

MECHANICAL ENGINEERING | PHYSICS |
PRESERVATION OF THE ARCHITECTURAL
HERITAGE | SPATIAL PLANNING AND URBAN
DEVELOPMENT | STRUCTURAL, SEISMIC
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Chair:
Prof. Paola Pucci

DOCTORAL PROGRAM IN URBAN PLANNING, DESIGN AND POLICY

The PhD Programme in Urban Planning, Design and Policy (UPDP) aims at exploring the significance and impact of contemporary urban changes and understanding the way these processes can be governed through planning, design and policy making activities. The programme pays specific attention to the transition towards new, more sustainable and equitable modes of urban development as well as to pro-active advancements in planning practices and to potential innovations in traditional urban studies, urban design and policy approaches. The integration between different fields and disciplines of urban research on the one hand, and between theory and practice on the other, distinguishes the approach promoted by the PhD programme.

Objectives

The objective of the UPDP Programme is to provide PhD Students with the analytical and interpretative tools and skills together with research/ planning/design methodologies to advance research in the field of urban studies, spatial planning, urban design, urban policy and governance. PhD Students are encouraged to reflect upon traditional and innovative practices in these fields by participating in research activities concerning cities and regions in both Italy and abroad, paying particular attention to international comparison.

By establishing a dialogue with the best European and International schools, this PHD programme is the place for research and innovative approaches to urban studies, spatial planning and urban design dealing, in particular, with the following themes:

- Multi-scalar regional urbanization processes: rethinking and reshaping the city on a regional scale and addressing the challenges for the analytical approaches and descriptions, as well as for institutional and governance processes;
- Advances and challenges in contemporary planning theory and practice: the reshaping of citizenship, boundaries and collective action in urban arenas and their effects in the urban environment;
- Urban transitions towards sustainability: strategies and tools for land and biodiversity preservation, energy conservation, and natural and technological risk prevention and mitigation;
- Social and economic changes and their effects on spatial processes:

social inequalities and urban segregation; economic specialization and diversification in a global context;

- Tools for the evaluation and management of urban projects: feasibility and equity of urban projects, as well as the sustainability and design quality of the physical outcomes;
- European cities, urban policies in Europe, the EU urban policy agenda: exploring distinctiveness, convergences and divergences.

Contents and research training

Based on a multidisciplinary approach, the main objective of both the educational programme and the individual research activities is to offer PhD students a challenging environment with space for international debate, research, experimentation and innovation.

Starting from this perspective, the main teaching activities are fed by the members of the PHD Board organized into three research areas:

- **Urban studies.**
Contemporary cities worldwide are confronted with increasing challenges regarding local democracy, sustainable development, management of environmental resources and landscape, social cohesion and cultural diversity. Looking at recent cross-scalar urban changes, the main issues addressed are the following: social, economic, environmental and territorial transformations; governance problems and technological innovations. The main research topics are: forms and processes of the spatialization of social and economic inequalities; urban segregation; processes and institutions of urban governance; spatial impact of social innovation; forms and processes of regionalization and processes of social, economic and territorial development in local contexts.
- **Planning theories and practices.**
Urban planning is not a unitary or self-contained discipline and planning knowledge and activities can be improved by delving into (and jointly considering) both theoretical and practical issues. First, the cultures, ethics, traditions and paradigms of planning are varied and have been evolving differently according to their geographical, institutional and political context. Similarly, planning practice is multiform and can be understood from several perspectives. Studying the characteristics, the peculiar interpretations and the effects of planning practices constitutes a second relevant research field. Thirdly, the selection and discussion of the crossroads between planning and other disciplines (e.g. architecture, environmental sciences, policy studies, philosophy and others) can dramatically innovate planning theories and practices, going beyond traditional approaches and perspectives.
- **Design topics, forms and tools.**
In a scenario of changing socio-economic, environmental and territorial conditions, theoretical and technical issues for the construction of urban projects and the implementation of governance policies are being experimented with as a way to improve the quality of life. Specific

research themes are: the role and form of urban projects in leading territorial transformations; innovation in the description and representation of urban environments and landscapes; tools for the evaluation and management of urban projects and policies aimed at mastering the feasibility and equity of land development, as well as the sustainability and the design quality of the physical outcomes and strategies for land and biodiversity preservation and energy conservation.

The three research areas reflect the contents and themes of the ongoing research at DASTU and represent the framework of future proposals. They will be the backbone for PhD Students' educational and research activities.

Professional and research profiles

According to its international orientation, the UPDP PhD Programme intends to train highly qualified researchers and professionals and expects them to work in academic institutions, research centers, public administrations and the private sector in the following fields: spatial planning, design and management of urban projects and policy, urban studies and urban governance.

PhD Doctors with such a profile are qualified to be employed by Italian and International academic institutions, public bodies and research centers, as well as public and private development agencies.

