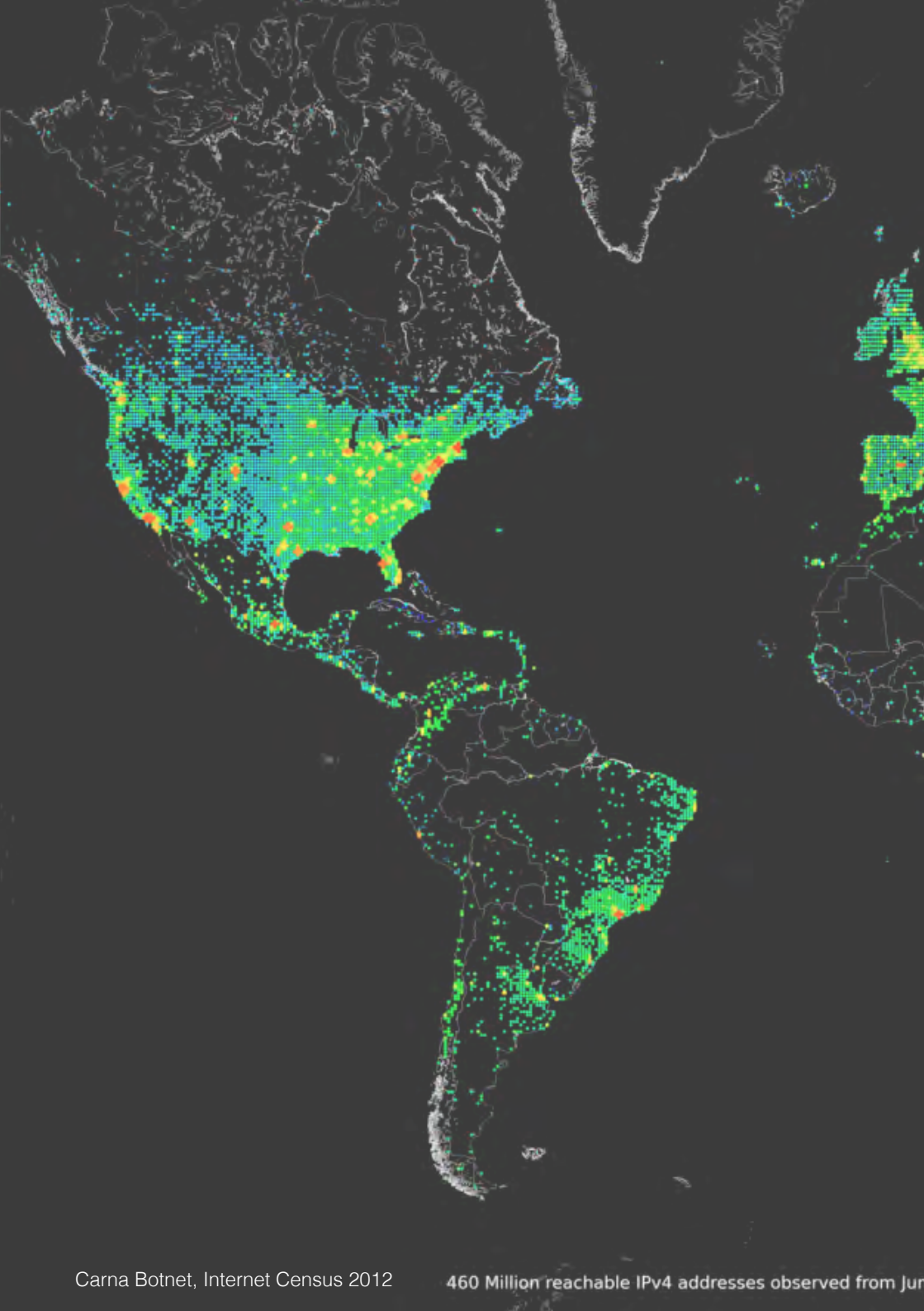
Expanding these Metropolitan areas for next year, reflecting upon the structure and effectiveness of collaboration and consultancy institutions and processes as to inform negotiations and governance, two areas the Lab recognised required specific skills. Are there methods to objectively evaluate each gap based upon completed project?

Emergence and complexity theory is relevant for both Metropolitan areas as its aim is to develop long term robust and sustainable communities(Innes and Rongerude 2013). Are feedback loops initiated in Metropolitan processes so regions can grow and evolve their visions? How might a robust system of continual education initiatives encourage innovative renewal of initial visions?

The realised projects depend upon physical, material and spatial design intentions including strong sectional understandings of the ground, site and interiors. How might we begin to layer this understanding into the early processes of Metropolis? Landscape Urbanism may offer some insight here (Waldheim 2006).



New Lanscape of Paris Metropolitan Area
TGP+TER 2003


Carna Botnet, Internet Census 2012
460 Million reachable IPv4 addresses observed from Jun

OPEN SPACE: PARTICIPANT'S RESEARCH AND PROJECTS

he 2012 to October 2012 using ICMP Ping requests and Port Scans.

Inclusive and Transformational Methods for Design: Case Experience, Physical Computing and Documentary Photography

KATHLEEN O'DONNELL
OXFORD BROOKES UNIVERSITY

Question: How might introducing an inclusive to transformative focus for learning activities in the context of Design Studio improve the level of confidence and achievement for students to engage empathetic processes?

This presentation was part of a research paper *"Towards a Cosmopolitical Democracy in Oxford Brookes' Postgraduate Architectural Design Studio."*

The aim of the presentation for the 2017 Metro Lab Initiative was to contribute to the skills discussion needed for the Metropolitan discipline. For the Metropolitan curriculum pedagogy, these 'inclusive' and 'transformative' learning activity methods introduce students on how to engage real-life experiences as part of their research process. The Learned Skill for the Architect would be:

"Produce design briefs based upon comparative models that undertake a proactive consideration in detail of relevant ethical, cultural, political and social issues within design architecture, such as sustainability and density, the architect's role in a consumer society, the impact of new technology, urban/rural relations and space/gender relations."

For the Metropolitanist, The Learned Skills address all four dimensions of learning: Environment, Society, Wealth and Governance.:

"Demonstrating inclusive and transformative methodologies based upon comparative models that undertake a proactive consideration in detail of relevant ethical, cultural, political and social issues within the metropolis, such as sustainability and density, one's role in a consumer society, the impact of new technology, urban/rural/metropolitan relations and identity, space/gender relations"

During 2015-16, my design studio titled: The Republic of Open, engaged two relevant 'wicked issues' facing society: Climate Change and The Refugee Crisis. The theme of openness, implies students engaged inclusive and

transformative methods as part of their studies taking up shared values and beliefs towards improved polity. Three methodologies were engaged by the students: Case Experience (inclusiveness), Documentary Photography (Inclusiveness) and Digital Identity(Transformative). Students' research questions explored these methods to help triangulate speculations for hypothesis.

Each metropolis comes with distinct complex issues. The Sustainable Development Goals (SDGs) prioritize governments to tackle challenges arising from demographic and social changes, shifts in global economic power, urbanisation, climate change, resource scarcity, inequality and technological breakthrough emphasising good growth delivering social, environmental value as well as optimal economic benefits. Our paradigmatic ambitions address an integrated approach with nature and man sharing equity in strategies.

"We cannot solve our problems with the same thinking we used when we created them."
A. Einstein

So the Republic engages a Cosmopolitan approach, with virtues embed commitments to global justice, democracy and cultural diversity.(Smith 2007). Throughout my research I have been pursuing cosmopolitanism within pedagogy (Nixon 2008), through feminist writing (Benhabib et al. 2006) and my pursuit of social justice. David Harvey sees Kant's cosmopolitan as 'a principle of intervention to try to make the world (and its geography) something other than what it is… a political project of transformation of living, being and becoming in the world.'(Harvey 2000)

I define an inclusive educational activity as one strengthening a student's personal values bringing in prior cultural and educational experiences into the studies and thus recognizes a multicultural society. With Case Experience, students participate directly with actors of a community or protagonist of an

issue such as Greenpeace, selected by the student, with the intent to embrace and extend communication skills of important issues and campaigns. So bringing this aspect into the metropolis, I would suggest it is very important to understand key actors who already demonstrate ambition to an issue or belief, widening the issue to local, national or global relevant.

To build a successful campaign or strengthen collectives of individuals, requires an open visual strategy in addition to strong approach. Documentary Photography utilized ethnographic visual methodologies (to record the everyday life of the community. The power of images as seen in the Greeenpeace's Shell Artic Campaign(2015), Galip Kurd, the Syrian Child washed ashore in Bodrum Turkey (2015), or Kim Phuc: Girl in Vietnam (1972) are examples of documentary photography as each tell a story without the use of words. (Barthes 1977, Pink 2012, 2013)

Final year Master student Kanmi Ojuri's work (2015-16) on the Makoko community in Lagos, was presented as a case study. Kanmi spent three weeks in Makoko, interviewing local 4 local kings, local residences and recording activities of the community through film and photography. Through mapping, understanding local livelihoods, skills and traditions, Kanmi's proposal was to return traditional craft back into community, extend formal systems of water ways of water based informal settlement into landside so to bring tourism to community. #buynaira

My next development of these learning activities will be close read of The reflective practitioner : how professionals think in action (Schön 1991).

Campeche Heritage and Landscape. Recovering the wall city.

SAÚL ALCÁNTARA ONOFRE
UNIVERSIDAD AUTÓNOMA METROPOLITANA, AZCAPOTZALCO (MEXICO)

The city of San Francisco de Campeche founded in 16th century by the Spanish Conquistadors, settled with a trace hypodamic, next to the sea, with tropical forest behind, in that period the people insisted on removing the forest to provide security, against possible attacks of different ethnicities persons that accompanied the spaniards in the conquest of Yucatán.

Soon, both houses of stone and wood decks, as Maya rooms affiliation with palm roofs were built. To defend themselves from harassment by pirates, the city was girded with hexagonal shaped walls, with gates and bastions. For three hundred years the defensive walls and bastions gave character at the urban landscape, between the sea and the forest, whose rooms, both popular and aristocratic were provided with home gardens proverbial amenity.

In the 20th century, the defensive wall was demolished, much of its length, for various reasons, among them: the attempt to communicate the outer boroughs, through the walled city, the use of material from demolition to fill the sea front of speculate and the remaining soil.

Later, the demands of automotive mobility beyond the founding, neighborhoods provides the excuse to demolish defensive wall, and brutally maul some strongholds, leaving these endearing architectures in the central avenues, serving as roundabouts. The historycal city that once had man as the measure gave the cars and residential use was displaced by tertiary activities.

In the late 20th century a reaction that seeks recovery of their cultural habitat, and safeguard this collective identity, recovery parts of the defensive wall and bastions mutilated. The national and local authorities have continued in this way replacing sections of the wall that clearly denote their membership twenty one century, aimed at mitigating the backbone of motor traffic, to safeguard the public space for pedestrians, and recover woodland qualified defensive landscape. This environment between the wall and the recollects gardens for centuries changed the character and unblemished identity of Campeche citizens. It is currently finalizing a planning process of the city, and its environment that viewed from the texture of the streets and squares to the determination of native plant species, that thrive in the squares and residual spaces of intramural and extramural city. The wall follows the old trace

recovered, and visually isolating the down town with the proposed woodland, buildings that make spurious ancestral unreadable message.

