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New pathways for sustainable urban development in China's medium-sized cities

Urban China and the challenges of sustainability

Presentations' abstract



SESSION: Spatio-temporal behaviour in complex urban systems

The SimpopLocal model or what the period of emergence of cities can tell about urban dynamics

DENISE PUMAIN

Géographie-cités, University Paris 1 Panthéon-Sorbonne

Abstract: The SimpopLocal Model is a model of multi-agents systems designed for reconstructing the emergence and spatio-temporal evolution of a set of cities in a territory. Such an early period in time enables to focus on dynamics properties that are both specifically urban (compared to those of nomadic settlements and villages) and sustainable until the present time. That means considering relatively invariant processes at a rather abstract level. The academic literature in history and archaeology provides large evidence about the initial environmental conditions which favored the emergence of cities (Bairoch, 1985; Diamond, 1997). Geographers insist on the specific societal and spatial functionalities that are associated to the category of a city (Wheatley, 1971) and the organization of cities as “systems within systems of cities” (Berry 1964; Reymond 1971; Pred 1977; Archaeomedes 1996). From that literature we identified stylized facts which could be selected for featuring the development of any system of cities, within the framework of an evolutionary theory of urban systems (Pumain 1997). A review of dynamic models of settlement systems (Schmitt & Pumain 2013) helped in choosing methods for implementing the elements and rules in the SimpopLocal model (Schmitt 2014). In that model we define a set of about 100 cities as agents that are spatially interacting through a communication network. Cities are places grouping a population and amount of resources that may vary over time. An innovation process occurs in cities in an endogenous way, as a random consequence of interpersonal interaction. Urban growth of population and resources is linked to the creation and adoption of innovation. Innovation is propagated between connected cities according to a model of spatial diffusion following a gravitational pattern of probabilities. The expected issue of the model is to simulate the emergence of a sustainable system of cities characterized by a Zipf like distribution of urban populations with a maximum size of about 10,000 inhabitants for the largest after a period of about 4,000 years. Experiments with the model were made in developing simultaneously the scalable simulation platform OpenMOLE (Reuillon, Leclaire & Rey-Coyrehourcq 2013). Specific validation methods using evolutionary algorithms and distributed computing were implemented for producing reliable results of a quality equivalent to a full exploration of the parameter space (Reuillon et al., 2015). From that we were able to identify which are the necessary and sufficient conditions for the emergence of a system of cities (Schmitt et al. 2015; Pumain, Reuillon 2017).

Urban wind path analysis and planning, supported by GIS and remote sensing

QINGMING ZHAN

Research Center for Digital City, School of Urban Design, Wuhan University

Abstract A number of ecological problems have emerged in the process of fast urbanization. Urban Heat Island (UHI) and Air pollution are typical negative byproducts of urban expansion



and population growth. Urban planning has not given full consideration to wind paths or corridors, and this has worsened heat island effect. Decent natural outdoor ventilation can be a crucial mitigation of UHI effect and optimization of urban thermal condition, it also contributes to enhancing human comfort and reducing energy consumption. Negative effects of pollutants concentrated in high density built environment can substantially be relieved through optimal air flow. Based upon remote sensing derivation, GIS modeling, spatial analysis, and CFD modeling, the research uses remote sensing to analyze urban heat island effect and evolution, uses local weather data and WRF model to locate wind resources and environment, applies GIS-based surface roughness evaluation as indicators to derive ventilation potential in dense urban areas and uses CFD simulation tools to find wind entrance, wind paths. The integration of different approaches provide solid bases and tools for urban spatial planning and redevelopment to be able to cope with issues related to climate change and low-carbon city. Several case studies will be introduced which have been implemented in some Chinese cities such as Wuhan, Fuzhou and Zhanzhou. The methodology of wind path detection and exploration derived from the research can be utilized to guide and support the planning of urban ventilation paths.

Keywords: Urban Ventilation, Urban Morphology, Wind Path Planning, Air Flow, Urban Heat Island, CFD, GIS, Remote Sensing

Modeling hierarchy of a system of cities as a result of the dynamics of firms' interactions

MEHDI BIDA, CELINE ROZENBLAT and ELFIE SWERTS

Institute of Geography and Sustainability, University of Lausanne

mehdi.bida@unil.ch, celine.rozenblat@unil.ch, elfie.swerts@unil.ch

Abstract: One of the main characteristics of systems of cities is the cities' size distribution. This characteristic has extensively been studied by geographers (Christaller, 1933; Berry, 1964; Pred, 1977; Bourne, 1984; Pumain, 1982; Batty, 2005; Pumain *et al.*, 2006), and more recently by physicists (Makse *et al.*, 1995; Schweitzer, & Steinbrink, 1998; Bettencourt *et al.*, 2007). All this literature underlines the remarkable constancy in space and time of Zipf's law of distribution of sizes (Zipf, 1941). It has been shown that the sole account of the diffusion of innovations across the network that cities form, is necessary and sufficient to reproduce the observed characteristics of urban systems (Bura *et al.*, 1996; Pumain, Sanders, 2013). However, the developed models always considered the entire city as the unit in the urban system like in the Simpop model (Pumain *et al.*, 2017). In our approach, the model aims at reproducing the observed hierarchy of urban systems, but with a complete bottom-up approach from the micro-agents, to the meso level of each single city until the macro level of system of cities with the minimum assumptions. In the model, the cities forming the urban system are the results of micro-agents' interactions. We use an agent-based model where agents are localized producers and representative consumers. Producers are under a monopolistic competition (Dixit, Stiglitz, 1977), and face two different costs to make their products available to consumers: the production cost and the transportation cost. Each producer is endowed with a technology level: higher technological levels