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“DESIGNED” SHRINKAGE? MANAGING DEMOGRAPHIC CHALLENGES/DECLINE IN URBAN PLANNING. THE CASE OF SMALL AND MEDIUM-SIZED CITIES OF SOUTHERN RUSSIA

Elena Batunova - Tutor: Prof. Giuseppe Bertrando Bonfantini

Supervisor: Dr. Annegret Haase, Helmholtz Centre for Environmental Research, Leipzig, Germany

Urban shrinkage, provoked by the combination of long-term depopulation and economic decline, is an emerging challenge for most cities in Russia, which appears to be the largest shrinking urban system in the world. Shrinking cities have attracted the attention of scientists, policymakers, and planners across the globe due to the inadequacy of the available planning and policy approaches and tools that have been developed for growth scenarios. However, in Russia, the long-term population decline is still viewed by most as a temporary phenomenon provoked by the dramatic socioeconomic transition after the dissolution of the Soviet Union and, accordingly, spatial planning remains growth-oriented. The PhD thesis is motivated by the contradiction between the current demographic development in Russia, where over 70% of cities are depopulating, and the obsolete planning approaches and methods being used. The study aims at discovering evidence of population decline as an important trend in the development of Russian cities and to identifying then which opportunities exist for the transformation of municipal and regional spatial development policies to appropriately address this urgent challenge. The research

question derives from the following objectives: to contribute to the integration of the Russian case into the international debate on urban shrinkage; to discover evidence of the manifestation of urban shrinkage in Russia and its differences and similarities with processes in other countries; to understand how the current planning system in Russia responds to the population decline challenge and how it might use the accumulated international experience on planning for the conditions of shrinkage. The research pursues two main lines of investigation: the urban shrinkage phenomenon itself (its definitions, causes, consequences, threats and opportunities) and the spatial planning of cities experiencing shrinkage conditions. Within this logic, several levels of research have been developed: 1) analysis of the global discussion of the topic through the literature review; 2) confirmation of applicability of the aspects discussed in the literature to the Russian context (at the national and regional levels) as a verification for the necessity of a deeper analysis; 3) testing the developed hypothesis at the city level through multiple case studies; 4) integration of the results obtained through the case

studies into the general view; 5) evaluation of the findings. The thesis provides empirical evidence drawn from cities located in southern Russia, which statistically represents the most favourable demographic situation in the country. The intention was to show that even in an area where depopulation is not considered an issue many cities are shrinking and experience a lack of demographic resources that could compensate for their depopulation. The research focuses on both shrinking and growing small to medium-sized cities in southern Russia, investigating through the comparative analysis the drivers and consequences of population change dynamics, but also how existing policies reflect upon demographic issues. Based on a mix of quantitative and qualitative data, it was possible to confirm that population decline is a new reality for most Russian cities, where the current and future depopulation is an unavoidable process. The consequences are especially notable in small and medium-sized cities, which are most vulnerable and often lack development resources. However, the current negative transformations in both shrinking and growing cities

result from a combination of complex factors, the influence of which should be deeper analysed through further research. Russian planners and policy-makers are largely ignorant of these processes, not only because of a lack of “awareness”, but also due to institutional, managerial, professional, and educational limitations, which must yet be solved in order to provide a professional approach to spatial planning. Another discovery of the research is of a specific pattern of urban shrinkage in the cities of southern Russia where depopulation happens over the background of a growing need for housing and infrastructure construction and an extensive ongoing urban development. Moreover, growth-oriented urban planning itself, which ignores demographic factors, creates conditions for the appearance of negative consequences of shrinkage in the future, such as perforation and fragmentation of urban fabric, abandonment, vacancy or infrastructure surplus, instead of using planning as an opportunity to prevent these effects. The thesis is structured according to its investigative logic of two main issues: urban shrinkage and urban planning and is divided into five chapters. Chapter 1 introduces the topic; describes the goals, scope and structure of the thesis along with the chosen research strategy, materials, methods and information sources used. Three central sections represent the investigation of the phenomenon of shrinkage and planning within the context

of urban shrinkage at three levels: in the world, in Russian context and the cities of southern Russia. Chapter 2 analyses urban shrinkage literature, the representation of the spread of the phenomenon, its perception, definitions and conceptualisation in different contexts. This step allows for placing the case of Russia into the global context and understanding its specificity regarding the probable application of the developed policies in this particular context. More precisely, the situation in southern Russia is studied with an assumption about the necessity of paying particular attention to the shrinkage issue even in that area characterized by most favourable demographic situation and the relatively stable network of small settlements. The next problem was to investigate the accumulated experience in planning for the cities under the conditions of shrinkage. Starting from the world experience, Chapter 3 details the Russian planning practices, applied in the past and currently. Then, in details, it represents a specificity of the policies in southern Russian area. The last Chapter 4 in this section is dedicated to the investigation of the case studies, which includes the current conditions of the cities' development and their strategies and plans. Chapter 5 discusses gaps, mismatches and contradictions in existing approaches, methods and planning tools used in the conditions of urban shrinkage in the world, in Russia and, specifically, in the cities of southern Russia. It also includes conclusions, summaries and

findings and evaluates the possibility of adapting existing international practices in the context of Southern Russia, Russian Federation or, widely, in post-socialist countries in transition critically. It also gives recommendations for the future research. This thesis contributes to the general discussion on urban shrinkage. While the existing literature on the topic is mainly dedicated to various contexts that differ significantly from the Russian situation, this research helps to fill in the important missing element of the Russian experience in the global puzzle of urban shrinkage.