In preparing this master plan landscape, the first phase has already materialized in restoration and enhancement, was carried out extensive cartographic and documentary research and archaeological surveys, that will confirm the design assumptions.

The Up-rooted City

NAUSICAA PEZZONI
POLYTECHNIC DI MILANO AND METROPOLITAN CITY AUTHORITY OF MILAN

In the Open space presentation on Monday 16th January 2017, I presented "The Up-rooted City," a book that I wrote in 2013. The italian title is "La città sradicata. Geografie dell'abitare contemporaneo. I migranti mappano Milano." Since then, it has developed into a research program constructing images and projects of the European territories beyond the boundaries of a geographical and cultural identity. The goal is to open up a dialogue with the immigrants, from the planner and territorial researcher's point of view, who could become a truly active and creative voice in giving shape and thought to present time and space.

The book presents the result of an empirical research on mapping Milan through a sample of 100 migrants, interviewed during the first period of their stay in the city. The context represents different dimensions of coexistence between new and old citizens, and different levels of hospitality for the populations that are transforming Italian and European cities. The method introduced by Kevin Lynch in his "Image of the City" to explore the perception of the environment seen by inhabitants was adapted to this context. "How does a stranger build an image of a new city?" In responding to this crucial and unexplored question, we have set up an empirical survey, departing from where Lynch left off his investigation half a century ago, to probe what today appears as an emerging issue in the organization of the territory: the relationship between the urban landscape and its new inhabitants. 100 maps of the "city landing" come to life and take shape, depicting the geography of a still unknown city where

migrants actually live: a city that attracts, holds, divides, couples, and raises fear, according to the ways its spaces are used by those ready to live in them.

As a result of this peculiar process of participation, two kinds of analysis have been developed: the first is the social inclusion of the participants in the survey, and the second is the perception of places developed by maps. Regarding the participants in the survey, we can say that observing and drawing their own idea of the city, offers a possibility for newcomers to take possession of the city by recognizing their relationship with the urban space, and thus developing the sense of belonging to the city. In the gesture of drawing, a creative way of observation is suggested by the migrants: imagining and representing the urban geography is an attempt to mentally inhabit the city, allowing one to think of oneself as a citizen, as well as an "architect" of the space one is inhabiting.

Regarding the perception of places developed through the maps, we can say that they lead newcomers to create new relations with the territory. Giving up a fixed topographical support to represent the city, means giving up an observation of reality that wants to be objective and offering an observation where the view of the observer is a constitutive part of the observed field. Through a new topography, which is not limited to the morphological appearance of urban objects, it becomes possible to build a dematerialized representation of the city where life of new citizens take place with various perspectives that each citizen brings to the city.

Operative Handbook For a Metropolitan Architecture

TOMMASO COSSU
METROPOLITAN ARCHITECT

How can Architecture and Planning address the question of the quality of life within the metropolis? The Operative Handbook for a Metropolitan Architecture, a Master Thesis in Architecture I developed at Politecnico di Milano with the help of the Measure and Scale Laboratory, within the Department of Architecture and Urban Studies, tries to answer by means of the definition of a new disciplinary approach. It is a tool for architects and planners, that aims at the definition of a design methodology, open to the influence of other disciplines and able to manage a project through architecture, urban and regional planning. The book gathers, defines and orders maps and drawings, as well as a selection of case studies projects. It constitutes a 'practical theory' because of the intertextual content that links the representations. The Handbook shows maps and projects, relative scales and legends, in order to clarify their construction and the role that they have in the process. It recognizes protocol investigations to be carried out in each case study, as well as it defines the methodology for design procedures suited for each project. The process pursues on one side the sustainability of the growth, thus coping the question of the bigness; on the other hand, it takes in consideration the quality of dwelling, which can be reached only with the creation of a gradient of urbanity that allows the territory to work both at a functional and figurative level.

The three main pillars of this methodology are Geography, History and Geometry. The first is focused on the geographical and even geological asset

Operative Handbook for a Metropolitan Architecture Protocol and Procedure map

of the whole metropolitan area. It comprehends the mapping of the tectonic, orographic conformation, climatic characteristic as well as ecosystems, biomes and hydrologic features. History in this case is a knowledge that examines the evolution of the settlements trying to underline not only the quantitative aspects but mainly the qualitative elements and operators. This means recognizing the historical thresholds, transition moments or episodes that structurally change the relations between society, economy, and the settling dynamics. It is fundamental to map the way the city unfolded new axes while expanding, as well as evaluating the plans for further development already designed and put in act by the current governance. Geometry represents the capability of rationalization, referring to Pedro Ortiz's work and his Metro Matrix: it is based on the concept that the economic efficiency of the metropolis is related to concentration; on the other hand, social justice claims a redistribution of wealth and services. So, the model proposed by Ortiz suggests a reticular grid able to balance the territorial centralities and avoid congestion, through a reticulum of roads/highways, and a rail system that prioritize access to the center and has a radial/fishbone structure. These three fields of study are the base for the definition of the Metro Armatures: Green and Grey Infrastructures. They connect and empower all the metropolitan digits: units characterized by a homogeneous pattern of natural signs and history. The patterns define accessibility, settlement principle and the program of the local area as well as research the local "imageability" of the place through a set of scenes, relations and practices. A section strategy is meant to tie digits together and introduce the attention to elevations, to the view and to the perception. Metropolitan Architecture then provides a project which creates a hinge point where global and metropolitan scale are blended through urban and local scale. Public space is expected to be the backbone for the design of a centrality of 1km x 1km. The tools used comprehend satellite and open data, digital parametric design, VR representation, aiming at the introduction of new land uses and new built form types. The aim is to produce a project able to manage a gradient of scales, formality and privacy; with an attention to public realm, local resources and identity, careful to the threats of poverty and climate change, but also focused at the building of a robust, vivid and sensual image.

Credit: Kevin_Dooley

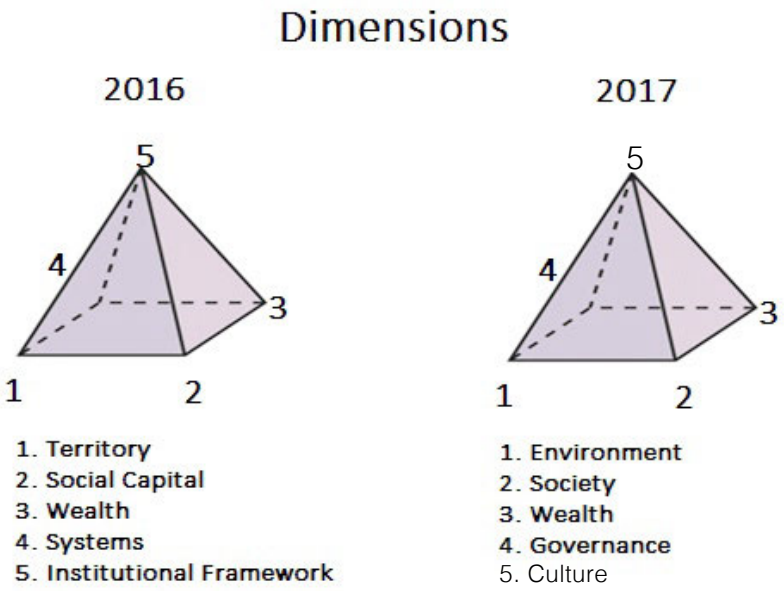
WORKSHOP RESULTS

Metropolitan Gaps Matrix

During the two modules of the course, the participants and the instructors worked on the design of a Metropolitan Gaps Matrix. It was created at the 2016 Metro Lab Initiative and it was further discussed and enriched over the two weeks of the 2017 Metro Lab.Initiative The Matrix frames the metropolitan challenges in dimensions. These dimensions are subdivided into factors, and each factor has a current state and specific gaps that should be attended by the rising metropolitan discipline curricula.

Gap analysis is a technique that businesses use to determine what steps need to be taken in order to move from its current state to its desired, future state. It is also called need-gap analysis, needs analysis, and needs assessment.

Gap analysis consists of (1) listing of characteristic factors (such as attributes, competencies, performance levels) of the present situation ("what is"), (2) listing factors needed to achieve future objectives ("what should be"), and then (3) highlighting the gaps that exist and need to be filled.



During the workshops of the first module “Bridging the Metropolitan gaps” the dimensions, factors and gaps defined in the 2016 Metro Lab where reviewed and re-defined by the group. Module 1 workshops debated potential gaps in knowledge to inform the development of the discipline and concluded with five dimensions of learning: *Environment, Society, Wealth, Governance* and *Culture, with two components,* each with two *gaps* in knowledge.

The focus of the second module “Shaping the Metropolitan Discipline”, was to select key aspects and methods from different disciplines so to gain a better understanding of the metropolitan phenomenon, co-creating new approaches and curriculum to address metropolitan challenges. Participants discussed how new curricula could be shaped contributing to the development of a metropolitan community of practice worldwide.

It was discussed the theoretical background and the diversity of contributing disciplines to build a new body of knowledge from a holistic approach. In this sense, which are the core skills that distinguish a metropolitan expert from an urban planner? The metropolitan skills arise from a new synergetic combination from different disciplines that are aligned with the concept of transdisciplinarity.

Another fact considered was the importance of the practice for metropolitan planning. The metropolitan study is a discipline of practice (Lawrence Susskind) that needs strong support from the related scientific disciplines and learning from concrete cases and practices.

Furthermore, it was discussed the importance of a complexity approach. As Eduardo Rojas stated, the metropolitan planning operates on a very complex open and morphogenetic system with high uncertainty about the future. Metropolitan planning is a transdiciplinarity field that operates in a multi-scalar complex system, which needs an appropriate core of knowledge and to learn from practice.

Dimension 1: Environment

Factor 1: Natural ecosystems

Natural Ecosystems are the land (space) itself with their natural characteristics, is the physical nature, the landscape, it refers to the plants, animals, organisms, topography, climate, etc. Some questions you can ask is: What does it look like? What might influence it? And also it's important to consider the boundaries around, like rivers, political jurisdictions, etc. Time is also an important element to consider, paying attention in the effects of history and processes that have changed suddenly over time, and how this affect the natural ecosystem.

This factor is a complex systems that implies that is more important thinking the whole ecosystem, not only the parts, being integral and holistic, not individual. Also, the Natural Ecosystem doesn't works in a nonlinear way, it's a net that interlace several characteristics and elements.

Gap 1: Social Responsibility

Is the cohesion between the landscape and the society, and how they´ll communicate and work together.

Skills:

- Communication and leadership skills: As Michael Cohen stated in his lecture, it is necessary to find another language to communicate with people and to think in local terms without forgetting the bigger scales. We should work with instead of work on
- Capacity to identify and articulate partnerships, networks and processes of ecological stewardship to manage the natural ecosystems

Gap 2: Urban Metabolism Accountability

Is the competence, the grounding of the metropolis, it's the physic world where the society develops. The physical aspect is relevant because is the backbone of all the metropolitan structure, holding together all the different elements. This metabolism is a deeply multi-disciplinary system that provides a more human and ecological metropolis.