decrease the production cost. Using the variation of the profit that the producers make from each representative consumer as a signal, they change the quantities made available to each representative consumer in order to make higher profits. Under this setting, each producer faces costs and competition from other producers, such that it may have negative profits in case the quantity it produces is sold at a price that does not cover its costs. Eventually a producer exits the market if it does not have the sufficient funds to cover its production and distribution costs. This will select the producers depending on their competitiveness. Given that competitiveness depends on the distribution cost, *surviving* producers are expected to be located close to consumers. The resulting spatial distribution of producers, will allow to verify whether this minimal model is sufficient to induce a hierarchy of sizes (number of producers, profit) around the representative consumer. We will explore the role of the variation of the distance cost and of the differential of technology across firms on the formation of the hierarchy of settlements.

China's small townships: the development, functions and challenges in a new transition context

PENGJUN ZHAO

Peking University

Abstract: It is widely believed that townships is a vital type of human settlements, and play an important role in connecting cities and the rural areas, and promoting regional sustainable development. A large proportion of people are still living in townships in the World although urbanization has resulted in a rapid growth of population in cities. In China, there are more than 20,000 small townships which has a population less than 100,000 in China. Development in China's townships, however, has been facing problems with a decline of the number of small townships, a loss of population and labors, a shortage of job opportunities, low quality of living, deterioration of environment, etc. In particular, there are increasing arguments between politicians and researchers and about do we really need pay attention to development of small townships as the recently issued New Urbanization Plan in China states city and urban agglomeration should be the main form of urbanization in the next decades. The paper aims to contribute fresh answers to the arguments by using the data from a recent state-wide in-depth on-site survey to 127 townships. Three key researcher questions are answered: what are the development facts of the small townships? what functions or roles the small townships are playing? and what challenges to sustainable development of the small townships? Following answering these three questions, the paper discusses potential strategies for sustainable development of small townships in China in a new transition context.

Keywords: townships; small townships; sustainable development; urbanization; transition; China

From micro to macro and back again: a case for urban data science



FABIEN PFAENDER

ComplexCity Lab, University of Technology of Compiègne/Shanghai University

Localized social networks, physical IOT sensors, crowd source Point Of Interest (POI) service or open map services provide researchers with wide range of micro-local traces. These markers of activities or structure are enabling complex investigations for the benefit of new kind of urban studies. But more than just providing a strong experimental foundation for various city approaches, we advocate that these data together with data science can become a common language for all sciences working on cities. Massive data handling capabilities given to data experts can maximize scientific efficiency. The science of cities then become a symbiotic coupling between urban data scientists acting under the guidance of field scientists. In this presentation we will (a) present the vast variety of digital traces able to describe cities and the micro local environment as a new trend for urban analysis. Then we will (b) describe how we used these traces to create macro level models using data science techniques. This strategy will then be applied as an example to (c) study urban road grid structure and provide citizens custom micro local pathways in cities.

Where to live in the arrival city: a spatiotemporal mobility approach

YANG YUE

Shenzhen University

Abstract: With the population of about 20 million, Shenzhen is definitely not a medium-sized city. However, there are 10 districts in Shenzhen, and each district is similar to a medium-sized city in terms of population and GDP. The developments of these districts are unbalanced, they vary at economic level, industrial structural, and housing price; and therefore, each district has made great efforts to establish its own development strategies and distinguish themselves from the others. Since the central districts have become more gentrified, there is a chance for the other districts to attract more industry investment and population. This study used transit smart data to monitor the trend in a continuous and dynamic manner, and results identified a notable intra-city migration pattern dominated by subway systems and property price. The rapid development of Shenzhen, to a great extent, owes to the immigration. Existing urban renewal strategy is likely to decrease the attractiveness of the city, especially to the young group which is the driving forces of innovation and creativity. Understanding the intra-city migration pattern could help each district establishing and adjusting its development strategies considering both cooperation and competition with surrounding districts.