Key words: shrinking cities, urban shrinkage, depopulation, planning, Russia, southern Russia.

THE CITY AS ACTION: THE DIALECTIC BETWEEN RULES AND SPONTANEITY

Stefano Cozzolino - Supervisor: Prof. Stefano Moroni

Co-Supervisor: Prof. Sanford Ikeda (Purchase College - SUNY, New York)

If we recognize the essential role of action in the city functioning (i.e. its creative role for innovation, the importance of localized knowledge, the need for perpetual adjustment and improvement of the built environment, the expansion and the growth of economies and services, etc.), we cannot plan and create the intentional and specific social-spatial configurations we like or desire (due to the unintentional effects of many actions interacting and the impossibility of collecting the dispersed knowledge); we can only create the conditions in which certain negative externalities are avoided and acceptable emergent socio-spatial configurations may occur and adapted over time. Such conditions regard (i) good planning on public spaces to grant certain infrastructures and (ii) good rules for private spaces that allow high degree of flexibility, experimentation and self-organization (i.e. rules that are simple, open, abstract and general, mainly negative, stable and easily enforceable).

After decades of comprehensive and technocratic planning, we can recognize certain limits and avoid them (i.e. the lack of flexibility, the problems and the costs of complex rules, the impossibility to forecast future emergent

opportunities with detailed land-use plans). This doesn't mean that we may neglect the importance of public interventions in addressing cities' development, but that we need to revise some consolidated planning dogmas diffused all along the twentieth century, repositioning our attention on what effectively guarantees cities' survival and wealth: the action. From this perspective, the experimental experience of Oosterwold, as well as other cases of the so called "organic planning" in the Netherlands, are merely

examples of how social-spatial emergent configurations can evolve even without the traditional zoning plan, relying on forms of spontaneous developments and self-organizing processes.

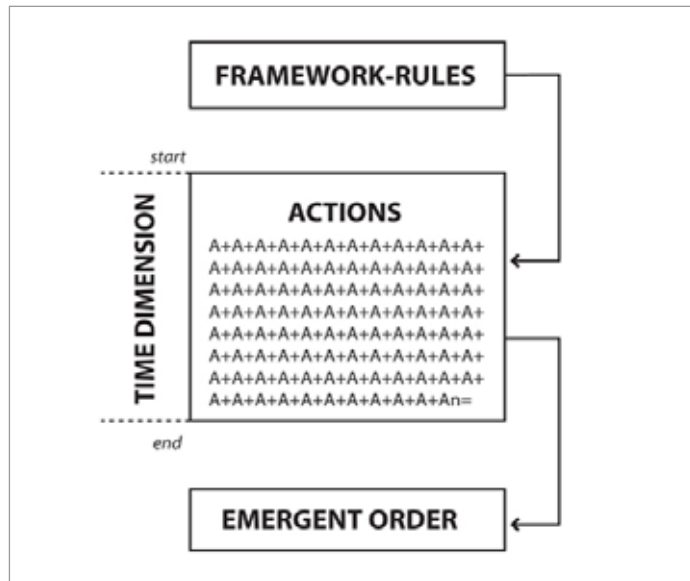


Fig. 1 - The interplay among planning rules, actions, and social-spatial emergent orders in organic planning.



Fig. 2 - the location of Almere in e Netherlands and the Oosterwold Area



Fig. 3 - An example of evolutive and organic incremental development in Oosterwold (July 2015, April 2016, September 2016).

EXPLORING THE DYNAMICS OF URBAN METABOLISM: FROM THEORY TO PRACTICE THE CASE STUDY OF THE METROPOLITAN CITY OF MILAN AND LOMBARDY REGION, ITALY

Gabriela Fernandez - Supervisors: Prof. Eugenio Morello, Prof. Ilaria Mariotti

Today, cities can be defined as highly complex non-static living organisms that are composed of dense concentrations of people, information, material, energy, and nutrients. The intense production and consumption of material and energy require vast quantities of natural resources. The world's cities occupy just 3% of the Earth's land but account for more than 60% to 80% of global energy use, 75% of greenhouse gas emission, and 70% of global waste (UN, 2015). Current practices are depleting the planet's finite resources, changing its climate and damaging its natural ecosystems (World Bank Group Climate Change Action Plan, 2016). Moreover, a wave of international policy visions for sustainable development has recognized the need to use natural resources more efficiently and encourage local governments to implement regulations and tools that support local resource efficiency initiatives (UNFCCC, 2015). However, there has been an insufficient discussion on whether cities and human settlements have the autonomy, capacity, tools, education, and resources to implement sustainable development policies effectively (UN, 2015). Within this context, the dissertation focus on the concept of urban metabolism to interpret the city as a living