Skills:

- Systemic complexity of natural-socio-economic metabolic fluxes and decision-making models. Multi-criteria impact assessments: The concept of urban metabolism facilitates the understanding of the metropolis as a

complex system of flows of materials and energy. Ferrão and Fernandez (2013) describe it as a systems-oriented approach that establishes useful linkages among environmental, economic, social, and technical infrastructure issues. These linkages lead to an integrated information-intensive platform that enables ecologically informed urban planning. Therefore, it is an important skill to understand the metro areas from a systemic approach to recognize the flows involved at the different scales, their interactions and impacts to improve decision-making processes

- Fragility of ecosystems and risk management: Capacity to identify fragility and respond to risks associate with climate change. As P. Ortiz stated in his lecture, the possibilities are to confront, adapt or run away
- Environmental inequalities articulation: A metropolitan expert needs competences on promoting, preserving and articulating natural ecosystems with the built environment, assuring accessibility for all the community
- Competences related to digital technology content: Big Data could have an important role on informing urban planning and regenerating territorial processes. Metropolitan planners should know general strategies on how big data could help territorial planning

References:
Ferrao, P., Fernandez, J.E., *(2013) Sustainable Urban Metabolism. MIT Press.*

Factor 2: Metropolitan Infrastructure (continuous and discontinuous)

Infrastructure often is understood as a physical structure of networks be it polycentric, linear or distributed grid. In the metropolitan, infrastructure often includes water systems, transport, education systems or similar. Introducing Transformative Metropolitan Environmental Infrastructure Theory to the discipline highlights the importance of natural-ecological emergence within the debate. For the New Metropolitan Discipline, complexity and emergence system theory is both core to logics of adaptible and resilent natural systems and critical to structures of leadership, participatory, organizational and collaborations where ambitions of innovation, continual improvements and feedback lead to a robust ciutadania.

Gap 1: Structure

What models or systematic frameworks for metropolitan infrastructure might bring ecological understanding of to appropriate structures?

Skills:

- Demonstrate ability to structure the multidisciplinary complexity of natural-socio-economic metabolic fluxes across a range of scales from local, core, periphery, regional and create decision making models and processes based upon multi-criteria impact assessments leading to shared, measurable goals

Gap 2: Inequality

How might natural and man-made systems in the metropolis address and measure an ecological equality towards respect, engagement with resources?

Skills:

- Ability to collect, interpret and present demographic, ecological, economic, gender and migrant impact analysis, integrating scenarios towards future planning.
- Ability to identify emerging context interfaces as forms of agency and articulation design for metro citizenship awareness.
- Ability to articulate vision and new narratives for social renovation and self-reactivation of emerging context and sensitive territories.

Factor 3: Metroscape

Metroscape as the (shared) representation of the metropolitan landscape or morphology of the Metropolis. Metroscape was a term coined by the 2017 group of participants, and it replaces the term “landscape” as it includes more than just the “landscape” but also the wider 4D urban form.

The contemporary metropolis must cope with the coexistence of many different identities and landscapes within it. It is a place, and at the same time many places. The frame of images, perceptions, as well as the concept of the city cannot be reduced to a triad of elements like Serlio’s Three Settings any more.

Gap 1: Metro Placemaking system

Beyond the abstract concepts of time and space, several academic fields have started to focus on the concept of "place" since the 1950's. Theorists coming from philosophy, geography, social anthropology, landscape architecture, architecture, environmental psychology, planning, communication and cultural studies have something to say about "places". Cresswell (2004, pg 39) for instance, inspired in the work of Seamon, Pred, Thrift and de Certeau, says a place is "constituted through reiterative social practice—place is made and remade on a daily basis. Place provides a template for practice—an unstable stage for performance" (the idea of performance can also be traced to Goffman's microsociology). John Friedmann (2010) goes further and argues:

To the characteristics of urban places identified by Cresswell —reiterative social practices, inclusiveness, performability, dynamic quality—we can now add three more: the place must be small, inhabited, and come to be cherished or valued by its resident population for all that it represents or means to them. (Friedman, 2010, pg 154)

Placemaking, according to the nonprofit Project for Public Spaces, refers to the collaborative process by which we can shape our public realm in order to maximize shared value. The concept of placemaking emerged in the 1960s, when individuals like Jane Jacobs and William H. Whyte became interested in designing cities for people, not just cars and malls. Placemaking is nowadays central to the practice of urban design.

Following these definitions, creating metropolitan placemaking systems would mean devising ways to systematically co-create and recreate networks of public places in the metropolis that are cherished by the community and that allow for multiple collectively-valued reiterative social practices, that also represent memorable places, even landmarks in the wider mental maps of the Metropolis. Placemaking, to be metropolitan, would have to be "interventions" carried out in smaller scales if accounted individually, but with a broader metropolitan scale/map in mind, considering the different flows of people, objects, natural elements and energy. It would also be strategic, in terms of the metropolitan scale, recognising the significance and role of a particular place to the wider metropolitan area.

Skills:

- Psycho-geography
- History of the city
- Practical skill of promoting a new built type and new land uses: The first consists in projects that builds a gradient of scale and formality, generating

a territorial landmark by the composition of large multi-purpose containers, as well as structures that are designed after a research of the roots of the local dwelling practice, the spatial articulation of solids and voids, then they are reinterpreted and fitted to the current need of that place. The latter is a practice related to the introduction of urban agriculture and public space as elements that must be structured at a metropolitan level, so that they are able to protect and reactivate both natural environment and citizens' activities. It is a process that goes beyond the zoning because it analyzes the metropolis as "text" and "intertext", adding a value of quality to the quantity.

Gap 2: Mental Map

Metropolitan interpretative maps and metro-matrix are conceptual tools used by metropolitan experts such as Professor Antonella Contin and Pedro B. Ortiz. According to Prof Contin, metropolis' are now so large that we need a satellite to have an idea of how big they are. It is necessary, then, to ground our images of the metropolis as memorable elements or places of the metropolis. These images have to seduce and assist us to navigate the territory.

The function of Metropolitan Mental Maps or Interpretative Maps is to, firstly, create a mental representation of the metropolis as a multiscalar complex system (with its continuous and discontinuous components). Secondly, mental maps and the metro-matrix allow planners to devise interventions to improve either the flows in the metropolis or the performance of a key location, as Pedro B Ortiz and Antonella Contin would say, "to practice metropolitan / urban acupuncture". The metaphor of the acupuncture, as explained by Prof Contin, is not to "cure" a "sick body", but rather to foster the flow of energy and prevent disorders from ever occurring. These key acupuncture locations can be significant, memorable locations appropriate for the making of memorable elements that form part of the wider metropolitan mental map. Thirdly, the identification or creation of metropolitan scale places helps people to create shared mental maps, which in turn helps people navigate the territory and re-appropriate it in more equitable ways.

Skills:

- Cartography and visualizations: ability to produce interpretative maps, thus maps that reveal a structural quality of the metropolis and the multi-dimensional relations of its inner elements. They are based on open source data, often enriched and manipulated with specific software, and they aim to produce a robust, vivid, dense and sensual image

Dimension 2: Society

Factor 1: Social Cohesion

This lack of cooperation may affect the social cohesion creating a fragmented and segregated city instead of an organic one.

The processes of socio-spatial segregation can build invisible sub-cities according to the dynamics and mobility patterns of different socioeconomic classes, often combined with visible sub-cities materialized in exclusive private places and gated communities. These sub-cities end up being a "city of islands" or islands in the metropolitan archipelago (Borsdorf, 2003; De Mattos, 2010; Janoschka, 2002).

GAP 1: COMMUNITY

To build community means to enforce the social group or groups of any size whose members reside in a specific locality, share government, and often have a common cultural and historical heritage.

At the metropolitan level there is a need of an integrated vision of a community that recognizes itself within the metropolitan scale. That understands the importance of having a collective identity beyond the borders constituencies and opportunities are available to everyone. However, social exclusion and fragmentation are great barriers to integrate a community in a metropolitan scale. An integrated community needs to be fostered through policies that promote spatial equality and social justice.

Skills:

- Conflict management
- Ability to understand the complexities and of integrating marginalized social groups into the metropolitan planning and to break away from socio-spatial stigmatization
- Capacity to identify the barriers that the current urban landscape pose on certain community groups in regards to access and integration

GAP 2: TOLERANCE

Different communities with different backgrounds, religions and political ideologies mostly share the same urban spaces. Tolerance is an existing gap to build social cohesion.

Skills:

- Capacity to promote policies of education for peace and coexistence
- Advocacy for Human Rights
- Ability to create spaces to promote the integration of marginalized groups
- Ability to bring together different sectors of society to promote tolerance and integration
- Sociological awareness on the barriers to integration and tolerance in that local context
- Understanding of conflict resolution and negotiation techniques
- Resilience

Factor 2: Social Capital

Social Capital as a factor involves a strong ability to organize the citizens and communities in a powerful structure able to have a voice and take action when needed. It requires an active role and a well-informed group of people interested in getting involved in the urban processes as they impact their quality of life. Social capital is also referring to the capacity of the citizen network to shape the city they live in based in the opportunity of their participation during the key moments (and even the whole process) of the decision making and public policy construction.

Social capital may be "used" by citizens themselves or by authorities and public officers to validate and guarantee ownership of urban processes. The importance of the social capital is not only the ability to actually make changes but the capacity to get people together and strength the community network. It is also important in terms of authorities and political leaders willing to make decisions. If they lack of social capital their reforms will not be successful.

GAP 1: EMPOWERMENT

Empowerment is also a key factor and needs to be approached as a never-ending process. Citizens may find themselves in societies more prone to allow participation or, on the contrary, to obstacle it. Considering this, the urban information and the knowledge about participatory processes and legal ways plus a conscious of urban rights will make a more powerful group of citizens. As people have different levels of involvement, it is key to facilitate and make accessible any ways people are willing to be part of.

Skills:

- Mechanisms of citizen participation

GAP 2: AGENCY

Agency is a sociological concept regarding the capacity of people to express their own power. It could be an individual agency or a collective agency. It is important to relate the agency concept with the "structure", which means a complex and interconnected social abilities and forces (relationships, institutions) that will impact in people lives. Considering the urban context, agency is needed for individuals (organized or not) to develop strategies to express their power in the shaping of the city they are living on and to guide the public policies that will affect their quality of life.

Skills:

- Creation of spaces that promote the participation and development of community based organizations, NGOs and other civil society groups
- Facilitation of conflict resolution and negotiation

Factor 3: Citizenship

The citizenship factor is considered a key factor for building a successful society that could participate and become agent of change in the metropolis.

GAP 1: INCENTIVES

The civil society should have incentives to participate in the metropolitan discussions, decisions and propose new projects, initiatives in order to empower society in terms appropriation and involvement in metropolitan issues. In other words, been an active stakeholder which is part of the metropolis. For achieving that, citizenship would need trust in themselves as society and as agent of change but also trust on the institutions and politicians that take decisions for them.

Skills:

- App design and content management
- Capacity to build spaces that foster genuine participation
- Accountability on the results of participation in planning and decision making

GAP 2: TRUST

Trust is a “sine qua non condition” because this is the first skill that a single person need to actively participate in any circle or group. If one person has trust, he/she will give opinion, participate in groups or even in the local and national elections and will express his/her conformity or disconformities with any decision taken. With this sense of trust and belonging of a certain area, citizenship will be able to participate, provided that citizenship would have incentives to do it, at the end.