A macro-scale model of co-evolution for cities and transportation networks

JUSTE RAIMBAULT

Géographie-cités, University Paris-Diderot - Paris 7 / MEDIUM fellow



Abstract: The complexity of Urban Systems is closely linked to the co-evolutive character of their different components or agents (Pumain, 1997). In the case of cities and transportation networks, this co-evolution has been shown empirically (Bretagnolle, 2007) but remains poorly understood in terms of its dynamical processes. We introduce a model of spatial interactions between cities at the macro-scale, in the spirit of stochastic urban growth models inheriting from the Gibrat model (Favaro and Pumain, 2011). We include evolving transportation networks, in order to explore stylized hypothesis on the interactions and drivers of the growth of both network and cities. In a multi-modeling fashion, the model can take into account various processes such as between cities direct interactions, network-mediated interactions, feedback of network flows, and for the network demand-induced growth. The latter is tested at different abstraction levels that are the time-distance matrix between cities, and physical network growth trying to satisfy greedy time-gain optimization criteria. We use as a benchmark network the geographical shortest paths that have been shown in a previous work to already capture network effects (Raimbault, 2016). The model is tested and explored on synthetic city systems, generated following a simple heuristic to follow the rank-size law and Central Place Theory. The systematic exploration through intensive computation unveils different interaction regimes across the parameter space. In some, the introduction of the network can drastically change the fate of some cities, whereas the top-distribution hierarchy is reinforced, what is consistent with empirical observations in the literature. Some regimes actually exhibit circular causalities between network and city growth, corresponding to the intricated co-evolution. The model will be applied to the French Urban System on long time dynamical data (Pumain-INED database for populations spanning between 1831 and 1999, with the evolving railway network from 1850 to 2000, and a specifically-designed database of the highway networks containing its full genesis from 1950 to 2015), and to the Chinese Urban System after 2000 with the High Speed Rail (HSR) network, both realized and planned. Expected results concern both accurate city population growth reproduction, and network patterns, i.e. how does taking into account dynamical networks can introduce further exploratory power in such models, and reciprocally how can such coupled models produce realistic networks compared to more classical autonomous models of network growth. The role of medium-sized cities on the trajectories of the system can also be examined with the model. Finally, a comparison between the urban systems in different geographical and political contexts and at different scales should unveil implications of planning on the interactions between networks and cities, for example by comparing the rather bottom-up growth of the French railway network to the top-down state-planned French highway and Chinese HSR networks.

SESSION: Population ageing and living arrangements of old people in Chinese and European cities

Living arrangements of the elderly: a new perspective from choice constraints in china

YANG ZAN

Institute of Real Estate Studies Beijing, Tsinghua University



Abstract: As the foundation of elderly care, living arrangements are closely connected with the physical and psychological well-being of the elderly and the social resources allocated for them. The objective of this study is to understand the constraints between the preferred and actual choices of elderly living arrangements in China. We first establish a standardized theoretical model and derive two hypotheses on choice constraints. Based on the CHARLS database, we empirically test the theoretical hypothesis based on multiple-step empirical tests. We find the correlation between elderly income and the likelihood of living with their children is nonlinear, we also find the poorer the health status of the elderly, the greater the likelihood that they live with their children, particularly if they have daughters. The results are robust after controlling for the potential endogeneity issue, the passive choice situation, and volatility in preference.

Planning for elderly care facilities in Beijing: application of new concept and model

XIAOLU GAO

Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences

Abstract: Rapid population ageing and weakening family support ability in China bring huge demand for the social supply of elderly care (EC) services and EC facilities. In recent years, the governments have poured a lot of resources on the construction of new elderly care facilities. However, there are distinctive mismatches between the provision and real demand in terms of pricing, quality and location. A critical reason for this relies on the flaw of traditional planning method, i.e., to allocate public services of areas according to the amount of population, assuming that people would select the nearest facilities and that the demand of different demographic groups are similar. This spatial and social homogeneity assumption, however, does not hold with older people's demand for EC facilities in the real world. In this research, the concept of "EC zone" is proposed, i.e, the spatial unit identified from homogeneous demand, to precisely represent the demand in different areas. With this idea, the methods and models to support the planning of EC facilities are developed.

The challenges of the French « reverse mortgage » system (*viager*)

NATACHA AVELINE

Géographie-cités, French National Centre for Scientific Research (CNRS) / University Paris 1
Panthéon-Sorbonne

Abstract: Against a background of shrinking welfare provision, housing equity of elderly homeowners has emerged as a key asset that can be exploited to co-finance pensions and secure ageing-in-place. This has spawned the development of reverse mortgage schemes in which 'asset rich, cash poor' senior homeowners can borrow money against the value of their home. Under this scheme, no repayment of the mortgage (principal or interest) is required until the homeowner dies and the home is sold. The principle of de-locking the wealth stored in the home is regarded as a particular important option in China to alleviate the burden of public finance and improve the life of the elderly in a context of rapid aging. Some experiments based on the US reverse mortgage system have already been launched in big cities. Although the principle is at odds with China's current cultural environment, it



provides promising perspectives in country where the national pension fund is expected to face a deficit of \$116 trillion by 2050. Yet the forms of extracting wealth from housing equity varies across countries. France has developed a scheme called 'viager' that is usually considered equivalent to reverse mortgage. Yet despite significant efforts to modernize this scheme, the *viager* has not gained similar success as its US and UK counterparts. We conducted an empirical study to analyze the blockages of the *viager* system, and find three weak points. The first one is inherent to the concept of *viager* itself. It is in fact not a mortgage, but a division of property rights between the bare ownership and right of use payments. If the senior's death occurs before the expected term, the monthly payments will stop and the purchaser will make a profit; conversely, if the senior's life is longer than expected, the cumulated amount of investment will exceed the actual home market value at the time of the transaction. Therefore, *viager* transactions do not only involve risk but also a macabre dimension. The second weak point is the lack of knowledge and the atomization of practices in this market. Because *viager* is not a mortgage, the assessment method of the initial lump sum and monthly payments are difficult to standardize. Given the case-dependency and relative complexity of these methods, *viager* transactions tend to be undertaken by specialized real estate agencies, which concentrate in only two regions, i.e. Paris and Nice regions. In addition, the demand for *viager* homes mostly emanates from investors who seek exclusively housing units locating in central areas or in upper-class neighborhoods. *Viager* markets are consequently characterized by a strong spatial mismatch between demand and supply, which not only hampers their development, but also causes an issue of spatial justice. These results suggest that *viager* is not, in its current form, a viable model for policies seeking aging-in-place.