organism that is composed of a network and subsystem flows, which travel in/out, transform and release/remain in the city (Wolman, 1965; Kennedy, 2010; Zhang, 2013). Specifically, the aim of this dissertation is twofold: (A) bridge the gap between urban metabolism studies and urban planning practice; (B) develop a process of method guideline choices for future studies in material, energy and pollution flows, spatial planning and preliminary strategic environmental assessment processes. The twofold aim developed the following four phases. Phase 1, a critical literature review on urban metabolism and its relationship

with the urban planning practice. Phase 2, (i) a simplified Step-by-Step Material Flow Analysis method and (ii) Metabolic Scan Sankey visualization model profiles of the Metropolitan City of Milan and Lombardy region's 12 provinces in Italy. Phase 3, a cluster analysis to identify urban metabolism typologies of the 134 municipalities in the metropolitan area of Milan using input, product and output classification flows (material, energy, pollution and socioeconomic) and control variables. Phase 4, an urban metabolism practical nature-based application using fog harvesting technology to identify inefficient metabolism typologies in the Metropolitan City of Milan. The

results from the application of this framework show that urban systems differ based on different spatial scales and metabolic profile characteristics. These findings, allow urban professionals to interpret material, energy, and pollution intensity flow in cities with the use of visualization as an urban planning tool to compare and analyze, report and monitor resource efficiencies while guiding existing/new transitioning cities towards sustainable development policies.

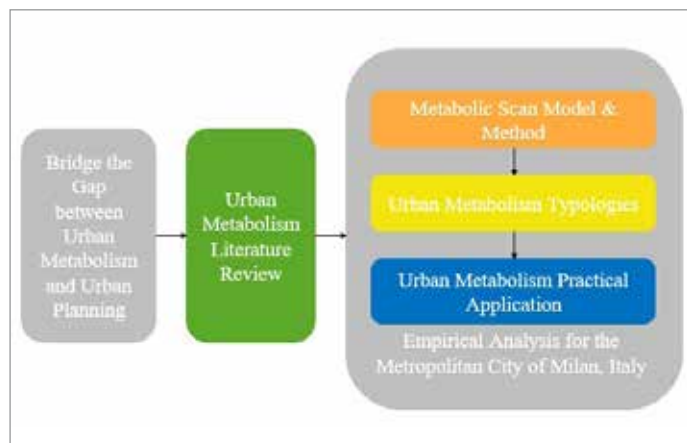


Fig. 1 - Bridging urban metabolism and urban practice dissertation scheme (Author)

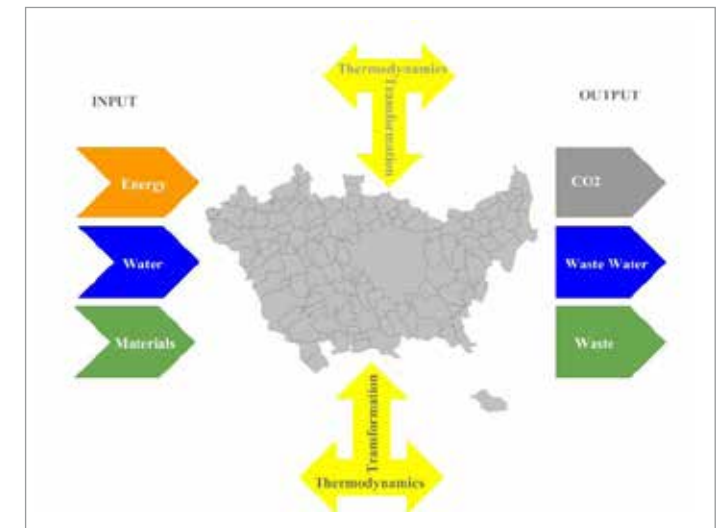


Fig. 2 - Metropolitan City of Milan Metabolic Scan representation (Author)

SYNERGIES AND FRICTIONS BETWEEN MEGA-EVENTS AND URBAN HERITAGE IN THE EUROPEAN CAPITAL OF CULTURE PROGRAM: A COMPARATIVE STUDY OF GENOA 2004, LIVERPOOL 2008 AND ISTANBUL 2010

Zachary Jones - Supervisor: Prof. Davide Ponzini

Cities are increasingly turning to mega-events as part of strategies to secure much desired global recognition and attract future economic investment. These events have a broad range of physical effects on the city, but can also be the cause of more nuanced institutional changes. For historic cities, mega-events can have a profound influence on the city and its protected urban heritage. As events like the Olympics aim to become more sustainable and less expensive, they seem poised to become once again more integrated into existing city fabrics than in recent decades. In light of these changes, how can planning effectively utilize the value of a transnational mega-event program for the greatest benefit to the locale and in particular cultural heritage? One long-term program that has permeated a range of contexts and whose primary activity has been embedded within the city fabric itself is the European Capital of Culture (ECoC). One of the longest running continuous EU policy programs, the ECoC has operated for 30 years, travelling amongst 50 cities and counting.