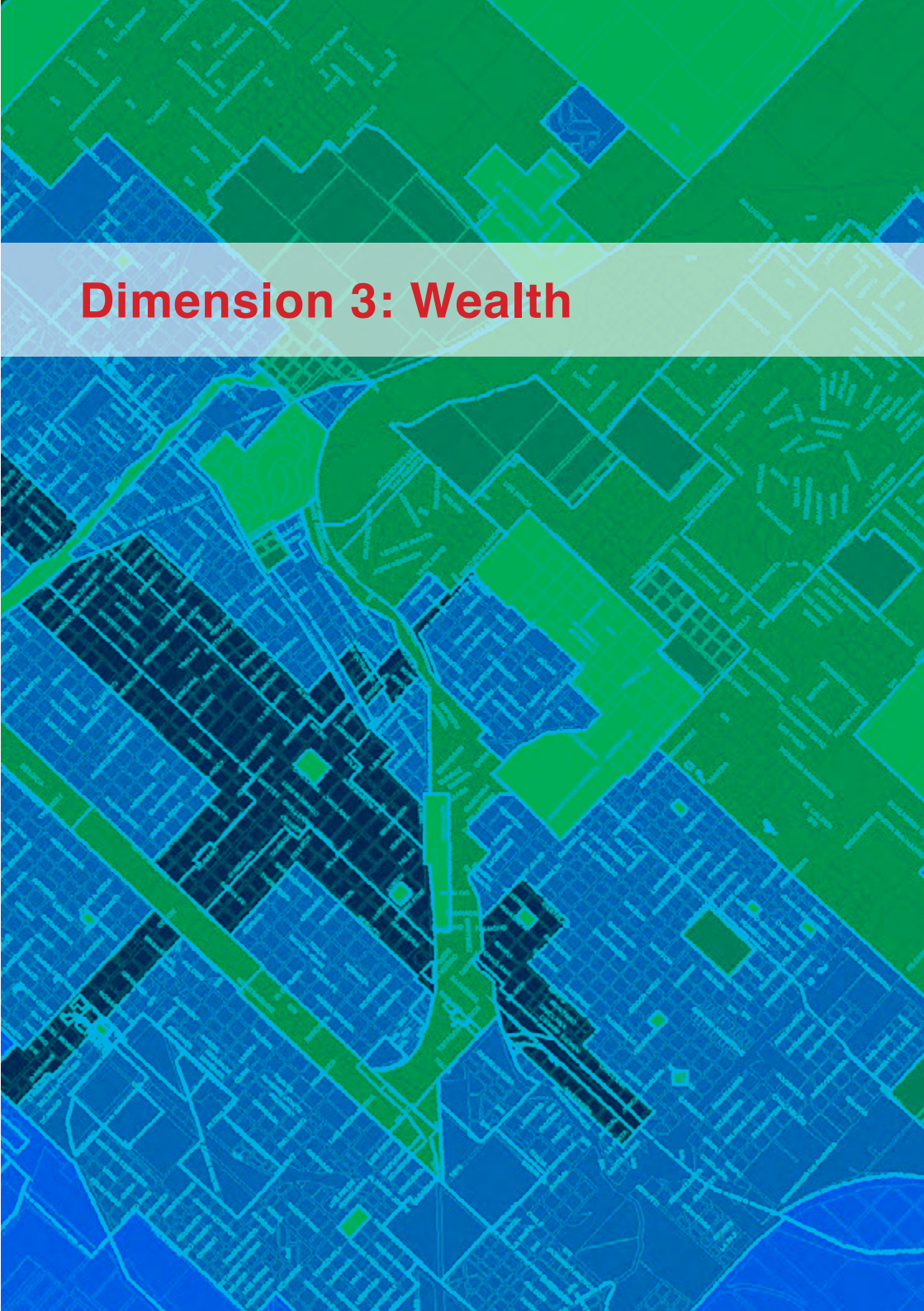
In addition to the personal trust, there is another type of trust that citizenship should have: the trust on institutions, politicians, authorities or everybody which takes decisions. If citizenship does not have trust in their own authorities they might not participate, even if they have personal skills to do it or if they have incentives to change any decision. The gap between citizenship and authorities is one of the main block agents to approximate people to government, no matter which level of government we talk about. This gap would seriously affect to various kind of potential problems: tax evasion, voting participation, use of public goods, safety, as well as social integration.

Trust on authorities will build an integrated citizenship that would have incentives to participate actively or passively in any initiative proposed in any area that would contribute to have the social cohesion necessary to own a metropolitan culture.

Skills:

- Accountability

Dimension 3: Wealth



Factor 1: Assets

An asset is a resource with economic value that the metropolitan area owns or controls with the expectation that it will provide future benefit. The land is an important asset to develop the infrastructure and services needed to meet the necessities of the population living in a metropolitan area.

GAP 1: ACCESS TO LAND

In the metropolitan area, dramatically growing population causes rapid urbanization and triggers rapid buildings in both cities and its boundaries. Unfortunately, improving urban services and the quality of city life remain behind this rapid concreted-based development. Therefore public investments, which normally need to be planned and have reversed lands in advance, come up inadequate urban services currently as one of the important problem in metropolitan area, peculiarly in case of lack of public owned land. This reason creates a need of accessing the land to make public investments in line with the requirements of metropolitan area in the most efficient way in order to improve cities and the quality of life, especially in management of metropolitan area.

GAP 2: EFFICIENCYi

There is a gap when managing the land and assets of the metropolitan area. The assets are not always managed in an efficient way. There is a gap in the way the public administrations use the land and public properties.

Skills:

Land developer could have some knowledge and skills for asset and resource management of public wealth as followed:

- Knowledge on current urbanization policy and ability to manage the land stock
- Ability to understand a city plan and trends of physical and social environment of the city
- Knowledge on cadastral management and land & ownership regulation
- Knowledge on zoning law
- Knowledge on how can create a land in current settlement and also related tools such as parcel arrangements or urban transformation
- Knowledge on method or tools to assess the efficiency and feasibility of investment

- Knowledge on how can manage the incomes.
- Knowledge on spatial - temporal analysis, land allocation and urban optimization
- Ability to create place attractiveness and added value
- Ability to create long and short-term plan for the land development

Factor 2: Wealth creators (firms)

Firms are key actors in the development and dynamic of metropolitan areas. Here, we can analyze productivity with two lenses: a) Micro-economic and b) metro-economic.

In the first case, we would be talking about the ability of firms to produce on the production frontier of its possibilities. This means that the firm is using its resources efficiently given its technology. Mainly improving management skills and helping entrepreneurs so as to increase the probabilities of success in startups could enhance lack of productivity at micro-economic level.

In the second one, Metro-economic level, the lack of productivity has another kind of causes and some other opportunities: Market Failures, Clusters, City-Branding are just some of the issues that should be studied.

Market Failures at Metro-Level is becoming a new field of study. Disrupting companies as Airbnb or UBER are challenging the metropolitan authorities to study and intervene in markets (i.e. Housing and Public Transport) that could affect the metropolitan economic dynamic and in the end the life quality of citizens.

GAP 1: WORKFORCE MARKET

Metropolitan areas should find ways of increasing their labor market across the different cities that conformed them. A way of doing so could be by attracting new investments. Direct Investment is a key factor for economic development and wealth creation since it means new employment opportunities and new incentives for small and medium companies. Many strategies could be implemented on trying to increase the arrival of foreign resources. City Branding, well equipped industrial areas or tax promotion are just some examples of policies that have been selected by metro-areas around the world.

Skills:

- Basic services management
- Socio-economic demographics
- Place attractiveness

GAP 2: JOBS DISTRIBUTION

Regarding the jobs distribution in metropolitan areas there are some alternatives that could improve the metro-productivity. Cluster Strategies may come to solve the lack of association between public, private and academic sector. Articulate, Coordinate, find common goals and collaborate in finding the best solutions are the challenges of clusters. As an example we can rapidly name the well know Silicon Valley Technology Cluster, where the high-tech companies work side-by-side between them and with universities to continuously develop new products.

Finally, we may not forget that there are some broad problems that impact directly in productivity and jobs distribution. Security, for example, force firms to allocate great amount of resources to take care of it assets, lack of infrastructure drives to high operative costs and, poor transport systems leads to delays and uncertainty in passenger and goods mobility.

Skills:

- Territorial economic policy
- Land allocation

Factor 3: Human capital (Individuals / Households)

The inhabitants of a metropolitan area are a key factor of the wealth creation and productivity. Human capital means the innovation, entrepreneurship and work capacities of the people that can occupy the job positions offered in a determined labor market. The human capital is conformed by the citizen in its role of economic agent: employee, consumer, household.

GAP 1: EDUCATION

Low grades of education almost always becomes in low productivity workers; low income wages always become in low consumption schemes and less access to technology and finally, lower citizens´wealth become in inefficient housing offer with poor access to public services.

Skills:

- Education strategy

GAP 2: WEALTH DISTRIBUTION

The metropolitan area should develop strategies to include the majority of the inhabitants in the different urban economic sectors. The wealth distribution should be planed widely in metropolitan areas than urban areas, as they are bigger and more heterogeneous in the way they create wealth.

Skills:

- Social protection plans

Dimension 4: Governance

Factor 1: Legal Framework

Andersson present seven factors that works as “enablers” of metropolitan governance: i) Laws/regulations; ii) Clear division of functions; iii) Incentives; iv) Administrative and financial capacity; v) Political support; vi) Authority should coincide with representation; and vii) Funds should follow function. The first factor that Andersson mentions corresponds to the appropiate consensus in the legislative power of the metropolitan area about the laws and regulations necessary to govern the territory. If the cities conforming the area don not share the same regulations in some key metroplitan aspects, the governance of the area turns to be a difficult task

GAP 1: LEGITIMACY

Legitimacy is one of the gaps that the legal frameworks face because, generally, to set a legal framework is necessary to have strong institutions and political support. As the metropolises are usually conformed by more than one city, the political support is not mostly homogeneous across the territory. To reach legitimacy, authority should coincide with representation.

Skills:

- Ability to identify instruments of regulation, awareness of and capacity to navigate within the formal and informal legal structures

GAP 2: APPROPRIATENESS

The gap of appropriateness is connected directly to the need to raise the metropolitan awareness of citizens. The citizens should recognize themselves as part of a bigger jurisdiction than their home city. If they reach that awareness they will recognize that laws and regulations are necessary to reach better policies. Once the laws are enacted, the citizens have to obey them. This means appropriateness.

Skills:

- Ability to create or adapt a legal framework based upon a comparative understanding of legal framework models

Factor 2: Institutional Framework

Governance is the ability of a society to reach agreements and jointly define priorities and actions that draw a roadmap for its development. In other words, governance can be defined as the ability to govern through consensus, and to include diverse approaches and actors during the governing process, positively impacting all sectors of society. To reach metropolitan governance it is necessary to count with a proper consented institutional framework.