Living condition and planning issues for aging in place: the case of Shanghai

YIFAN YU

College of Architecture and Urban Planning, Tongji University

Abstract: The body function declines during the aging process that usually leads directly to the decline of quality of life. As the majority of Chinese elderly people travel by walking in daily life, the built environment and supportive services nearby in the community and surroundings are critical. This study has been conducted in the center city of Shanghai during 2010-2016. The communities under investigation were classified in terms of morphology, but all of them had the common characteristics of high population density, high proportion of aging, and concentrated demands of elderly service. The database consists of two major parts: 1) A total of 1,872 valid questionnaires of aged residents; 2) The GPS records obtain from virtue of smartphones lasted 102 days. Through the subjective satisfaction evaluation and objective trajectory data analysis, we got a further understanding of the major factors in the built environment that promote healthy aging. We believe this is an alternative way of participatory planning for the decision-making during the adaptive urban renewal, which may contribute to the related planning practice as a scientific basis.

SESSION: Urban China sustainable development



Competitiveness and sustainability of China's mega city-regions

NING YUEMIN, ZHANG FAN

Center for Modern Chinese City Studies, East China Normal University

Abstract: With the acceleration of urbanization in China, mega city-regions have become the national and regional growth poles and main spatial form to promote urbanization. Based on six indicators, this paper uses the data of the fifth national census to identify 13 mega city-regions with a minimum population of 10 million in 2000. Then, this paper proposes a multi-index evaluation system to calculate the competitiveness of 13 mega city-regions. The chosen indicators come from the perspective of population size, economic development, transport accessibility, integration in global economy and development of science and education. The result shows that there are great disparities in competitiveness across different mega city-regions. Yangtze River Delta, Pearl River Delta and Beijing-Tianjin-Tangshan are the top mega city-regions with the highest level of development and have significant global influence as well. Chengdu-Chongqing in west China and coastal regions such as south central Liaoning and Shandong peninsula belong to the second tier of mega city-region which has relatively strong national influence. Remaining regions belong to the third tier which only has limited regional influence. Moreover, the competitiveness of a mega city-region more likely depends on the advanced functions of its core city. Finally, this paper particularly concerns about the sustainable development of China's mega city-regions by exploring the relations between sustainability and competitiveness from energy consumption, sewage discharge and expansion of built-up areas.

Keywords: mega city-regions; definition of China's mega city-region; competitiveness; sustainable development

The sustainable development of urban in Northeast China from the perspective of digital economy

Wang Shijun

Northeast Normal University

The Northeast China includes Heilongjiang Province, Jilin Province, Liaoning province and the five cities that are Chifeng, Tongliao, Hulun Buir and Xilinguole Meng in the Inner Mongolia Autonomous eastern region. The internal natural conditions are similar and the economic relation is close in the Northeast China, which is a relatively complete geographical unit covering an area of 1454700 km², with a total population of 119855000. Since 1949, the number of cities in Northeast China has increased rapidly, and the scale has continued to expand, and there are 102 cities in total, with a 58.62% urbanization rate slightly higher than



the national average by the end of 2015. At present, the hierarchical structure of cities in Northeast China is just like pyramid, and there is no super city in the region, meanwhile, the spatial distribution of the cities shows significant characteristics along the main arteries, mostly concentrated in the "T" type railway (Harbin-Dalian, Harbin-Manchuria, Harbin-Suifenhe), forming many city-and-town concentrated areas relying on a number of traffic lines. The relations between cities in the region have gradually increased after a long-term development, and Ha-Chang (Harbin and Changchun are the central city) and Mid-Southern Liaoning (Shenyang and Dalian are the central city) urban agglomerations have been formed, which together constitute the growth pole of the Northeast China. Economically, Northeast China is the earliest region of modern industrial development in China, and it is an important base of heavy industry, energy and raw material, grain. Thus its long course of development leads to the lagging development of the tertiary industry, the convergence of industrial structure and urban functions. After 1990s, the status of the Northeast China economy in the country has been declining, and there occurs the "Northeast phenomenon" that the decline of urban economic development is obvious, and the differentiation of urban economic development in the region is remarkable, resulting in the dual economic structure. For a long time, the economic development of cities in Northeast China is based on resources, and the resource-based cities account for 16.03% of the country, more than 34% of the region, however, the number of declining resources cities accounts for 47.62% far above the national average. Above all, the problem of urban sustainable development in Northeast China is more prominent. While the digital economy is a new form of economic and social development after agricultural economy and industrial economy, it is becoming a new momentum of global economic development. In this study, through analyzing the connotation and basic features of the digital economy, we can find that digital economy is the best embodiment of sustainable development of urban economy in the digital age, and it is also the main way and direction to realize the sustainable development of urban economy under the new era background. Therefore, based on the digital economic index issued by the Tencent Research Institute, the paper makes a targeted study on the sustainable development of urban economy in Northeast China in the digital information era. The results show that the digital economy development in Northeast China lags behind, indicating that the ability of urban economy sustainable development is relatively poor, meanwhile, the difference between cities is obviously, and there are many cities at the low-level state, whose potential for development remains to be stimulated. The study further divides the ability of sustainable economic development into four aspects: "basic support capability--industrial transformation development ability--economic development vitality--the social security ability of economic development", then we can find that the basic support capability and industrial transformation development ability of cities in the Northeast China are relatively good, while with great difference in performance; and the social security ability shows low level and balanced development; however the economic development vitality is poor, and the difference among cities is great.



