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| **MEDIUM**  ***New Pathways for Sustainable Urban Development in China’s medium-sized cities*** |
| **Zhuhai scientific seminar** |
| **December 3rd-5th, 2016** |
| **Report** |

**3rd December 2016 (Day 1)**

**INTRODUCTION**

**Irene Poli**

Professor Poli (Ca' Foscari University of Venice, Italy) welcomes the organizers and participants to the workshop to reflect on new ways of sustainable urban policies in China’s medium-size cities. She then invites Professor Zhou Suhong, the Deputy Dean of School of Geography and Panning of Sun Yat-sen University.

**Zhou Suhong**周素红 (中山大学地理科学与规划学院)

The Deputy Dean expresses a warm welcome to all on the campus of SYSU on the occasion of the scientific seminar. She presents the structure of research at SYSU, with Departments and Research Institutes. SYSU is ranked first university in Guangdong, and top ten in China. It has 4 Departments and 8 Research Institutes. Research in geography is for example done at both the School of Geography and the Laboratory for Geosimulation. At the School of Geography and Planning, Human Geography, GIS and Remote Sensing are key disciplines. She invites to cooperation and collaborations with SYSU researchers.

**Zhou Chunshan 周春山** (中山大学地理科学与规划学院)

Professor Zhou Chunshan (School of Geography and Planning, SYSU) also greats welcome on the behalf of SYSU. He develops why Zhuhai is a typical medium sized city, as it features the expected issues. It is an economically developed area and a representative case study. The output of this seminar should be a reference for the development of medium sized cities.

**Natacha Aveline**

Professor Natacha Aveline (CNRS, Paris, France) addresses a speech in Chinese. She is very glad to be in this city, to be in this conference room provided by Sun Yat-sen University, which is such a good place for this scientific seminar. She is also grateful towards Prof. Zhou Suhong and Prof. Zhou Chunshan. She briefly recalls the organization of the MEDIUM project, which aims at sustainable urban development in China following three axis: case studies of three medium-sized cities ; collaboration with three universities ; and the help for young researcher mobility in China.

**Martine Laborde** and **Sebastian Haule**

Martine Laborde (CNRS, Géographie-cités) and Sebastian Haule (CNRS, Géographie-cités) present the Géographie-cités research unit, which is the coordinator of the MEDIUM project. The unit is a joint unit between CNRS (larger research organism in Europe in all fields) and two Paris Universities (Paris 1 and Paris 7). Currently working there are 59 researchers, 20 engineers and 70 PhD students. It has three distinct teams, CRIA focusing on industry and planning, EHGO focusing on epistemology and PARIS on urban systems, spatial dynamics and science of complexity. A technical support is available for any partner of the project from dedicated engineers (Sébastien Haule, CNRS and Ludovic Challonge, CNRS), on geomatics, statistical analysis, geovisualisation. A short video of the Head of the laboratory, Arnaud Banos presents new perspectives in simulating complex spatial systems and geosimulation. The different partnerships between Géocités and China are highlighted : the MEDIUM project since 2015, the ANR project Finurbasie, the Odessa project with Tsinghua and Sheffield, the ERC Seasteems that includes 7 Chinese researchers and a recent PhD project on the Chinese Urban System under the direction of D. Pumain.

**PRESENTATION OF CASE STUDIES**

Professor **Céline Rozenblat**

*“The Integration of medium-size Chinese cities in the globalized world: the profile integration of Zhuhai”*

**CélineRozenblat** is Professor in Geography at .

**Presentation**

This study is a joint work with E. Swerts and A. Ignazzi. The research question is, in the context of a fast integration of China in the global economy, small and medium size cities beneficiate less, but could concentrate innovative firms, i.e. how can a city like Zhuhai become specifically innovative ? A larger question arising is the definition of medium-sized cities, for which several definitions have been proposed in the literature. The working hypothesis here is that they are defined regarding the intensity of their integration in the globalization process.

Different effects are to test through the study, such as the administrative level, the urban size, the geographical position, in order to check if there is a specific economic profile of Zhuhai. The framework consists in multi-level city networks, from micro-scale, to meso and macro-scale. The data consists in micro-network data for companies (from Bureau Van Dijk), for the 3000 top world groups, with up to 8e5 subsidiaries (nodes of the network), linked by ownership relations. The aggregation yield an inter-urban network. The definition of cities is taken as Large Urban Regions (from joint work ERC Geodivercity/UNIL), with recent database for Chinese cities (E. Swerts).