GAP 1 AND 2: INTEGRATION AND COORDINATION

At metropolitan level, governance is built upon a fundamental formula: integration + coordination. Through this principle, metropolitan governance becomes in the ability to govern and manage in a coordinated way the elements that two or more territorial jurisdictions shares, and which shape the metropolis. The dialogue between the various local governments that conform a metropolis becomes to a dialogue between peers, which goes beyond the hierarchical dialogue that usually exists in trivial configurations of government, such as that formed by the trio Nation/Region/Municipality.

Metropolitan governance absorbs basic elements of urban governance such as stakeholder dialogues, networking, and the shared implementation of territorial management tools in the city. In this way, the elements of metropolitan governance together with the inherited elements of urban governance form an adequate framework to create a governance scenario in the metropolis.

To explain what integration and coordination means we can take Lefèvre (2009) argument through which he explains that the governance of the metropolis is achieved through two main factors: i) The establishment of coalitions of territorial actors whose interests are convergent and/or complementary; and ii) The production of a collective action based on the adhesion of the largest number of actors, or at least the most relevant.

When metropolises reach a consolidated stage of governance, it must give rise to formal institutional arrangements that can evolve over time, and which should be adapted to the cultural, historical, institutional and political particularities of each territory. Although this type of arrangement can be as varied as the number of existing metropolises, Andersson (2016) defines four basic elements that must have all the metropolitan governance arrangements: Legitimacy; Authority; Scope; and Funding.

Skills:

- Coordination: Ability to systematically organize policies and common value of diverse institutional scales towards fair, representative and equitable system power sharing in decision making.
- Integration: Ability to initiate processes enhancing knowledge exchange across diverse sectors with an aim to broaden understanding of the complex context of the Metropolitan for more informed and adaptable multi-sector outcomes.

Factor 3: Sustainable Management

The first two factors focus on policy and procedure and the third framework focuses on implementation. In order for the policies and procedures to work sustainable management needs to use various systems like financial systems, planning systems and information systems to implement policies and procedures.

Sustainable management means the capacity to maintain a project for generations. Various systems within sustainable management, like information systems, planning systems and financial systems, are the means by which sustainable management can implement the policies and procedures designed by legal and institutional frameworks.

GAP 1: INNOVATION

Metropolitan governance needs innovative ways of managing the institutions and implementing the public policies and legislation. The information, planning and financial systems should be different for each metropolis context, this specific design should adapt to each territory and be different from urban governance. Sustainable management requires the capacity to think new ways of solving old problems

Skills:

- Ability to lead and facilitate activates of collective thinking designed for multi-sector participation, engaging empathy, ideation and proof of concepts prototypes as part of the process.

GAP 2: TRANSPARENCY

Linked to the necessity of aquiring legitimacy, sustainable management should be based on transparent ways of planning and financing projects. A useful way of reaching this is by opening the data used by the government to manage metropolitan projects.

Skills:

- Ability to develop and support an open platform systems that is readily accessible to governments, institutions, stakeholders and individuals, structuring Metropolitan documents, policies and activities for knowledge, contribution and review.

Dimension 5: Culture

Out of the many and varied definitions of culture, we could say studying culture is related to analyzing meaning, circulation of meaning and practices in everyday life. The fifth dimension, titled "culture" in this publication, involves three factors: identity, professional praxis and academia. The following pages outline gaps and required skills for these three factors.

Factor 1: Identity

Identity is what allows us to recognize ourselves as part of a group, a collective construction. The identity is linked to a common history of a place and to a certain way of behaving in a territory, and it differentiates one community from another.

GAP 1: Tradition and history

Tradition is related to the way of doing things of a certain community, in a certain territory, sustained in time. Traditions are unique to a community and to a place. There is a gap in understanding metropolitan traditions, in comprehending the way they operate in the metropolitan scale and how they pass from one generation to the next. City branding initiatives, for example, need to work on the concept of metropolitan traditions.

Skills

- Historical knowledge
- Local narratives understanding
- Place and urban marketing skills

GAP 2: Sense of belonging

At the metropolitan scale, the sense of belonging consists in how the inhabitants of the metropolis see themselves as such, if they recognize themselves as being part of a community that extends beyond neighbourhoods and jurisdictional boundaries. Creating an awareness of the existence of a metropolitan community is the first step towards building a more comprehensive sense of belonging to it.

Sense of belonging is, in turn, crucial to fostering participation in community life. Just like holding a national citizenship implies rights and responsibilities, metropolitan citizens have rights and responsibilities as well, only that those are frequently not explicit.

Skills:

- Knowledge of anthropology and related methodology.
- Knowledge of psychology and sociology.

Factor 2: Professional Praxis

The professional praxis that is required to work at a metropolitan (complex) scale can only be gained with years of experience and after acquiring a large number of methodologies.

GAP 1: Methodology

The metropolitan dimension poses significant challenges in terms of strategic visions, governance, and management. The metropolitan scale challenges traditional urban governance, as it questions not only the right scale for dealing with increasingly complex metropolitan issues (e.g., the environment, mobility, mass housing, and food chains), but also the sense and appropriateness of any given spatial domain, rethinking and making flexible institutional arrangements. Metropolitan actions, governance, and management should implicate different stakeholders, according to the issue in question, and also go beyond existing administrative boundaries.

Specific methods can help practitioners comprehend and act with a metropolitan scale in mind. Managing grey, green and blue infrastructure in an agglomerate requires methodologies and instruments such as the Metro Matrix developed by Pedro B. Ortiz, interpretative maps or Gabriel Lanfranchi's Urban DNA.

GAP 2: Expertise

The current gap in metropolitan expertise can be explained, firstly, because metropolitan issues are rarely studied at undergraduate and graduate academic levels. Secondly, building the knowledge through experience is time consuming and costly, mainly relying on trial and errors approaches. Thirdly, the organization of public administration into silos, with budgets that are limited to specific functions, and with ministers and secretaries belonging to the same government politically competing for a position in the future, have hindered, in many cases, collaboration between peers and the creation of a real metropolitan expertise. From a professional standpoint, approaches coming from diverse disciplines also limit integration, as experts are not always capable of looking outside the box or willing to leave their comfort zone. Yet, the demand for metropolitan experts that can address multifaceted wicked problems is already there.

Skills for both gaps:

- Being knowledgeable on grey, green and blue infrastructure management, gained from studies on catchment management, public transport planning, green infrastructure or ecosystems' management.
- Strong analytical skills.
- Risk management experience.
- Negotiation skills.
- Process and project management experience (ideally, in cross cutting fields).
- Understanding of the complexity paradigm.

Factor 3: Academia

GAP 1: Theory

Metropolitan management implies governance of the territory on a greater scale than the local one, but mostly it demands the capacity to understand the metropolitan complexity related to the need for scale integration, the management of many variables, and/or actors, as well as the integration of sectors. Lack of integration between the administrative boundaries of municipalities must be assumed, since most of them were conceived before the 20th century and later overgrown by the urban system during the mid-1950s and 1960s with the proliferation of urban freeways. The fragmentation of public power in multiple municipalities and in diverse levels of administration, in addition to the lobbying capacity of the large private sector companies and the activism of the social organizations that lack proper juridical administrative tools, demand development strategies for governance of the metropolitan territory. It is in this field where knowledge interconnects: ecology, geography, architecture, urbanism, engineering, economic development, sociology, anthropology, and political science, among others, come together. This gathering of knowledge is the fertile soil that gives rise to metropolitanism, which means know-how capable of giving a comprehensive (not sectoral) response to the problems related to managing large metropolitan areas.

"Every discipline should create its own history of theory as well as its models. Not so much to self-legitimize but because the history of a discipline is where answers to its deepest questions can be found, it is where original hypotheses emerge giving sense to the theory. Expanding on this concept, the origin of the metropolitan discipline could be found during the beginning of the industrial city. Nowadays, new matters related to the speed and the impact of changes should be considered. Migration and climate change have made traditional planning tools obsolete. If the worldwide urban territory is to double in 15 years, we cannot manage growth in the same way as we did before. We are facing great challenges related to food production, the logistics of natural resources regarding urban consumption, air pollution, and waterways that, because of their magnitude, are nothing like those of the Industrial Revolution. (...) New tools must be created, tools that can promote a new understanding of the territory, allowing for integration that could contribute to the creation of mind maps to define the problem and find an appropriate solution. (...) It is clear that a theory needs to be developed, which in the words of MIT Professor Lawrence Susskind is a theory of practice, a theory that comes from looking at practice and learning from it. As is the case of the discipline of negotiation, metropolitan management must learn from the trade, casuistry, and gaps that must be overcome in everyday management."

Lanfranchi & Contin (2017). *The Rise of a New Discipline to Manage Metropolitan Urban Systems.* In Gómez Álvarez, Rajack, López Moreno and Lanfranchi (2017). Steering the Metropolis: Metropolitan Governance for Sustainable Urban Development. In print.

GAP 2: Discipline

Decision-makers are currently organized in a sectoral way and territories are subdivided into multiple jurisdictions and levels of government. In order to migrate toward good metropolitan governance, it is necessary to train a new generation of leaders in understanding metropolitan issues and create a sense of belonging for people in a metropolis. A new metropolitan discipline able to synthesize the knowledge required to operate in this environment is imperative (Lanfranchi & Contin, 2017).

It is necessary to admit that both metropolitan knowledge and its object of study are fragmented. Many disciplines are required to define an analytic framework. Precisely this lack of a specific discipline prevents us from obtaining the necessary tools from only one knowledge field and pushes us to advance in a collaborative way such as the Metro Lab Initiative to build the new discipline.