The Transformation Paths and Existing Problem of Sustainable Development in Northwest Cities of China Since 1990

YONGCHUN YANG ^(1,2)

- (1) College of Earth and Environment Sciences, Key Laboratory of Western China's Environmental Systems, Lanzhou University, Lanzhou 730000, China
- (2) College of Earth and Environment Sciences, School of geological science and mineral resources, Lanzhou University, Lanzhou 730000, China)

Abstract: The rapid economic development in mainland China was promoted by the economic transition of Neo liberalism, via gradual institutional change pattern with marketization, decentralization and globalization, thereupon, the gradient space from Southeast coast to Northwestern inland is more distinct in mainland China since 1978's reforming and opening-up policy. Under this background, the northwest city, in the process of fierce competition, is facing the problems, such as the reconstruction of industrial structure, the protection of ecological environment, the transformation and development of resource-based cities and so on. Since 1990, the northwest city has formed three transformation path of local characteristics from the perspective of sustainable development. Firstly, close a large number of polluting enterprises, support the development of local characteristics industries, protect the atmospheric environment, enhance economic competitiveness and improve the city's space organizations though the marketization of enterprise restructuring and enterprise relocation, as well as spatial structure reconstruction. Lanzhou, for example, has stepped out of the economic predicament of a large number of enterprise bankruptcy in the 1980-90, and the air pollution has been substantially improved. Secondly, resource-based cities have undergone a difficult transformation and actively develop characteristic industries to promote economic growth. For example, Baiyin adopts the pattern of industry substitution, Jinchuan has adopted a way of industrial chain extension and recycling economy, but Yumen adopted the urban contraction model. Thirdly, stimulate the development of tourism, leisure and other service industries, and improve the quality of human settlements through developing localization, characteristic culture and ecological resources and through building the cultural industry and ecological city, Such as Yinchuan city and Zhangye city. Overall, the three city transformation path to sustainable development, basically is a successful practice and explore for Chinese conditions and northwest area. However, there are still many problems, such as the slow development of the strategic/emerging industries, the relatively weak industrial competitiveness, the serious brain drain, the lack of investment, and the serious environmental pollution in the few cities and towns.

Keywords: the mainland China; sustainable development; Northwest cities; three transformation models; Transformation Paths



SESSION: Measuring progress toward urban sustainability

Vulnerability and adaptation to climate change in urban sustainable development

ANDREA CRITTO ^(1,2), **ELISA FURLAN** ^(1,2), **SILVIA TORRESAN** ^(1,2), **ANNA SPEROTTO** ^(1,2), **ANTONIO MARCOMINI** ^(1,2)

(1) Department of Environmental Sciences, Informatics and Statistics, University Ca' Foscari Venice

(2) Euro-Mediterranean Centre on Climate Change (CMCC)

Abstract: Cities matter for Europe and China. They represent valuable centers of innovation and growth and the engines of European economic development. They provide fundamental services for communities, such as living spaces, work places and education. At the same time, they depend on services provided by other cities and rural areas, through the production of food and other goods, flood retention or provision of drinking water. Global climate change is expected to challenge these services, affecting the intensity and frequency of extreme events (e.g. heat waves, drought, heavy precipitations events) and increasing natural disasters and damaging events worldwide (e.g. storms, pluvial floods and coastal flooding), with cascading implications for population and economic activities. Especially in urban areas, disasters risks can be further exacerbated by changes in exposure and vulnerability patterns (i.e. urbanization, population growth) and should be addressed by adopting an integrated approach to management, able to enhance climate and water resilience of cities. Coping with extreme events and incrementally reshaping and improving existing urban adaptation systems, are therefore key challenges and strategic goals, offering effective short and medium-term solutions for climate proof cities in Europe and beyond. As a consequence, decision makers and urban planners are increasingly calling for information on what impacts are expected under projected climate change, their location and communities or systems potentially affected. In this setting, a Regional Risk Assessment (RRA) methodology, integrating climate and environmental sciences with bottom-up participative processes, was developed and applied to the urban environment of the municipality of Venice (Italy), with the main aim to evaluate the potential consequences induced by climate change on pluvial flood risk in urban areas. Based on the consecutive analysis of hazard, exposure, vulnerability and risks, the applied methodology has led to the development of a wide array of risk and vulnerability maps and statistics, representing a valuable screening tool to identify and prioritize major elements at risk (e.g. residential, commercial areas and infrastructures), as well as to localize sub-areas that are more likely to be affected by flood risk due to heavy precipitation events, in the future scenario (2041-2050). These outputs allow at raising public awareness about the potential effect of climate change on pluvial flood risks in urban areas, supporting future adaptation actions and cross sectorial risk management plans aimed at reducing physical-environmental vulnerabilities and increasing resilience and coping capacity of human society to future climate change scenarios.