Studying the world network of cities reveals primary stylized facts. The crisis had a strong impact on network topology, observable in 2013. Continents are very cohesive and only 20% of relations are inter-continental. When looking at China in 2010, 61% of linkages are inter-continental and only 6% intra-urban , whereas in 2013 the first went down to 45% and intra-urban raised to 10%. The zoom on China increases the importance of Bahamas, but the network is more balanced, the middle-sized cities having taken a sort of advantage. Rank-size laws for ownership and subsidiaries number (in- and out- degree) reveals the dominating role of Beijing and Hong-Kong. Middle-sized cities form a plateau in the distribution. The test of predictive power of population size on local network topology gives a R-squared of around 0.66, what is reasonable with a single variable. Do middle-sized city correspond to a change in regime, with a stronger importance of specialization ?

A zoom is done of the three studied cities. Hangzhou has mostly fund management and service activities. The example of Zhejiang expressway company is developed. The economy of Hangzhou is very diversified, thanks to the proximity of Shanghai. Datong has on the contrary a strong specialization, and difficulties for attraction and diversification. Zhuhai is a quite interesting case. It has the second port of the region after Shenzen, high accessibility and is a special economic zone since 1980, to which can be added a national High-tech development zone and a free trade zone. Administrative measures include the reduction of taxes. The example of Gree Electrical Appliances recalls the importance of strategic links with universities. Zhuhai appears to be quite well integrated, also in emerging countries. The second example of Livzon Pharmaceutical group shows an intensive collaboration with SYSU School of Medicine and Pharmacology (oldest of western medicine in China), but is mainly oriented towards the Chinese market. Zhuhai seems to have related and unrelated specializations, with a possible strong role of universities.

In conclusion, it is possible to define medium-sized cities by considering their integration in the globalization. The urban size effect decreases in time. The administrative effect is captured in the spatial spread of emergent attractive cities, i.e. in the proximity of metropolises. The specialization may be due to local resources such as in the case of Datong. The future of Zhuhai may rely in its specialization as an innovative place, in a perspective of polycentrism, beneficing from the proximity of major financial poles.

**Discussion**

Pr. Aveline insists on the fact that for the city of Datong, it is difficult to put into perspective with other cities, as it is strongly involved in coal industry, which is a highly strategic domain for the central government. The issue with the city is that there is very few other companies.

Zhou Suhong Jiaoshou points out that with city regions emerging, there is an additional difficulty to define the city. Several works now are focused to define functional urban regions, at different levels. Be part of the same functional urban region can be then using the same airports for international travels, i.e. the accessibility to the world.

Zhang Weiliang Jiaoshou wonders why the study focused on very particular companies such as Alibaba, which is highly internationalized, why study these particular companies ? There is indeed a problem with Alibaba, as it is settled in a fiscal heaven, with one link only, no other company complexifying its structure. Further work should look at other companies.

Professor **Zhou Suhong** 周素红

*“New pathways for sustainable urban development in Zhuhai”* 珠海城市可持续发展新路径

**Zhou Suhong** (infos parcours academique)

**Presentation**

**Discussion**

Pr. Poli asks if the difference of profiles between East and West also implies different environmental politics. A gap indeed appeared at the beginning, but the Eastern part of the PRD is now upgrading this aspect to meet environmental standards.

Pr. Critto inquires about the use of Sustainable Development Indicators in the region and in this work. It is not directly the case here, but some versions of such indicators are used at the local level, for example by the Planning Bureau in Zhuhai.

Zhou Suhong Jiaoshou emphases on the new opportunities brought by the Hong-Kong-Zhuhai-Macau bridge. The area is of course closely linked to the development of Hong-Kong and Macao, and the long-term patterns in the Special Economic Zones are difficult to influence at the macro-level. But there is no need to break such a dynamic, and Zhuhai can indeed capitalize on its positioning. It has already a good position in the strategy of transformation of industries in China (entering the new era), and more potential to catch up with other cities.