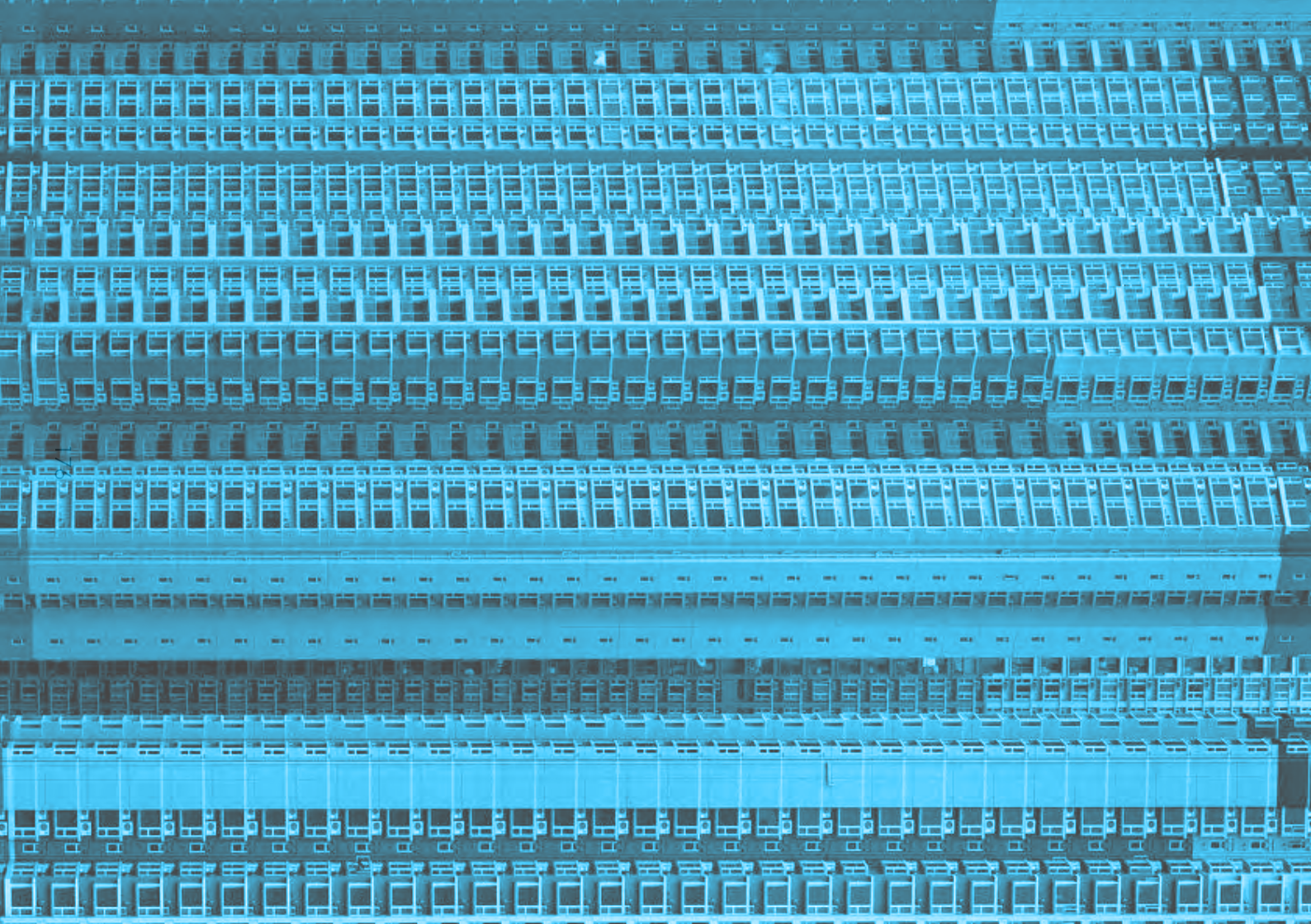
There is no need to train a metropolitan expert in all subjects, but they must be a generalist with enough of an understanding to allow them to maintain a fluid dialogue with technicians, negotiate with stakeholders, and advocate before the decision-makers for comprehensive metropolitan management (Lanfranchi and Contin, 2017).

Summarizing all that has been said before, there are two types of SKILLS that a metropolitanist must develop. Hard skills related to the knowledge of methods of environmental impact assessment, urban metabolism, complex systems management, transportation and mobility modelling techniques, urban and territorial planning, economic development, human development, law, metropolitan architecture, and data science. Deep understanding of these skills will remain the field of specialists, yet the metropolitan expert should be able to grasp the basics in order to enable constructive interactions with a wide range of specialists in each of these matters and guide them toward an integral approach. In a field where government is not imposed, but governance is needed, soft skills such as negotiation, leadership, participation techniques, capacity to build alliances, capacity for innovation and communication, and conflict resolution mechanisms are essential for a metropolitanist.

The paths that will lead to constructing the discipline are still uncertain, although we are convinced that the gap is evident and it will only be a matter of time and maturation for it to take the corresponding form. The proposed interdisciplinary approach of the discipline aims to establish:

- a technique;
- an interdisciplinary project;
- an international culture; and
- a shared ethics.

In addition, academia needs to learn how to communicate the way in which the local, the metropolitan and the global scale meet. Usually, the metropolitan scale is handled by the legal, economic, and social disciplines studying governance of the metropolitan dimension. These fields are too abstract for the average inhabitant. New tools for citizen participation at the metropolitan level need to be created, and these should be adapted to the technology and communication revolution already changing their way of understanding and living in the city.



APPENDIX

Biographies

Organizers

Gabriel Lanfranchi, *Metro Lab Initiative Founder*

Gabriel is an Architect and urban planner by training from the University of Buenos Aires. He holds a master's degree in urban economics from Torcuato Di Tella University and a SPURS fellowship from MIT. He was the director of the Metropolitan Oce that coordinated the Strategic Guidelines Plan for the Buenos Aires Metropolitan Region. He also led suburban poverty alleviation development projects at Fundacion Pro Vivienda Social. He worked on the Verona Mobility Plan and the Green and Biodiversity Plan for Barcelona at the Urban Ecology Agency of Barcelona. He currently works as Director of the Cities Program at CIPPEC, and as consultant for the Inter-American Development Bank, AySA, and other institutions. Gabriel is Assistant Professor of Urban Planning at Universidad de Buenos Aires, founder and board member of ENI Di Tella, and founder of the Metro Lab Initiative.

David Gómez-Álvarez, *Metro Lab Initiative Co-organizer*

David has a Ph.D. and a master (M.Phil.) in Public Administration from New York University (NYU); a master (M.Sc.) in Public Policy from the London School of Economics and Political Science (LSE); a bachelor in Public Administration from e College of Mexico (Colmex), among other certications. He has been researcher since 1998 in public administration, local government and political science at the ITESO, Jesuit University in Guadalajara, and professor at the University of Guadalajara as well. He is author of many publications and has collaborated in media and newspapers as political analyst. He is independent consultant for international organizations, as UNDP, ONU Habitat and World Bank. David is the founder and executive director of Jalisco Cómo Vamos, citizen observatory; president of the Electoral Institute of Citizen Participation at the State of Jalisco; Undersecretary of Planning and Evaluation at the Government of the State of Jalisco. Currently he is visiting scholar at the Massachusetts Institute of Technology (MIT) and is executive president of Transversal, ink Tank based in Guadalajara, Mexico.

Instructors:

Antonella Contin, *Politécnico di Milano*

She has a PhD in Architecture and is an AssistantProfessor of the Politecnico di Milano. She is also the coordinator of the LMS Laboratory at Architecture and Planning.

Eduardo Rojas, *University of Pennsylvania*

He holds a degree in Architecture from the Catholic University of Chile; an M.Phil in Urban and Regional Planning from the University of Edinburgh, UK; an MBA from Johns Hopkins University, US; and is Doctor in Urbanism from the Universidade Lusófona in Lisbon, Portugal. Dr. Rojas is an independent consultant on urban development specializing in urban development,heritage preservation, urban rehabilitation,low-income housing and municipal governance and is a lecturer in the Graduate Program in Historic Preservation at the School of Design, University of Pennsylvania.

Federico Bervejillo, *ORT University*

He is an Arquitect with a certicate in Management of Regional Development of ILPES-CEPAL. Fulbright Fellowship in Urban Studies, Department of Urban Studies and Planning, Massachusetts Institute of Technology (DUSP-MIT). International consultant in urbanism. Former National Director of Territorial Planning, Housing Ministry, Uruguay National government. Professor of ORT University, Uruguay.

Francisca Rojas, *Inter American Development Bank*

She has a PhD in Urban and Regional Planning from the Massachusetts Institute of Technology (MIT), a Master in City Planning also from MIT and an undergraduate degree from the University of Michigan. She is urban development and housing specialist at the Inter-American Development Bank (IDB) based in the IDB Argentina country oce. Her areas of expertise include sustainable urban development, metropolitan urban governance, and the role of ICTs in urban management, and transparency and accountability. Previously she was research director and post-doctoral fellow with the Transparency Policy Project at the Harvard Kennedy School of Government. She was also a researcher at the MIT Senseable City Lab. In the public sector she has been an urban planner with the Washington DC Oce of Planning and an advisor to the Minister of Housing and Urban Development in Chile. She has a PhD in Urban and Regional Planning from the Massachusetts Institute of Technology (MIT), a Master in City Planning also from MIT.

Janice Pearlman, *Founder-president of the Megacities Project*

Dr Perlman's work has bridged the worlds of academia, public policy, and the non-prot sector. She has served as a tenured professor in the Department of City and Regional Planning at the University of California, Berkeley; the Coordinator of an Inter-Agency Task Force on National Urban Policy during President the Carter's administration; the Executive Director of Strategic Planning for the New York City Partnership; Director of Science, Technology and Public Policy at the New York Academy of Sciences; the founder and chief executive of a global non-prot organization; and Senior Advisor to the World Bank's Urban Projects Department.

Marco Kamiya, *UN Habitat*

Marco Kamiya is acting coordinator of the Urban Economy and Finance Branch of UN-Habitat, headquartered in Nairobi. In addition to working on eld projects with UN-Habitat, Kamiya conducts research on municipal nance, the economics of urban expansion and local infrastructure-investment policy. He is also a member of the Habitat III advisory group on local nance and the U.N. Inter-Agency Task Force on Finance for Development. Previously, he occupied senior positions at CAFDevelopment Bank of Latin America from Caracas, the Inter-American Development Bank from Washington and with PADECO Co., Ltd on international development projects from Tokyo.

Mats Anderson, *Internatioinal Consultant*

He holds MBA degrees from Sweden and USA; and is a Certied Management Consultant (CMC) by the Canadian Association of Management Consultants (CAMC). He is a Management Consultant for UN-Habitat & World Bank. He specializes in urban, metropolitan, and city-regional development. He was municipal nance and urban management specialist at the World Bank, and was their Country Coordinator in China for urban development 2000-2003. Since 2008 his main clients have been the World Bank, Asian Development Bank (ADB), GIZ and USAid with assignments in Asia, Eastern Europe, and East Africa. He has published on metropolitan governance, and worked on the subject in China, Eastern Europe, Central Asia, and East Africa. Prior to joining the World Bank he was with PriceWaterhouseCoopers, Bank of Montreal, and own consulting rm in Canada, with numerous assignments in Latin America.

Michael Cohen, *New School University*

He holds a Ph.D. in Political Economy from the University of Chicago. Director of Studley Graduate Program in International Aairs from the New School and Professor of International Aairs at Milano School of International Aairs, Management, and Urban Policy. He worked at the World Bank from 1972 to 1999 and was responsible for much of the bank's urban policy development during that period. He has worked in 55 countries and was heavily involved in the World Bank's work on infrastructure, environment, and sustainable development. He also has advised governments, NGOs, and academic institutions around the world such as UN-Habitat in the preparation of the Global Report on Human Settlements (2005-2012). He is currently the director of the New School's Observatory on Latin America, Director of the Studley Graduate Program in International Aairs at e New School, and professor of International Aairs at the Milano School of International Aairs, Management, and Urban Policy.

Patricia MacCarney, *Toronto University*

President & CEO of World Council on City Data She holds a Ph.D. from DUSP in Planning and International Development from M.I.T. Patricia McCarney is Professor of Political Science and Director of the Global Cities Institute at the University of Toronto, Canada and President and CEO of the World Council on City Data, the organization which hosts the global platform for city data based on ISO 37120, which she developed as the rst ISO standard for cities. Before joining the University of Toronto, between 1983 and 1994, Professor McCarney worked as a professional sta member in a number of international agencies, including the World Bank in Washington, and the United Nations – HABITAT in Nairobi.