With its purpose of promoting culture, the ECoC is often used to present a new image of the city and can act as a pivotal moment for historic cities to determine

or reevaluate their approach to their built heritage, not only for the event, but for the long-term. Framed through the lens of value-theory, the thesis seeks to understand how a transnational mega-event transfers “value” to local conditions, in specific regard to the urban heritage of the city. For this research, urban heritage will be investigated in terms of: 1) physical changes 2) preservation policy 3) governance and 4) definitions of heritage. The research will be conducted through a comparative case study analysis of the European Capital of Cultures of Genoa 2004, Liverpool 2008 and Istanbul 2010 three diverse cases with different event themes and roles for heritage within varying planning systems.

The international comparative analysis of three case studies provides the opportunity to observe how a mega-event performs and operates at a local level while the three international cases provides the opportunity to examine how the event transforms within different contexts. The research used secondary sources including original bid books, programs, books and evaluation reports produced specifically for the event to complete a discourse analysis. Primary sources consist of interviews event organizers;

conservation officers /city officials, scholars, researchers and experts as well as relevant local stakeholders. A site analysis of present day conditions of heritage based projects was also conducted.

The research contributes to urban planning studies through an increased understanding of the use of transnational mega-events as an urban strategy, with specific focus on urban heritage. The work introduces a value theory framework to bridge between the existing literatures of mega-events and their ability to impact and potentially alter urban heritage. This framework allows to consider mega-events beyond just their economic impact and view their relationship with the city and society from a more holistic perspective.

Keywords: Urban heritage, mega-events, European Capital of Culture, comparative case-study, value theory

THE LEGACY OF HENRY GEORGE. LAND VALUE TAXATION TODAY

Luca Andrea Minola

Supervisors: Prof. Fred E. Foldvary (San Jose State University); Prof. Stefano Moroni

The thesis examines in detail the theoretical framework on which Henry George's proposal is based. In particular, the initial chapter critically reconstructs it by analysing not only *Progress and Poverty* - George's best-known book, which is generally claimed to be one of the "best sellers" in the history of economics (Barker 1991) - but also his other work as mainstream economists. The second chapter contains an analysis of main criticisms of public revenue from land rent. Economists from various schools of thought have critically analysed Henry George's theory. Although all of them would deserve a detailed analysis, the second chapter deals only with the criticisms of Herbert Spencer, some adherents of the Austrian school of economic thought and Frank Knight. Using these critics, it is possible to bring to the fore the debate concerning the private ownership in land and the role of land in wealth production, i.e., land as a distinctive factor of production versus land as just a type of capital good. Such criticisms also facilitate the highlighting of some relevant aspects that are not often considered, but that are claimed to undermine the implementation of land value taxation.

The third chapter aims at bringing Henry George's proposal up to date, analysing and articulating the perspective of Neo-Georgism, defined as an attitude or point of view - one that may concede that Henry George's theory and proposal were vulnerable, but maintains that, when all is said and done, he was right on the essentials. In this perspective, therefore, the term Neo-Georgism refers to a specific policy program reflecting this outlook. Finally, the last chapter analyses whether the proposal of Henry George can work and have a chance of success.

COMMUNITY ENERGY ENTERPRISES: COMMUNITIES, SOCIO-INSTITUTIONAL SYSTEMS AND MANAGEMENT OF THE FUTURE DISTRIBUTED ENERGY GEOGRAPHY

Luca Tricarico - Supervisor: Prof. Stefano Moroni

The debate on distributed energy systems is evolving in a way that enlarge the domain of traditional energy policy, especially regarding institutional and organisational aspects. The crucial issue here is that in a distributed energy system distribution we may refer not only to production units, but also to ownership, decision-making and local responsibility as regards new forms of energy provision, infrastructures and organizations. The thesis focus the role of Community Energy Enterprises (CEE) on contributing to the diffusion of a Distributed Energy system¹, by triggering virtuous processes of mobilization of local resources. This contribution argues that these two aspects are partially intersected: the role of these organizations in fact reverses the way we are used to thinking about urban planning practices and responsibilities in both general terms and in specific aspects related to energy issues. Therefore, this thesis intends to answer the following research questions: is the role of these organizations desirable and why? which “bottom-up”

activation policies and tools may be worthy to make their developments accessible and feasible?. The present thesis CEE and distributed energy production hinges mainly on questions of technology and engineering; at most, some reflections on economy are thrown in for good measure (World Economic Forum, 2017). The present article is focused on the institutional and organisational implications involved, which may be crucial and to date have received only limited attention (as underscored by Ribeiro et al., 2012, Sovacool, 2014). In this regard, Friedrichsen et al. (2014, p. 264) observe for instance that “the institutional set-up of the [distributed] smart system is still uncertain”. Johnson and Hall (2014, p. 149) likewise observe that: “The systemic institutional transformation necessary to support wide-spread adoption of community/decentralised energy schemes ... [has] received limited attention to date”. Therefore, the issue here is that a distributed energy system ‘distribution’ may refer not only