Professor **Zhou Chunshan 周春山**

*“The development of medium cities in China”* 中国中等城市发展特征分析

**Zhou Chunshan** (infos parcours academique)

**Presentation**

**Discussion**

Doctor **Pan Yujian 潘裕娟**

*“The development strategy of Zhuhai city”* 珠海城市发展战略

**Pan Yujian** (infos cv)

Presenation

Doctor **Ye Yuyao** 叶玉摇

*“The urban spatial structure towards low-carbon transportation and an exploration of low-carboncity-construction”* 面向低碳交通的城市空间结构与珠海低碳城市建设路径探索

**Ye Yuyao** (infos cv)

Presenation

Discussion

Professor **Yuan Bingcheng 元炳成**

*“A study on the construction strategy of Qi’Ao island in Zhuhai”* 珠海淇澳生态岛建设战略研究

**Yuan Bingcheng** (infos parcours academique)

Presenation

Discussion

Doctor **Zhang Guojun 张国俊**

“A comprehends evaluation on the development of industrial ecologicalisation and analysis of influencing factors – a case study of Zhuhai” 产业生态花发展水平的综合评价级影响因素分析——以珠海市为例

**Zhang Guojun** (infos parcours academique)

Presenation

Discussion

Doctor **Yang Gao** 杨高

“The characteristics and influencing mechanism of spatial-temporal variations of migrants in Zhuhai

*”* 珠海外来人口时空演变特征及影响因素

**Yang Gao,** senior PhD student at the School of Geography and Planning, Sun Yat-sen University Guangzhou. His researches have focused on Chinese rural-to-urban migrants, Chinese migrant workers’residential community and distribution of migrant population.

**Presentation:** This presentation examines the overall characteristics as well as the spatial and temporal development patterns of the floating population (流动人口) in Zhuhai, a medium-sized city located in the Pearl River Delta (PRD). Yang Gao’s presentation is divided in three parts: the research design, the research contents and the conclusions.

Yang Gao firstly defines the different components of his research study: the research area, the data sources and the methodology. His research focuses on a total area of 1635.64km2 including 20 administrative areas (街镇) of Zhuhai city, excluding Guishan town (桂山镇), Wanshan Town (万山镇) and Dangan Town (担杆镇). The data used are the 2000 and 2010 census, as well as the 2008 sample questionnaire survey on migrant workers in the PRD (the China Labor-force Dynamics Survey, 中国劳动力动态调查) provided by the Center for Social Survey of Sun Yat-sen University .

Before presenting the methods used in his research, Yang Gao gave a definition of the object of his research: the migrant population. He defines the “*wailai renkou*” (外来人口), the people arriving from outside, as those people who leave their personal residence and settle in the urban area for more than six months, without changing their *hukou*’s (户口, the household registration system) registration. This population is a wide group of temporary migrants, including *nongmingong* (农民工), the peasant workers.

Using statistical analysis and GIS spatial techniques, his research measures a wide range of Index (including the Segregation Index, the Isolation Index, the Mean pointer centre, the Index of population concentration, the Location quotient, the Spatial autocorrelation), revealing:

* The socio-economical features of migrants in Zhuhai, in particular their education level, their provenance, their Urban Settlement Intention, their social segregation and isolation in the urban area (comparing it with the situation in Shenzhen).
* The spatial distributions of migrants in Zhuhai
* The spatial and temporal patterns in the evolution of migrant populations’ gravity center, of spatial agglomeration of migrants, of migrant population density and of migrants population concentration in Zhuhai from 2000 to 2010.
* The factors which lie behind such changes concerning the migrant population in Zhuhai

The results show that:

1. The migrant population in Zhuhai mainly comes from the neighboring provinces ( such as Hunan, Guangxi, Hubei, Henan, Sichuan, Jiangxi and Chongqing), it has a relatively high level of education, and a strong intention to settle down in the city. Furthermore, a complex pattern of socio-spatial differentiation has been revealed.
2. The non-native population is mainly distributed in Xiangzhou district, Jinwan district and Doumen district, showing obvious distribution differences among rural and urban areas. Areas of high migrant population density are mainly concentrated in the central area of the city. The hotspot area (high accumulation area) is located in Xiangzhou district (central city area), and the cold spot area (low accumulation area) resides in Doumen district (West city area).
3. There have been significant changes in Zhuhai’s floating population spatial distribution patterns: a gradual shift to the South-West city area, a general trend toward decentralization (migrants are more scattered in the city), a spatial variation that changes from town to town.

Finally, Yang’s research reveals that changes in migrants’ distribution patterns are influenced by housing factors, employment opportunities, traffic conditions, social networks and urban planning.