Promotion for green economy at the provincial level in China

BEIBEI LIU



State Key Laboratory of Pollution Control & Resource Reuse, School of Environment, Nanjing University

The Johns Hopkins University-Nanjing University Center for Chinese and American Studies,

Abstract: The project entitled *Partnership for Action on Green Economy: Promotion project for green economy at the provincial level in China* in Jiangsu province on which Nanjing University co-operate with UNEP (United Nations Environment Programme), is mainly responds to the 2013 UNEP Governing Council Decision 27/8 on Green Economy and to UNEA Resolution 1.10 on “Different visions, approaches, models and tools to achieve environmental sustainability in the context of sustainable development and poverty eradication”. The overall objective of this project is to develop a green economy indicators framework tailored for the sub-national level stakeholders to assist policymaking and monitoring progress. The Ministry of Environmental Protection (MEP) of China expressed the interest of joining PAGE, but at the provincial level – given the size of the country - in September 2014. Partnership for Action on Green Economy (PAGE) aims to enable countries to formulate and adopt green economy policies, strengthen the capacity of national partners to finance and implement inclusive green economy initiatives, develop and provide global access to tools and training programs on green economy, and create and share knowledge on green economy to support its application at the country-level. According to the work priorities of PAGE and the context and demand of China’s green economy, the project select Jiangsu province as the level of engagement. Having a Green Economy Indicators framework that can help the policymaking process has been identified as a need during policy consultations with local stakeholders, and this indicators framework tailored at the sub-national level which Nanjing University is working with PAGE aims to help Jiangsu and other provinces in Inclusive Green Economy policy making. The main product of the indicators work is a report that measures Jiangsu province’s inclusive green economy status and provides policy recommendations to areas that could be further improved which has two main sections. Firstly, an indicators framework that developed based on existing work at the national and international level. This framework is designed for the sub-national level but not limited to Jiangsu Province with detailed guidelines and technical notes. Secondly, the report will also provide a status analysis on inclusive green economy development with the latest data available from Jiangsu province and propose policy recommendations in achieving provincial goals and targets.

Expected results to be achieved:

- (1) A Green Economy indicators framework tailored for sub-national level developed and the methodology accepted by local stakeholders;
- (2) Partnerships with national and local stakeholders on indicators strengthened for future collaboration;
- (3) A report measuring the current green economy development status produced and shared with government officials and policy recommendations provided;
- (4) Support from provincial government on developing the indicators report as a periodical publication measuring the province’s progress received.

This study is to serve as the baseline for the overall PAGE China project and it will be the first issue of a periodical inclusive green economy status report of Jiangsu, which Nanjing University will continue doing beyond the project period of PAGE.



Participatory sustainability assessment for China's integrated water management and urban planning. A case study from the region of Taihu Lake

DANIELE BROMBAL¹, YUAN NIU², LISA PIZZOL³, ANGELA MORIGGI^{3,4}, JINGZHI WANG², ANDREA CRITTO³, XIA JIANG², ALEX ZABEO³, ANTONIO MARCOMINI³, BEIBEI LIU⁵

¹ Department of Asian and North African Studies, University Ca' Foscari Venice

² Chinese Research Academy of Environmental Sciences

³ Department of Environmental Sciences, Informatics and Statistics, University Ca' Foscari Venice

⁴ Department of Economics and Society, Natural Resources Institute (Luke) Finland

⁵ School of Environment, Nanjing University

Abstract: This paper introduces a framework for Sustainability Assessment (SA) developed to appraise integrated water management and urban planning policies. The framework is applied to the case study of the Lihu Lake Basin (Wuxi City), where between 2002 and 2012 a government-led program of water management was carried out to curb environmental pollution issues. The program was inspired by an integrated spatial planning approach aimed at combining effective water management with urban development. The framework for SA introduced in this paper is based on a Multi-Criteria-Decision-Analysis (MCDA) approach, integrating environmental, economic, and social sustainability criteria. Local stakeholders were engaged in focus group discussions (FGDs) and in depth-interview, aimed at investigating the importance attributed to different dimensions of sustainability. Outputs of FGDs and interviews were input in the framework of assessment by attributing corresponding weights to criteria and attributes of the MCDA model. Results of the application indicate that policies adopted in the Lihu Lake Basin yielded positive results in enhancing the environmental conditions of the lake and fostering economic growth. Performance of social indicators was comparatively worse. This seems to indicate that in the case considered viability was pursued by environmental and city planners, rather than comprehensive sustainability.