Pedro B. Ortiz, *International Senior Consultant*

Pedro is the leading world specialist on metropolitan land-use integration. As former Deputy Mayor of Spain's Capital, Madrid, and Director General for Metropolitan Planning for the State of Madrid he managed rapid growth of the metropolis. His experience is being used now by Multilateral, International Non Government Organizations (INGO's) as the World Bank, InterAmerican Development Bank, UNHabitat, UNCRD, etc to provide a framework for metropolitan expansion in numerous developing metropolises. He has recently published a book on this accumulated knowledge and managing experience tips, "e Art of Shaping the Metropolis" Pedro B. Ortiz, McGraw Hill, 2014.

Robin Rajack, *Interamerican Developmoent Bank*

He holds a Doctorate and Master in Land Economics from the University of Cambridge. Lead Specialist on Housing and Urban development at the Inter-American Development Bank. Earlier he spent more than a decade at the world bank headquarters working on land, housing and urban development through a variety of operations, research and technical assistance programs in multiple world regions. He is a former founding director and full time manager at the land settlement agency in the government of Trinidad y Tobago where he helped to design and implement policy, legislation and programs to address informal settlement between 1997 and 2003.

Remi Sietchiping, *UN Habitat*

He holds a Ph.D in Geography from the University of Melbourne, Australia. He leads the Regional and Metropolitan Planning Unit at UN-Habitat. He oversees the development of strategic programes of the UN-Habitat including National Urban Policy, urban rural linkages, metropolitan development (particularly the MetroHUB) and the International Guidelines on Urban and Territorial Planning. Prior to this, Dr. Sietchiping was Project Leader of the Global Land Tool Network where he coordinated work on tool development processes particularly on access to land and tenure security, land management and planning, land information, land policy and legislation and land-based nancing. He has over 20 years working experience in the UN systems, academia, private sector, public sector and NGOs in Australia, Cameroon, Ethiopia, Jamaica and worldwide. Dr. Sietchiping has over 40 publications including books, peer-reviewed articles, papers in proceedings and reports. He speaks French and English.

Victor Vergara, *World Bank President & CEO of World Council on City Data*

Lead Urban Specialist with the Global Urban Unit of the World Bank. With more than 25 years of experience in the urban sector Victor Vergara is a lead urban specialist with the Global Urban Unit of the World Bank. Currently he leads the Metropolitan Lab for Strategic Planning and Management (MetroLab). Mr. Vergara joined the World Bank in 1991 contributing to policy dialog on sustainable urban nance. In 1994, as a senior urban specialist he led preparation of urban planning and management capacity building initiatives for Latin America. Mr. Vergara joined the World Bank Institute in 1998 where he led the Urban and the Municipal Finance programs. In 2009, as a lead urban specialist for East Asia, he managed the technical review of operational, analytical and advisory services. Mr. Vergara holds Masters Degrees in City Planning (MIT) and Agriculture (Texas A&M) enabling him to appreciate both rural and urban dimensions of metropolitan regions.

Metro Lab Initiative staff:

Mercedes Bidart, *Metro Lab Initiative | MIT, participant 2016*

She is a Fulbright Scholar for Masters 2016-2017. Graduate Degree in Political Science (University of Buenos Aires). Visiting Alumni of the University of Bologna, Italy. Postgraduate in Governability, Political and Public Management (University of San Andrés and George Washington University). Mercedes coordinates the projects' development of CIPPEC's Cities Program, a ink Tank based in Argentina. Mercedes also worked on informal settlements in Argentina from the NGO TECHO and is a member of UBACyT Investigation Project on Habitat and Housing (Department of Architecture and Urbanism in UBA).

Chiara Gibertoni,*Metro Lab Initiative | MIT, participant 2016*

Chiara is a licensed architect from Buenos Aires, Argentina. In 2015 she attended MIT to pursue Real Estate finance & development professional studies. Her professional experience as an lead architect specialized in the design and development of commercial buildings in Latin America region. Currently, Chiara works as a Transaction Manager in JLL for Latin America.

Sandy Jiyoon Kim, *Metro Lab Initiative | MIT, participant 2016*

Master of Architecture, Worked on residential interior projects, London housing development, and competitions.

Guest Speakers:

Bruno Verdini Trejo, *MIT-Harvard Mexico Negotiation Program*

He is a Mexican and French national, who has been trained in international aairs, political science, and public policy in Mexico City (CIDE), Paris (Sciences-Po), and Cambridge (MIT). He is a Lecturer in Urban Planning and Negotiation and the Executive Director MIT-Harvard Mexico Negotiation Program.

Chris Zegras, *MIT DUSP*

Zegras is Associate Professor of Transportation and Urban Planning in the Dept. of Urban Studies and Planning at MIT, where he teaches classes on integrated land use-transportation planning, quantitative methods, and transportation nance. He has also co-taught urban design and planning studios and practica in Beijing, Santiago de Chile, Mexico City, Boston, and Cartagena, Colombia. He is the Lead Principal Investigator for the Future Urban Mobility research group, sponsored by the Singapore MIT Alliance for Research and Technology, and is MIT Lead of Transportation Systems under the MIT Portugal Program.

Diane Davis, *Harvard GSD*

Chair and professor of the Department of Urban Planning and Design at Harvard's Graduate School of Design. She holds a Masters and a Ph.D. in Sociology from the University of California in Los Angeles. Her research focuses on the transformation of cities of the global south, particularly the urban social, spatial, and political conicts that have emerged in response to globalization, informality, and political and economic violence.

Eric Huybrechts, *Institut d'Aménagement et d'Urbanisme d'Île-de-France*

Senior Architect and Regional/Urban Planner, based in Paris, in charge of International aairs for the Regional & Urban planning Agency of Paris/Ile-de-France Region (www.iau-idf.fr). Associated professor at the French institute of Urban planning (IFU), university of Paris/Marne-la-Vallée and scientic director of the post master "International expertise on Cities in developing countries". Representative of IAU îdF as Lead partner of the World urban Campaign (UN-Habitat) and on the Governance council of UN-Habitat.

Eric Plosky, *Chief, Transportation Planning U.S. Department of Transportation Volpe Center*

He earned bachelor's and master's degrees in planning from MIT. Plosky leds a team of 40, working closely with the Oce of the Secretary of Transportation (OST), the Federal Highway Administration, the Federal Transit Administration, and other agencies on many dierent types of transportation planning eorts, at the project, program, and policy levels. In addition to supporting federal land management agencies, the division's work ranges from Secretary of Transportation Anthony Foxx's Beyond Trac and Smart City Challenge initiatives, to research and regulatory analysis, to international activities. Eric has also been a disaster recovery coordinator for U.S. DOT; he was stationed in Louisiana for ve months following Hurricanes Katrina and Rita.

Erin Baumgartner, *MIT Senseable City Lab*

Assistant Director of the MIT Senseable City Lab. Experienced manager for large and complex programs at the Massachusetts Institute of Technology (MIT). An inclusive leader with a record of developing and stewarding business partnerships between industry and academia.

Gabriella Carolini, *MIT DUSP*

Gabriella is an assistant professor in the International Development Group, and an aliated professor with the Housing, Community, and Economic Development and Environmental Policy and Planning Groups, in the Department of Urban Studies and Planning (DUSP) at MIT. She has served as the lead chair of the Global Planning Educators' Interest Group within the Association of Collegiate Schools of Planning, and within MIT works as a collaborating member of the Displacement Research and Action Network, the Faculty Council of the Community Innovators Lab (CoLab), the MIT-AFRICA Advisory Committee, and as an advisor to the UrbanAfrica student initiative.

Gilberto E. *Chona, IADB*

Lead Specialist, Urban Development Economics and Regional Coordinator Emerging and Sustainable Cities Program, IDB. He is a City Planner with concentration in Urban Economics, project economic & nancial evaluation. He was a country (Macro) Economist/Analyst in Costa Rica, Honduras, Mexico, Panama, Dominican Republic. He is focus on economic, political, and institutional knowledge on Central American and Caribbean countries.

John Fernandez , *MIT Environmental Solutions Iniciative*

John E. Fernández, class of 1985, has been on the faculty of MIT since 1999. He is a full Professor and Director of the Building Technology Program in the Department of Architecture and is Director of the Urban Metabolism Group, a highly multidisciplinary research group focused on the resource intensity of cities and design and technology pathways for future urbanization. He is also co-Director of the International Design Center at MIT, a large internationally funded center for design studies across engineering and architecture.

José Luis Inglese, *President of AYSA Argentina*

Graduated with honors at the Engineering School of the University of Buenos Aires, Argentina; postgraduate diploma in Sanitary Engineering, a scholarship from Obras Sanitarias de la Nación in 1973. Won the National Academy Prize “Ing.Enrique Butty”for his achievements in Sanitary Engineering for 40 years. Chairman of the Board of AySA, water and sewerage company of Gran BA, Argentina. Former President of the Argentine Association on Sanitary and Environmental Engineering and VP of inter-American Association on Sanitary and Environmental Engineering. Directed more than 750 studies and projects for water supply, sanitation and environmental subjects in LatAm and Africa, funded by IDB/WB and other multilateral credit agencies. He has presided the Argentine Congresses of Sanitation and Environment in 1997,1999 and 2002.

Marc Draisen, *Boston Metropolitan Area Council*

He holds a Master’s Degree in City Planning from MIT. Draisen has served as the Executive Director at MAPC since 2002. Mr. Draisen leads the agency’s sta in their work to provide technical and professional services that improve physical, social, and economic health for the people who live and work in the Metro Boston region. MAPC’s work covers a wide range of areas related to smart growth and regional collaboration, including transportation, land use, water resources, clean energy, public safety, public health, housing, economic development, and collective procurement.

Nausicaa Pezzoni , *Metropolitan City Authority of Milan*

Architect, holds a PhD in Territorial Design and Government. She works as a planner in the Metropolitan City Authority of Milan and collaborates both in research and didactics at the Department of Architecture and Urban Studies of the Polytechnic of Milan. She is a member of Centro Studi Assenza, a multidisciplinary research centre. Author of several scientic articles and contributions on urban survey and representation, site specic art interventions in the landscape, and the relationships between migration ows and spatial transformation, she has recently published La città sradicata. Geograe dell’abitare contemporaneo. I migranti mappano Milano (O barra O Edizioni, Milan, 2013).

Nora Libertun de Duren, *IDB*

She works in the IDB's Urban Development and Housing Sector. Nora has a PhD is Urban Planning from the MIT, a Master in Urban Design from Harvard University, and Master in Architecture from the University of Buenos Aires. Previously she was the Director of Urban Planning at the New York City Department of Parks and Recreation & Natural Resources, and has taught urban planning theory and urban design at Columbia University, MIT, and Harvard. Her papers had been published in a number of prestigious peer reviewed journals and she was editor of the MIT Journal of Planning and of a Rapid Urbanization and Development,

Pablo Bereciartua, *Argentina's National Government*

He is the Federal Undersecretary of Hidric Resources of Argentina and the President of the Planning Agency of the Buenos Aires Province. He holds an MSc in Engineering & Economics, University of California at Berkeley CA, and Engineering (with Distinction) UNESCO-IHE Delft, an MBA from the Universidad de San Andres, and he is a Civil Engineering from the Nacional University La Plata (UNLP). Former General Director for Infrastructures at the Buenos Aires City Government. Former Dean of the School of Engineering and Mangement at the Buenos Aires Institute of Technology (ITBA).