Yang Gao concluded his presentation defining the limits of his research and highlighting areas for improvement. In fact, his study lacks a general overview on the migrant population’s development process and on its main characteristics in Zhuhai, as well as an analysis of the mechanisms impacting their spatial evolution. A combination of the fourth census data is needed to extend the study on a more complete temporal dimension. Moreover a comparative study with cities of bigger size, such as Shenzhen, will be useful to understand the characteristics of the migrant population in a medium-sized city as Zhuhai.

**Discussion:** Questions were raised about the differences between Zhuhai’s and Shenzhen’s migrant population, since Yang Gao introduced it quickly during is presentation. It emerged thattheeducation level is higher in Zhuhai, but the segregation level is lower than in Shenzhen. The Index of population concentration is higher in Shenzhen, where there is a larger migrant community.

Doctor **Hu Jincan** 胡锦灿

“Social Spatial structure in Zhuhai” 珠海社会空间结构

**Hu Jincan:** senior PhD student at the School of Geography and Planning, Sun Yat-sen University Guangzhou and member of the Guangdong Key Laboratory for Urbanization and Geo-simulation. His researches have focused on Chinese urban and rural socio-spatial structure and regional development planning.

**Presentation:** Hu Jincan’s presentation focuses on the study of social and spatial structure of Zhuhai city and on its formation mechanisms. While establishing some enriching comparison with other cities’ structure, Hu’s research emphasizes the need to optimize the layout of urban space, in order to alleviate the spatial disparities of Zhuhai and to adapt to the needs of society.

The research questions were clearly stated at the beginning of his presentation:

* Which are the distinctive features of Zhuhai’s socio-spatial structure?
* Which are the main formation mechanisms responsible for of this structure?
* How to deal with the socio-spatial differentiation of Zhuhai City?

Based on the sixth census data of 2010 and on the second national land survey data, Hu Jincan selected a total of 46 variables reflecting five main aspects of the social and spatial structure of the city, including population, household, housing, economy and land. According to his research, five factors impact the most the social and spatial structure of Zhuhai: the proportion of family households of two generations; the proportion of the urban highly-educated population; the population density; the proportion of households; the proportion of young people and migrant population. Employing those five factors, the results in Zhuhai are divided in five distinctive parts:

1. the city center, characterized by the highest population density;
2. the peri-urban area, mostly inhabited by local families and young people;
3. the suburban area, mostly inhabited by non-natives and characterized by low population density;
4. the outer suburbs, mostly inhabited by rural families;
5. the islands area, mostly inhabited by single-generation households and characterized by high population density

In order to better understand the spatial and social structure of a medium-sized city such as Zhuhai, Hu Jincan draws a comparison with Guangzhou and Shenzhen, two megalopolises in Southern China, as well as with Nanchang, a medium-sized city in eastern China.

Compared to Guangzhou, Zhuhai’s social structure seems less complex, and characterized by the important presence of a new migrant population. Moreover, the distribution of those immigrants over the urban space differs from Guangzhou’s. In fact, in Zhuhai the non-native population is scattered throughout the city, with a higher concentration in the coastal area (i.e. high-tech zone, Hengqin New District). A common feature between Zhuhai and Guangzhou is the development of the suburban area, which lies in the transformation of small towns around the rural areas into edge cities.

The comparison with Shenzhen shows that in both cities the migrant population is an important driving force for the segregation of the social space. Due to the industrial development of these two port-cities, both Zhuhai and Shenzhen have been attracting a high number of migrant-workers. Furthermore, because of their similar spatial structure (long and narrow), the urban growth pattern of Zhuhai and Shenzhen differs from the concentric zone pattern which is typical to Guangzhou’s urban development. Finally, the different scope of their urbanization process, reflect the difference in size of their rural area.

Since both Zhuhai and Nanchang are medium-sized cities, the comparison appears more balanced in terms of social structure. However, there are significant differences in the spatial structures of these two cities. In Nanchang, the old neighborhood, the urban neighborhood and the agricultural neighborhood are prominent, while in Zhuhai, the most important area is the new industrial district, due to the concentration of non-native population.