Keywords: water management; urban renewal; sustainability; assessment; MCDA; China

Sustainability perception in planning Chinese urban spaces: the case of Hangzhou and Zhuhai high tech zones

VALENTINA ANZOISE¹, DEBORA SLANZI², IRENE POLI²

¹ Department of Environmental Sciences, Informatics and Statistics and European Centre for Living Technology, Ca' Foscari University of Venice / MEDIUM fellow

² Department of Environmental Sciences, Informatics and Statistics and European Centre for Living Technology, Ca' Foscari University of Venice

Abstract: Among the key drivers of the rapid urban development initiated by China during the 80's thanks to the opening-up and decentralization reforms, there is also the realization of huge industrial and development zones all over the country. Indeed, beside the fact these areas contributed to



Chinese economic growth and innovation, their development exercised (and continue to exercise) a great influence in the (re)shaping of urban and rural landscapes: they became new cities or a new independent administrative zones and more recently some have changed into high-tech industrial parks. The paper will focus on two of these areas, which are located in Hangzhou and Zhuhai (Zhejiang Future Sci-Tech City and Zhuhai High-Tech zone) with the aim to critically discuss overlooked issues related to China sustainable urban development such as the perception hold by different social actors of the fast-transition triggered by these zones and of their long-term and multiple consequences. For the present study mixed methods approaches have been used. In particular visual ethnography and qualitative analysis have been combined with explorative statistical measures and cluster-based modelling approaches to analyse the interviews conducted with different stakeholders (entrepreneurs, residents, etc.) affected by the planning and implementation of these areas. The hypothesis is that to tackle urban sustainability there is a need to go beyond the rational management and monitoring of resources and take into greater consideration discourses, social perceptions and narratives. These, indeed, are constitutive part of social change and structure the ways people understand and decide to act upon the environment. In particular, complex and critical spaces like the high tech zones, which are often built on the urban fringes, contribute to China transition not only in terms of GDP, jobs created, rural and urban spatial restructuring but also because they trigger and channel new imaginaries and conceptualizations of modernity, sustainability and of future more in general.

Between pretended scalability and real isolation - The model of Tianjin Eco-City for sustainability

YINGHAO LI

LEESU / École des Ponts ParisTech, Labex Urban Futures, University Paris-Est / MEDIUM fellow

Abstract: In the pursuit of more sustainable growth patterns for Chinese cities, the “eco-city” model has attracted intensive attention and is expected to provide viable solutions to the environmental, ecological, social and economic problems in contemporary China. The Sino-Singapore Tianjin Eco-City, born under high-level supervision of China and Singapore, has been being the spotlight of international researchers on urban sustainability. Yinghao Li, based on its site study carried during 2016, gives a fresh insight in what is happening on ground in this flagship Chinese eco-city on halfway towards the due date set at 2020. A certain number of strong points of the eco-city are underlined. The establishment of Key Performance Indicators and relatively innovative governance favoring the respect of environmental constrains show potential sings of paradigm shift in Chinese urbanism. Notwithstanding, the in-situ observations also put into light the limited and confined vision of sustainability that manifests in the application of the indicators, which raises the question of the relevance of Chinese eco-cities as regards with sustainability.

SESSION: Urban governance: conflicts, mass action, social and political regulation



Governance of development zones and local growth coalitions: the case of the Zhuhai high-tech zone

JEAN-PIERRE GAUDIN, LIAO LIAO

EP Aix-en-Provence, Cherpa Research Centre/ AMU University, France

Abstract: Zhuhai High-Tech Zone has been created in 2006, within the dynamic of the first SEZ of China. It is a national high tech development zone, within a national policy which was initiated in 1992 by the Central State. First, we consider the evolutive pattern of developing this zone since the beginnings, through 1) its activities growing specificity, 2) the peculiar fiscal incentives provided 3) and the original model of the zone Management Committee. Then, we shall try to evaluate the present way of governing local development in the Zhuhai city, according to a new planning decision making opened to consultations. It addresses the academic debate about functional pluralism.

Rapid urbanization, urban agglomeration and governance transformation in China

LIN YE

School of Government - Center for Chinese Public Administration Research

Center of Urban and Local Governance

Sun Yat-sen University, Guangzhou, China

Abstract: The discussion will primarily focus on how mega cities in China face challenges for ever-growing population and diversifying needs on urban services. A collaborative governance approach has to be adopted to deal with urban problems locally and inter-locally. Cases in the Pearl River Delta region will be analyzed to demonstrate how such transformation is taking place.

Reexploring the "danwei-shequ" transition: the housing issue as object of public policy (Datong's mining district)

JUDITH AUDIN

IEP Aix-en-Provence, Cherpa Research Centre/AMU University, France / MEDIUM fellow

Abstract: Based on multi-sited ethnographic research within the MEDIUM project, this presentation analyses the evolution of « work-unit (*danwei*) governance » and « residential community (*shequ*) construction » in a medium-sized city with a heavy industrial background: Datong, in northern Shanxi. If many studies have shown the decline of the paradigm of the work-unit in urban China along with the economic reforms towards a market economy, large public work-units still exist in contemporary societies and are involved in urban governance.