to energy generation units, but also to ownership, decision-making and local responsibility as regards energy supply (Alanne and Saari, 2006). In this perspective, this work intends to be part of the recently born disciplinary framework on energy and social sciences, arisen in order to cast the net wider and include social-organizational and institutional issues alongside the more technical aspects of distributed energy production (Moroni & Tricarico, 2017). This results from what some scholars (Goldthau, 2014) have underlined as an evident lack of governance innovation to promote the diffusion of a distributed energy system, disrupting the top-down techno-centric structure of the current institutional layout within markets, infrastructures and regulations (that are going to be discussed in-depth in the next sections). The hypothesis is that Community Energy Enterprises may be considered as a major attempt to innovate the governance of the current energy system, as part of a *socio-material* transition, involving innovative

organizations, institutions and approaches in users and citizens’ engagement (Calvert, 2015). With these objectives the thesis discusses in a multi-scalar perspective the role of this specific organizations may innovate the governance of the current energy system, as part of bottom-up based *socio-material* transition in the energy market: mobilising specific territorial factors, institutions and approaches in users and citizens’ engagement. Debating from a planning theory and public choice perspective, we might cast a general reflection on how the theory of Community Energy Enterprises adds a radical contribution to the Distributed Energy planning debate. In particular, it may be possible to question the present framework of public control over the energy grids and infrastructure, which is still configured on a centralised model of production and distribution. It goes without saying that a Distributed Energy system must likewise operate according to a set of safety and security common public standards. The role of the Regulation Agencies will be vital to establishing standardized requirements and universal protocols. In this case, the principal “infrastructure” that a public party can offer is the guarantee of universal legal safety and security standards, which are stable and impartial, that will guarantee equal access to new options. Considered in this way, the law could constitute the framework for the multiple (local) utopias of which Nozick (1974) spoke: that is, a general and abstract institutional framework

within which the most varied of local utopian arrangements can flourish. Nozick observed that dreaming of utopia is a positive element for the human spirit. Nevertheless, many scholars make the mistake of imagining a utopia that is universal for the whole of society – something impossible in a plural and complex world. Conversely, what can really be accomplished is to imagine a general and neutral institutional framework that would allow for numerous local utopias. As Nozick (1974: 311- 312) observed: there will not be only one kind of community and only one kind of good life; “utopia will consist of utopias, of many different and divergent communities in which people lead different kinds of lives under different [private] institutions”. In brief: “Utopia is a framework for utopias, a place where people are at liberty to join together voluntarily to pursue and attempt to realise their own vision of the ideal life within the ideal community, but where no one can impose his own utopian vision upon others”. Nozick noted that the framework for utopias has two fundamental advantages over every other kind of substantive utopia. In the first place, it will be acceptable to almost every utopian vision. In the second place, it will be compatible with the realisation of almost all specific utopian projects, though it does not guarantee the universal triumph of any of them (ibid.: 318-319). Obviously, it is not possible to be sure that all individuals would be fully qualified to enter this new world and many important caveats

must be considered and taken into account (Hoffman and High-Pippert, 2005). But nor can it be assumed that there is something intrinsically impossible from a cultural and social viewpoint. Moreover, there may also be equity problems, such as unequal access and energy poverty issues (Adams and Bell, 2014). As regards energy poverty, one can imagine that a radical reorganisation of the tasks of the public subject, which would provide more space for experimentation of residential aggregations (or of other kinds), in many cases would ensure more economical access to certain services. Is also true that micro-grids and smart technologies require investments that not every local community may be able to afford. Therefore, combating “energy poverty” through CEEs may represent a challenge not only for developing countries, but also for many developed countries (Oldfield, 2011). Surely, abandoning the traditional model may provide considerable amounts of relief for public resources – now used to maintain costly centralised public systems – which could be used to come directly to the aid of the poorest groups unable directly to take advantage of the new options.

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1. Distributed Energy (or Distributed Generation) is an electrical generation and storage performance, made of a variety of small, grid-connected or off-grid devices referred to as distributed energy resources (DER). On the contrary power stations such as thermal coal and gas, nuclear powered plants, as well as hydroelectric dams can be considered as large-scale power stations, centralized and often connected to an energy transmission network over long distances. By contrast, DER systems are decentralized, modular and, in certain conditions, may be more flexible technologies, especially because they are usually located close to the demand they serve.

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URBAN MOBILITY AS HUMAN CAPABILITY. BRIDGING THE GAP BETWEEN TRANSPORT PLANNING AND INDIVIDUAL OPPORTUNITIES

Giovanni Vecchio - Supervisor: Prof. Karel Martens (Radboud University Nijmegen, Technion Haifa)

Supervisor: Prof. Paola Pucci (Politecnico di Milano)

The research focuses on the impact that everyday urban mobility can have on the opportunities available to each person. Everyday mobility appears as a pervasive, taken-for-granted feature of contemporary societies. Mobility is a dynamic and relational phenomenon, shaped by personal, social and spatial features that affect individual opportunities. The access to social resources allowed by the everyday spatial mobility is in fact fundamental to take part in a society built around the assumption of high mobility: if missing, social disadvantage and exclusion derive. However, the prevalent approaches to urban transport planning and policy often do not encounter the mobility needs of people, nor their impacts on individual opportunities.