After illustrating these three thoughtful comparisons, Hu Jincan summarizes Zhuhai’s social and spatial structures’ main characteristics, emphasizing its fan-shaped model constituted by two main transportation arteries wings. He also underlines the impact of Macau, Zhongshan and Tanzhou on Zhuhai’s social and spatial structure. He, then, presents four mechanisms responsible for the formation of this particular structure, including the market, the public policies, the family life cycle and the role of nature and history.

To conclude his presentation, Hu Jincan makes some suggestions for optimizing the social and spatial structure of Zhuhai. He believes that the overall planning of Zhuhai requires comprehensive evaluation of the economic development, public facilities and population needs, in order to boost the spatial structure of the city. Transportation, industry, production mode, and public services are crucial forces that should be integrated in the future planning of Zhuhai to ensure substantial change, and the local government should play an active role in this optimization process.

**Discussion:** Due to a lack of time, no questions were raised.

**4th December 2016 (Day 2)**

**INTRODUCTION**

**Zhang Weiliang** **– 张卫良**

**Zhang Weiliang**, PhD in history, is a professor of history and director of Institute for Urban Studies, affiliated to the school of Humanities of Hangzhou Normal University. His main interest is in urban history, urban sociology and heritage. His researches have focused on the British economic history and urban history. He currently works on the issues of urban strategy, urban slum, and urban sustainability.

**PRESENTATIONS BY YOUNG RESEARCHERS**

**Cinzia Losavio – 秦霞**

Phd student

Paris Panthéon Sorbonne University – Research Unit Géographie-cités, CRIA

*“Migrant workers and Chinese medium-sized cities: the issue of migration in China’s new urbanization strategy”*

**Presentation:** Cinzia Losavio presented her PhD research project concerning migrant workers integration in medium-sized cities and her first findings after one month of field research in Zhuhai (Guangdong). In China, urban development and internal migrations go hand in hand with economic transformation. During the first decade of Deng Xiaoping’s economic reforms in the early 1980’s (改革开放), driven by a logic of social control, the Chinese government tried by various means to limit and to orient rural to urban migration in relation to the economic needs of the country.

This important and growing phenomenon has turned the country’s human geography upside down, increasing the urban population rate from 26.4% in 1990 to 56.1% by the end of 2015, contributing to the emergence of a new social category: migrant-workers (农民工).

While migrant-workers have played a crucial role in shaping China’s economic growth and urban development, their presence in the urban space has been significantly increasing pressure on China’s largest megalopolis’ resources (in terms of housing, education, health care and other public services). Migrant-workers do not only affect labor supply but also the demand for goods and services, making them subject to special concern for the national government.

In parallel, in the aftermath of the 2008 global financial crisis, a major shift in China’s socio- economic trends has taken place: the transition from an export-led growth model to one powered by domestic consumption and a consequent expansion of the middle class.

These two important phenomena result in a new urbanization strategy, which lies in the integration of migrant-workers in small and medium-sized cities. According to the 13th Five-Year Plan of China (approved by the 12th National People Congress on March 16, 2016), the population of megacities will be strictly controlled from 2016 to 2020. Simultaneously, migration to small and medium-sized cities will be more clearly encouraged, undoubtedly generating new economic formats and social patterns. This new strategy will help slow down the one-way flow of migrants and reduce pressure on megalopolis.

Zhuhai, a fast-growing medium-sized city, has been chosen as a case study for Cinzia’s PhD research, for two main reasons:

* -  First, because of its position in the Pearl River Delta: Zhuhai is a sub-regional center located in one of the most attractive areas for migrant-workers.
* -  Secondly, a new round of the population development plan is currently being implemented in Zhuhai. On September 14th 2016, Zhuhai’s local government published “The 13th Five-Year Plan of Population Development”, demonstrating its main stakes in Population Structure optimization and Urbanization Rate. We believe it may create new opportunities for migrants’ integration.
* Considering Zhuhai new development strategy, Cinzia Losavio discussed some relevant research questions for her fieldwork:  How do migrant-workers participate in the socio-spatial reconfiguration of medium-sized cities? What determines the transition from being a migrant-worker to becoming an urban-consumer/citizen?  How to settle down migrant-workers to promote the process of urbanization?
* In order to reply to those questions she formulates a preliminary hypothesis: in line with the State-Party’s rhetoric calling for “people oriented” (以人为本) ethos of development (Lin, 2006), migrant-workers integration in medium-sized cities as the core of China new urbanization strategy reflects a triple objective of the Chinese government: promote the social and spatial reconfiguration of smaller cities, in order to correct the development gap between cities of different sizes; obey the new economic aspirations of the country; ensure the orderly management of internal migration.
* Her research will focus on Tangjiawan Town (唐家湾镇) a division of Xiangzhou’s district, which is located in the northern part of Zhuhai. She has already started to conduct her fieldwork documenting in one of the 16 communities (社区) of Tangjiawan, the old village of Tangjia. Tangjia village is a historical neighborhood mostly inhabited by migrants-workers, which is experiencing a gentrification process. Is this gentrification process going to change property value in Tangjia leading to an increase of housing prices? In the following months she will observe if migrant workers continue to settle in this area.  She will also detect other migrant-concentrated areas in the city and understand the housing offer for *nongmingong*.
* Steering away from a hukou-centered approach Cinzia Losavio will try to understand the integration process by going through it with migrant-workers. She will place actors’ viewpoints and individual trajectory at the center of her approach, giving voice to the people who are experiencing this transition. As she believes that the integration process is at the crossroads of social context, public policies and actions of individuals, she will use mixed methods to investigate this social process, including: in-depth interviews with migrants-workers but also with actors of the administration at different level; ethnographic observation in the selected areas; documentary analysis on national and local laws and regulations, as well as on national and  local press.

By emphasizing on the importance of studying migrant workers as a heterogeneous category, her main research aims is to discern migrant workers role in the recent urban dynamics of medium-sized cities in China.

**Discussion:** Questions were raised about the possibility to generalize the results of this research to other cities and megalopolises. In China locally diversified socio-economic and environmental situations force provincial and municipal governments to adapt the national regulations at their priority and challenges. Issues confronting all levels of government in managing migrant workers population are not unique, resulting in a diversified range of measures to address the local situation. It is quite difficult to generalize the results of this research to cities at all levels.

**Juste Raimbault – 于思特**

Phd Student

Paris-Diderot University – Research Unit Géographie-cités, PARIS

*“Towards a theory of co-evolution networked territorial systems: insights from transportation governance modeling in Pearl River delta”*

**Presentation :** This presentation is about work-in-progress for a PhD thesis, in particular on the construction of a geographical theory for territories and networks and its application to a model of transportation governance aimed to be applied to Pearl River Delta (PRD) mega-city region.

The scientific context of Complexity approaches to urban systems is first introduced, and put in perspective with Complex Systems approaches in other fields of science. In that frame, the knowledge framework of Theoretical and Quantitative Geography, which co-constructs theories, models and empirical analyses, is a way to position the study of Urban Systems within Complexity. The subject of the thesis is recalled, namely the investigation of relations between Networks and Territories through the construction of models of co-evolution between land-use and transportation networks. This presentation proposes a geographical theory, and then applies it to Transportation Governance in DPR.

The theory relies on various empirical and modeling previous work. A first example shows how simple co-evolutionary dynamics can reproduce stylized urban forms. A second reveals the existence of autonomous morphogenetic processes by the calibration of an aggregation-diffusion growth model. The spatial non-stationarity of correlations between network topology and urban form is shown empirically for Europe, and simple coupled models are shown to be able to produce such a range of potential correlations. Finally, network effects are revealed at the macro-scale by calibrating a model of growth for French city system. The theory considers networked human territories from an evolutive urban theory perspective, and postulates that the existence of morphogenetic processes in which networks are essential drivers is equivalent to the existence of co-evolutive niches in these systems.

A model for Transportation Governance in Mega-city regions is then presented, the LUTECIA model, that couples a LUTI model with an infrastructure provision model. The transportation network evolves according to decisions taken by governance agents, following a game-theoretical framework, where agents seek to maximize the expected accessibility of their area. Examples of model output on synthetic configurations, and of model exploration are given. The future application to DPR is discussed, in particular its special characteristics making the region a perfect candidate: the regional governance as a new level of state action, the large development of infrastructures in a relatively short time, the conflicting regional and municipal masterplans, the planned bridges across the delta and the high economic competition between the cities. Retrospective model calibration is expected to unveil actual governance processes, whereas calibration on planned and optimal infrastructure should respectively give first collaboration patterns equivalent to the central planning, and then potential optimal governance processes.