Why government fails in promoting urban refuse classification? An analysis from policy tool perspective



CHENG CHEN

School of government, Sun Yat-sen University

Abstract: Many urban governments have made much efforts in promoting refuse classification in China, however have not achieved much effect. By examining the case of Guangzhou city, this article aims to identify the policy tools the government have used in promoting refuse classification and why these tools failed in the effects. the article argued that the government relied much more on the advertising and propaganda while ignored the use of other innovative policy tools. These failures can be partly explained by the departmentalism in the bureaucracy system and the lack of participation from citizen and businesses.

SESSION: Internal migration and urban integration in Chinese medium-sized cities

Forced relocation of informal settlements and rural migrant's social networks in neighborhoods in China's medium-size cities: evidence from Yangzhou

XU HUANG

School of Geography and Planning, Sun Yat-Sen University

huangx253@mail.sysu.edu.cn

Abstract: This paper analyzes the effects of residential relocation on China's rural-urban migrants' social networks in neighborhoods in medium-size cities, in light of evidence from Yangzhou, Jiangsu province. Our major objective is to contrast voluntary moves with involuntary moves driven by the inner-city demolition redevelopment of informal settlements (urban villages in China). Based on data from a survey conducted between 2012 and 2013, we find that migrants have three possible strategies to cope with the loss of pre-existing social capitals after relocation: to preserve the contacts with their previous neighbors by using ICTs; or to construct contacts with new neighbors in destination neighborhoods by participation in public activities organized by the residents' committee; or to do both in ideal conditions. The logistic regression analysis shows that compared to forced move, a voluntary move and the intention to move prior to the demolition appear to be positive for the preservation of migrants' pre-existing social capitals and their construction of new contacts, especially when they move to formal neighborhoods. This suggests that voluntarily-relocated migrants and the ones with prior intention to move were worried about the integration into formal neighborhoods, and thereby reinforced the connections with pre-existing contacts by ICTs; they became more active in participation in activities organized by the residents' committee, and obtained more social benefits, especially when they moved to formal neighborhoods.

Keywords : rural-urban migrant, forced relocation, informal and formal neighborhood, social network, ICTs, Residents' committee



Studying migrants' housing choices and conditions in Chinese medium sized-cities: a case study of Zhuhai

CINZIA LOSAVIO

Géographie-cités, Labex Dynamite, University Paris 1 Panthéon-Sorbonne / MEDIUM fellow

Abstract: Over the last thirty years of urbanization, one of the major challenges addressed to Chinese cities has been the housing provision. Since the housing reform in 1998, a dual-housing system has been created: on the one hand a private housing market to satisfy the demand of high-income households; on the other hand, an affordable housing supply introduced to benefit middle and low-income urban households (WANG Y., 2000). Although China's urban housing reform has dramatically increased the housing supply and effectively mitigated the housing shortage in urban China, many housing affordability problems have emerged, excluding migrant workers from the low-income housing market (HUANG Y. 2012). In this new phase of the Chinese urbanization, which is switching focus towards medium-sized cities and their increasingly diversified population, while gradually reducing residence permit restrictions in smaller cities and facilitating the transition from an origin-based to a residence-based *hukou* system, how to satisfy the housing needs of migrant workers in those cities? Considering the importance given to the residential production to stimulate the domestic demand and ensure the economic growth, as well as the urgent need to prioritize affordability issues regarding migrant workers housing provision, we are studying the current housing supply model for migrant workers in Zhuhai, a typical third-tier city in China, and examine migrants' housing conditions. Exploring the urban dimension of internal migrants' lives – patterns of urban settlement, housing choices, residential conditions, relation with the city, neighborhood activities – in Zhuhai at a micro-level, this paper addresses the current issues related to migrants' housing needs and priorities, and report some of the findings of our ongoing research, including some of the factors influencing their housing decisions in the urban space.

Keywords: migrant workers, housing provision, housing choices, residential conditions

Research on innovating the integration mechanism of "new Hangzhou people"

GUANG XU

Department of Economics, Zhejiang Institute of Administration

Abstract: At the early stage of the 13th Five—Year Plan, improving and innovating a mechanism of urbanization integration of 'the new Hangzhou people' is not only the fundamental outlet of deepening the reform of household registration system and eradicating the dual structure in urban and rural areas, but also an important means of accelerating the construction of new urbanization and constructing the fair sharing mechanism of social undertakings. In recent years, through the means of strengthening policy inclusion, innovating the form of trade union organization, expanding community service and so on, Hangzhou has effectively improved the level of urbanization of 'the new



Hangzhou people'. Moreover, it makes the institutional mechanisms of every stratum of society participating equally in the process of modernization and sharing justly the fruits of economic development have been established initially. In the next stage, we suggest that Hangzhou should start from innovating management models, strengthen quality training, achieving effective interaction and several other aspects. Furthermore, we suggest Hangzhou accelerating the construction of the 'self-routing' of external population integrating into city life in order to realize successfully the effective transformation, which is from 'the new Hangzhou people' to modern urban rights subject.

Keywords: the new Hangzhou people; urbanization; urban integration; community