To convey the impact that everyday urban mobility has on the opportunities available to people, the research aims to propose an approach to urban transport planning and policy focused on individuals' capabilities. By capabilities, the research refers to the wide definition given by Amartya Sen, and developed by Martha Nussbaum: these are individual abilities that contribute to the individual freedom to lead one

kind of life or another, according to what each person has reason to value. While the approach has been rarely considered in relation to transport planning and policy, urban mobility is instrumental to enhance the people's freedom of achieving functionings and things that they have reason to value. The capabilities approach is receiving an increasing theoretical attention; instead, related approaches to urban transport planning and policy are missing. Therefore, the research intends not only to provide a better understanding of the role of urban mobility for the enhancement of individuals' capacities, but also to elaborate recommendations regarding how urban transport planning may foster individual opportunities. The research moves from a theoretical framework that explains the work and provides a discussion of how an approach focused on capabilities could usefully conceptualize urban mobility, according to its relevance for individual opportunities. Then, operational directions for capabilities in transport planning are explored, using Bogotá as a significant testbed: the city has promoted significant, explicitly socially committed public transport investments that nonetheless had limited benefits on the huge marginal

settlements of the city. Three are the approaches here tested, drawing on fieldwork extensively led in Bogotá: first, how transport systems may support individual capabilities, referring to a technical evaluation of urban accessibility to a basic set of opportunities; second, how everyday mobility contributes to people's capabilities, drawing on individual microstories of mobilities and opportunities collected in two marginal settlement of the city; third, how the focus on capabilities may generate a distinct framework for urban mobility policy. Finally, the relevance of a capabilities-based approach to urban mobility is discussed, as to improve both the current understandings of urban mobility, both the operational approaches to tackle its issues. Exploring the relationship between urban mobility and individual capabilities, it is possible to improve how transport planning currently contributes to increase the opportunities available to each one of us, by bringing a philosophical approach - capabilities - in a deeply technical field - urban mobility planning and policy. The idea of mobility here proposed is an instrumental one: the ability to overcome spatial friction is relevant for the opportunities it gives us - chiefly, the ability to reach locations and

participate in activities that anyone of us may consider as important. Such view, increasingly present in different research streams, requires nonetheless to deal with real-world planning practice. The main contribution of the research is the combination of established approaches to mobility that until now have not dialogued much. The research in fact does not provide any new heuristic tool to investigate the relationship between mobilities and capabilities, but rather tries to develop a coherent approach to bring individual opportunities into transport planning. The contribution is threefold. First, the theoretical framework of capabilities defines a space for combining together accessibility evaluations and microstories of mobilities, mixing an aggregate, quantitative tool with a bottom-up, qualitative approach. Second, the two approaches are not defined from scratch, but rather are refined in the light of capabilities, to privilege those features more significant in relation to the individual freedom of choice over alternative lives. Third, these tools are intended to guide urban mobility interventions, defining where to intervene first in order to guarantee sufficient access to urban opportunities. The proposed multi-dimensional reading of mobility combines thus the two main approaches used in the field of capabilities, the 'distance assessment' based on objective evaluative approaches on the one hand, and the 'grassroot exploration' focused on subjective approaches on the other. These approaches intend to provide

a reading of what exists and at the same time offer the basis for creating new opportunities; that is, to understand how transport systems work and are used in relation with what people value, to make way to further significant opportunities. The proposed evaluative approach is relevant in relation to the subsequent policy framework, to deal with the real-world features and issues that would affect the implementation of the suggested tools. According to the setting examined, the proposed approach may receive different uses, reshaping the evaluative tools and opening space for varied options for intervention. The focus on *urban* mobility does not limit the settings in which the approach may be adopted: the definition of urban conveys a form of life rather than a typology of settlement, and a capabilities-based approach to mobility could be significant also in non-urban contexts. Depending on the setting and on the most pressing issues to face, institutions - the subjects primarily involved in a work focused on urban planning and policy - may differently inflect the interest in fostering individual capabilities through interventions on mobility. Such interest may take into account traditional forms of intervention, for example providing transport services and infrastructures; or may consider to tackle mobility demand and offer by using service coproduction and demand matchmaking; or may even embark in long-term planning, defining future land use strategies more attentive to the issues of access to urban opportunities.