In conclusion, from this particular model and its application to the case study, theory will be refined. The knowledge production process is itself a metaphor of studied geographical processes since it is co-evolutive and complex. Furthermore, it is wanted as vertically and horizontally integrated, interdisciplinarity being a key factor to go beyond the artificial distinction between qualitative and quantitative.

**Discussion**

Pr. Aveline asks for some precisions on the notion of morphogenesis that was too briefly evoked. Some precisions are given: in the frame of an interdisciplinary work in progress, the notion was scrutinized from various point of view, and the satisfying emerging definition of morphogenetic processes is self-organizing processes, in which particular causal relations between form and function imply an emerging architecture.

Pr. Rozenblat asks how the presented examples and theory tackle the multi-scale nature of urban systems. This aspect is for now indeed poorly integrated, as the first objective is to obtain sufficient simple models of complex urban processes. Building huge gaz factories makes no sense when the behavior of each brick is not known, and is furthermore a slippery slope towards overfitting. A careful building of multi-scale models is necessary. It is expected to be next steps, for example the coupling of the macro-scale growth model with the meso-scale reaction-diffusion growth model.

**Liao Liao 廖了**

Post-doctoral Research Associate

Institut d’Etude Politique d’Aix en Provence, Cherpa

*“Evolution of management in the development zone in Zhuhai: an emergence of a local model of governance”*

Presentation

Discussion

**Juste Raimbault – 于思特**

Phd Student

Paris-Diderot University – Research Unit Géographie-cités, PARIS

**Cinzia Losavio – 秦霞**

Phd student

Paris Panthéon Sorbonne University – Research Unit Géographie-cités, CRIA

*“Agent-based modeling of migrant workers residential dynamics within a mega-city region: the case of Pearl River Delta ”*

**Presentation**

The approach taken here can be described as hybrid agent-based modeling. Agent-based models (ABM) can range from toy models to fully parametrized models, and we here start from data and qualitative stylized facts, to build a model that will be validated and/or calibrated on output data and qualitative behavior. Recent trends in ABM include pattern-oriented modeling, new practices in multi-modeling and high performance computing (HPC), and the model proposed here enters this framework.

The structure of the model is wanted simple but included two scales of evolution: the meso-scale conditioning population and economic opportunities spatial distributions, and the micro-scale corresponding to the level of migrants residential dynamics. The variety of economic profile is taken into account with a tunable wealth distribution, and the corresponding economic categories. Dynamics follow discrete choice, for which utilities include accessibility, cost of life and risk aversion. An additional term allows to include state regulations. The temporal evolution is sequential, first at the meso scale (Gibrat’s law and scaling laws) ; new migrants enter the city and settle according to their social network ; discrete choice migrations occur ; and variables are finally updated.

The model is implemented in Netlogo and HPC exploration through the model exploration software OpenMole. It is for now only implemented on synthetic data, i.e. synthetic city systems respecting simple rules (rank-size laws, monocentric cities). First results allow to obtain the statistical behavior of the model for some parameter points. It confirms the internal consistence and gives the number of repetitions needed to reach a certain confidence interval under some assumptions. Some phase diagrams were obtained, and although seem to follow expected behavior for obvious parameters, results are too preliminary to draw any conclusion on unexpected emergent behavior. Further work will be the full exploration on synthetic data, then stylization and scenarios for real DPR configurations, and the corresponding model behavior on real and hybrid configurations. Targeted experience plan should answer to specific questions such as the role of economic diversity or the influence of state regulation. Iterative further model construction are a potentialities depending on qualitative outputs. The final expected results are the impact of processes linked to migrant diversities on emergent dynamics, and the unveiling of state strategies through regulations.

In conclusion, this work is a first insight into an interdisciplinary complex approach on meso-scale migration dynamics. In this paper, both qualitative empirical knowledge and quantitative theoretical knowledge are crucial for its success, and qualitative fieldwork is as important as good modeling in order to not end up quickly into dead-end streets. Furthermore, it is wanted as complementary to “classical” approaches (typically quantitative contributions such as statistics or equilibrium economics).

**Discussion**

*no discussion ?*

**Valentina Anzoise**

Post-doctoral Research Associate

Ca' Foscari University of Venice, European Centre for Living Technology (Italy)

*“Planning, representations and perceptions of China’s urbanization: a case study on Hangzhou Future Sci-Tech City”*

Presentation

Discussion

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*“The reshaping of social groups through the process of urban renewal in post-socialist China: a case study on the coal miners in Datong”*

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