Sarah Williams, *MIT Civic Data Design Lab*

Sarah Williams is an Assistant Professor of Urban Planning and the Director of the Civic Data Design Lab at MIT School of Architecture and Planning School. Trained as a Geographer (Clark University), Landscape Architect (University of Pennsylvania), and Urban Planner (MIT), her work combines geographic analysis and design. Before MIT, Williams was Co-Director of the Spatial Information Design Lab at Columbia University's GSAPP. Williams has won numerous awards including being named top 25 planners

Shobha Kumar, *World Bank*

Senior Knowledge & Learning Specialist, Equitable Growth, Finance and Institutions (EFI), Leadership, Learning & Innovation Unit, the World Bank Group, Washington DC. She is a seasoned knowledge and learning specialist, thought leader, and project manager with over 20 years of experience and expertise in: designing and implementing result-oriented learning curriculums and knowledge management initiatives, facilitating group processes which tap into the power and potential of experiential knowledge and where adult learning can thrive and managing the design and implementation of client learning and capacity development initiatives with the use of cutting edge tools and techniques.

Tom Wright *, President of New York Regional Planning Association*

Tom is president of Regional Plan Association, an independent urban planning think tank focused on improving the prosperity, infrastructure, sustainability and quality of life of the New York-New Jersey-Connecticut metropolitan region. Tom is a member of New York City's Sustainability Advisory Board, which helped prepare OneNYC. Before his current tenure at RPA began in 2001, Tom was deputy executive director of the New Jersey Oce of State Planning, where he coordinated production of the New Jersey State Development and Redevelopment Plan

Yu-Hung Hong*, Samuel Tak Lee MIT Real Estate Entrepreneurship Laboratory*

He is the founding Director of the Samuel Tak Lee MIT Real Estate Entrepreneurship Laboratory that promotes social responsibility among entrepreneurs and academics in the real estate profession worldwide, with a particular focus on China. He is also the founder and Executive Director of Land Governance Laboratory where he studies the use of land tools to facilitate open and inclusive decision making processes for land resource allocation in developing countries. Dr. Hong teaches urban public nance at MIT, where he earned his Ph.D. in Urban Development and Masters in City Planning from the Department of Urban Studies and Planning.

Participants:

Adriana López Hernández, Mexico

Master of Public Policy. Sustainable urban development expert. Foreign policy and international cooperation advisor at the Minister's oce in the Secretary of Agrarian, Territorial and Urban Development.

Ana Díaz Aldret, Mexico

PhD in Social Sciences. Specialist in political culture, public management and citizen participation. Research Professor associated to CIDE (Spanish acronym for Center of Investigation and Economic Teaching).

Andrea Rolando, Italia

PhD. In Urban Planning and Policy Design. Investigator and Professor at the Department of Architecture and Urban Studies at Politecnico di Milano. He has about 30 publications on the analysis of complex systems of urban and regional scale, the relationships between infrastructure and landscape; the concept of smart region and the role of ICTs as drivers as of territorial innovation.

Angélica María Caicedo Rozo, Colombia

Attorney with extensive experience in public, administrative, environmental and urban law. Leader of the urban law team of the law rm that has accompanied the development of the main construction and urban development projects in Colombia.

Brigitte Rajacic, USA

B.S. Management/International Business at NYU; Lawyer by the Benjamin N. Cardozo School of Law. Attorney at the New York City Housing Authority Agency of Attorney.

Burcu Özdemir, Turkey PhD. In Urban and Regional Planning. Urban planner and Project Coordinator at the Directorate of Superstructure Projects of the Istanbul Metropolitan Municipality.

Carlos F. de la Torre, Mexico

Master of Public Policy. Adviser with 20 years of experience supporting public and private sector led transformation and improvement initiatives in America, Africa, Asia and Middle East related to Government nance, market systems, environmental policy, organizational change, consensus building.

Cristina Menegal Garcia, Spain

Master in European Law and Economy; Master in International Economy and Development with more than eight years of work experience in an international cooperation environment, especially managing and implementing dierent international projects related to institutional strength, security, economic development, malnutrition and environmental issues.

Cynthia Stella Yanes Cardozo, Paraguay

Master in Human Settlements and Environment. Manager Renewal at the Port Area Project area of Asuncion, in the Ministry of Public Works and Communication.

Daniel Galland, Denmark

PhD. of Architecture and Spatial Planning. Associate Professor in Urban and Regional Planning in the Department of Development and Planning at Aalborg University. He has several research and publications about international comparative planning with an emphasis on spatial planning policy, metropolitan planning and rescaling.

Deborah Gonzalez Canada, Argentina

Master of Environment. Expert in international NGOs, project management, informal education, new media, and academic research.

Diego Andrés Arcia, Colombia

(lives in USA) Architect with Master in Economy. Consultant at the Inter-American Development Bank (IDB), at the Emergent and Sustainable Cities Initiative.

Dulce Akemi Sato Matsumoto Miranda

Architect specialist in sustainable communities design. Research assistant at MIT Civic Data Design Lab.

Fátima Angélica González Canales, Mexico

B. A. in Architecture. Specialist at CEMEX-TEC Center, Collaboration with a multidisciplinary group in case studies with the “Sustainable Communities Model”.

Fiorella Bellora, Uruguay (lives in Italy)

Project Manager at Bellora Architecture Oce. Previously, junior architect at the Architecture Oce of the Architecture Faculty of the Universidad de la República, Uruguay.

Giuseppe Tesoriere, Italy

M.S. of Economics. Chief Project Economist at SERING International Engineering Consultancy L.L.C. (Sultanate of Oman); Municipal Finance Expert at SERING srl Engineering Consultancy.

Heindi Seyedeh Elaheh, Iran

(lives in Italy) M.S. in Urban Planning and Policy Design. Research on analysis and design of transportation system on Mozambique in Africa at Architecture and Planning Studio, Milano.

Hélène Jourdan, Spain

Bachelor in International Negotiation and Relations. Project Ocer for Africa and the Observatory, World Association of the Major Metropolises.

Sandy Jiyoon Kim, Corea

(lives in Italy) Master of Architecture, Worked on residential interior projects, London housing development, and competitions.

José A. Iracheta Carroll, Mexico

(lives in USA) PhD Candidate in Public Aairs. Specialized in Environmental Policy and Policy Analysis with a focus on metropolitan environmental policy. Public Policy Consultant / Project Manager at Eure Center. Land Studies and Public Policy.

Juan Valle Robles, Spain

h. D. In Architecture and Urban Planning. International Manager at SECE. Responsible for leading the brand image of the company and its representation for the market in dierent ways and channels and managing the portfolio of products / services and customers to achieve the objectives set out in international department.

Julia Leticia Neira Tijerina, Mexico

M.S. Sustainable Development and Design of the City. General Director of Public Policy Planning and Evaluation at INPLADEM – Municipal Planning and Development Institute of San Nicolás, México (Metropolitan Area of Monterrey, México).

Kathleen O'Donnell, UK

M.A. in Emergent Technologies and Design. Professor and Investigator at Oxford Brookes University School of Architecture. President, Founding Principal of WOS (Work_OS).

Lia Brum Rodrígues, Brazil

(lives in Spain) Project officer at World Association of the Major Metropolises responsible of planning and implementation of communication strategies, coordination of customer relationship management (CRM), organization of international events, facilitation of cooperation between city councils around the world.

Lucas Nassar, Brazil

(lives in USA) Fellow in the Special Program for Urban and Regional Planning in the Department of Urban Studies and Planning at MIT. With seven years of experience in public sector in Brazil mainly in the urban and metropolitan regulation eld. Interested in metropolitan governance, civic engagement and participatory methodologies and renewal of urban centers.

Maria del Pilar Tellez Soler, Colombia

Lawyer. Assessor for Sustainable Metropolitan Development e Bucaramanga Metropolitan Area – Colombia. Director of the Bucaramanga Metropolitan Observatory

Mariana Jimena Alegre Escorza, Peru

M.S. in City Design. Chief Coordinator al Lima Cómo Vamos, city research center. Expert in urban studies and leading challenging tasks on urban planning, mobility, transportation, urban regeneration, the media, human rights, democracy and public policies.

Martín Javier Quiroga Barrera Oro, Argetina (lives in United States)

Master in Public Policy with focus on Economic Policy. Consultant in the Housing and Urban Development division at the Inter-American Development Bank with more than 5 years of experience in international development, especially in monitoring and evaluation, public health and urban policy.

Mónica Jhoanna Rodríguez Trujillo,Colombia

Master in Economic Laws. Specialist in Administrative Law, with experience in litigation within the Jurisdiction of the Contentious Administrative and advisor related to urbanistic and real estate law to dierent companies of the construction sector.

Nathalie Badaoui Choumar, Brazil

International Cooperation Specialist, MSc in Urban Studies. International Aairs Advisor | São Paulo State Company for Metropolitan Planning (EMPLASA)

Oliver David Meza Canales, Mexico

Ph. D. in Public Policy. Research professor of the Department of Public Administration at Centro de Investigación y Docencia Económicas Región Centro (CIDE RC), Mexico.

Peter Robinson, Australia/UK (lives in Sri Lanka)

M.A. in Urban Design. Urban Expert/Specialist with qualification in planning, urban design, and computer aided design in planning, with over 30 years of experience in Australia, 25 years International experience, including Asia, the United Kingdom, Europe, and the Middle East.

Ramón Reyes, Mexico

Chief of the Urban Projects Department at University Center of Art, Architecture and Design of the Universidad de Guadalajara.

Rafael H. Forero H., Colombia

Specialist in State, Development and Public Policies. Engineer. Specialist in development, public policies and project management. International consultant on subjects related to urban and territorial development.

Rola Sayaydeh, Jordan

M.S. in Urban Agglomerations. Urban Planner with extensive experience in planning practices in Amman, in addition to a widespread knowledge about planning concepts practices worldwide like: Europe, North and South America, MENA region, Far East in Asia, Australia and Africa.

Rosa Salazar, Venezuela (lives in UK)

M.S. in in Social Development Practice. Strategic communications ocer at CAF-development bank of Latin America.

Rossana Cenina Poblet Alegre, Peru (lives in Germany)

M.S. in International Cooperation and Urban Development and M.S. in Architecture. Research Associate at the e Bartlett Development Planning Unit (DPU), University College London (UCL), United Kingdom.

Saúl Alcántara Onofre, Mexico

PhD in Design. Professor of the Universidad Autónoma Metropolitana. Author of more than 30 publications related to Architecture, Heritage and Design.

Soledad Iglesias, Argentina

Master in Project Evaluation. Coordinator of the Program for the Development of the Metropolitan Areas of the Interior (DAMI) at Ministry of the Interior, Public Works and Housing Sub-secretary of Coordination - Central Executing Unit.

Tomasso Cosu, Italy

Architect focused on Metropolitan Architecture. Master in Architecture. Collaborator Architect at Degli Esposti Architetti - Milano.

Efrén Josué Osario Lara, Mexico

Master of Arts on Public Policy. Program coordinator and liaison ocer of UN HABITAT in Jalisco and Technical Secretariat of the Pan American Network of Metropolitan Areas (RAMA-UN HABITAT).

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