Together with the theoretical and practical issues that deserves further research, a pressing question underlies the real-world impact of the proposed approach: how to assure that institutions, together with the other actors in the urban mobility arena, are interested in fostering capabilities and act consequently, also when dealing with transport planning and policy. A knowledge that intends to have whatever small impact on the real world needs to be at least aware of this dimension. In this sense, it is necessary to demonstrate that an approach that addresses urban mobility having in mind individual capabilities is feasible and relevant. As for the feasibility, this work hopefully provides some elements that go in this direction. As for the relevance, many elements may contribute to support it: theoretical debates, empirical data, even first-hand experiences. All elements that once more reflect the richness of each person and, when combined, the complexity of contemporary urban life.

THE VITAL PRESERVATION OF CHINESE HISTORIC QUARTERS FOR CONTEMPORARY LIVING: RECONSIDERING THE ITALIAN PLANNING TRADITION IN THE PHYSICAL MAINTENANCE OF THE HISTORIC CITY

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China is rich in urban heritage, but has faced with exceptional pressures on redevelopment and other changes. Urban conservation in China, which is influenced by Western experience, has its own characteristics, reflected on its distinctive philosophical and cultural traditions and the political-economic conditions. Essentially, its specific conservation ethics, *teleology*, and *axiology*, i.e., the long-term under-appreciation of tangible heritage and specific tradition of not pursuing long-lasting physical shapes, produce some difficulty when adopting and interpreting international modern conservation ideas that derived from the West. In recent years, China has witnessed that the destruction of historic cities and fabrics was shifted from urban development projects to the so-called 'conservation', particularly the pseudo-historical conservation projects. Main culprits involve in both the lack of a unified consensus on the necessity of maintaining physical consistency, and the diversified understanding and different implemented approaches on the Western conservation doctrine and principles.

This research begins with those two issues, discussing the necessity, legitimacy, and

significance of maintaining physical consistency on the metaphysical dimension of China's urban conservation; and comparing the differences, interactions and links on urban conservation in China and that in the West from institutional, legislative and practical dimensions, particularly clarifying some apparently similar concepts.

Moreover, aiming at better addressing the maintenance of the physical consistency in China, the study looks at Italian rich experience, in particular, the methodologies and planning devices on the specific care for historic urban fabric since the 1950s. Specifically, the typology and morphology-led planning techniques are focused, which may be classified into two categories: one is 'by single bits' – an action by single buildings managed through architectural types as engine of the planning action; and another one is 'by recognizable parts' – ways and alternatives in interpreting and ruling morphological units in the historic urban landscapes. These techniques are explored on three Chinese cases, in which the more suitable planning devices are discussed for addressing specific planning problems. The three cases are selected through a careful, sensitive and

holistic consideration, not only as representatives of three different Chinese historic quarters, but also as a reflection of three typical but distinctive situations and challenges of present Chinese historic quarters.

On Three Lanes and Seven Alleys traditional historic quarter in Fuzhou, since large-scale pseudo conservation was completed, the study does not focus on making alternative plans. Rather, it presents a critical review of its planning attitudes and choices evolving in three phases, and physical planning approaches, through a comparative discussion with two concurrent domestic cases - Xintiandi and Pingjiang Road Historic Quarter and the Italian experience. With a specific concern on the typological approach, the project of Three Lanes and Seven Alleys is criticized due to its inappropriate typological requalification – creating imitated pseudo models to replace historic fabrics in a broad-brush way.

On Gulangyu Island colonial historic quarter in Xiamen, one of the most famous touristic attractions in China, the study aims at addressing the growing imbalance between developing tourism and improving local liveability. In the light of Italian

experiences, particularly the morphology-led planning techniques, a two-pronged project is developed for a physical and social preservation through recognizing landscape units and framing corresponding strategies: (1) by 'systems' – four local characterized systems related to the leading practice of uses that characterizes each of them; (2) by 'parts' – four typical featured areas with respective special spatial-social dimensions that characterize crucial challenges.

On Yingping mixed characteristics historic quarter in Xiamen, the municipal large-scale planning intervention has not been taken. The quarter is still a living and vital part of the city, but facing poor liveability and growing insensitive private intervention that has destructed historic urbanscape. Learning from Italian planning technical lessons, in particular, the morphology-led technical approaches, this study outlines a two-pronged multi-layered fertile interpretative structure, aiming at maintaining historic urbanscapes and improving living conditions: (1) from the maintenance-oriented perspective, five intervention ways are grouped according to different grades and interventions for making rules to support and rule macro and

micro interventions, with a specific focus on the leading structural elements of the urban fabric – the arcades' streets, producing detailed possible treatments for the sequences of arcade buildings and the constituted urbanscape; (2) from the morphological view, six characterized areas are identified and classified with respective morphological features and facing crucial planning issues for discussing corresponding optimizing strategies and suitable guidelines.

To conclude, this study explores the possible interpretation of technical tools and experiences of Italian planning tradition on the physical maintenance of China's urban conservation, particularly in various historic quarters. Through this research, the possibility is demonstrated that such European, or more precisely Italian, ways may be deployed in the Chinese context for better addressing its various heritage problems. The dissertation is also expected to form a basis for future research on the way in which urban conservation in China can be further improved, particularly on planning attitudes and tools.