

MANCHESTER
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The University of Manchester

Manchester Urban Institute

CHINA'S NEW URBAN AGENDA:

An International Dialogue on
Sustainable Development

Conference | 30 October - 3 November 2018
University of Manchester

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An International Dialogue on Sustainable Development

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Organiser

Manchester Urban Institute, The University of Manchester

Co-organiser

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

Conference Sponsors

Economic and Social Research Council (ESRC)

Town Planning Review

Conference Venue

Museum of Science and Industry, Manchester

Conference Contact Email Address

china.urban.agenda@outlook.com

Conference Language

English

Website

manchesterurbanchina.com

Conference Organising Committee

Professor Mark Baker, University of Manchester

Professor Xiangzheng Deng, Chinese Academy of Sciences

Professor Richard Kingston, University of Manchester

Dr. John Sturzaker, University of Liverpool

Professor Cecilia Wong, University of Manchester (Chair)

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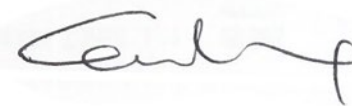
WELCOME

Message from the Conference Chair

On behalf of the organising committee, I would like to give you the warmest welcome to the international conference on China's New Urban Agenda: an international dialogue on sustainable development at Manchester's Museum of Science & Industry, the UK.

As affirmed in Habitat III's New Urban Agenda, the international policy community has turned to cities as the driver to end poverty, develop sustainable and inclusive urban economies and deliver environmental sustainability. The publication of the 'National New Urbanisation Plan' in China signifies its moving away from export-led manufacturing to domestic consumption to reshape urban growth towards a more human-centred and environmentally sustainable pathway. However, there are continuing debates over the paradoxical relationship between urbanisation and sustainable development.

We hope that this conference will provide an avenue for international scholars and policy-makers to have a dialogue and debate over the ways we can learn from each other to help achieve the challenging agenda of sustainable development that puts humans at its heart. As commented by Nobel Laureate, Professor Dan Shechtman: ***Sustainable development requires human ingenuity. People are the most important resource.***



Cecilia Wong

Professor of Spatial Planning, University of Manchester

Chair of Conference Committee

Welcome to the Science and Industry Museum, a place full of amazing objects and world changing ideas. We're based on the site of the world's oldest surviving passenger railway station and the world's first railway warehouse, built in 1830.

Enjoy live machine demonstrations, take part in fun science shows and discover how Manchester changed the world forever.

1 and 2 November Highlights

Electricity: The Spark of Life

Until 28 April 2019
Free



Electricity is a powerful force of nature, spectacular and thrilling. For centuries, humans battled to harness and control it. Today, electricity is central to our existence. We use it without thinking about it and only notice when it isn't there.

Featuring stunning commissions from three contemporary artists, Electricity: The spark of life examines how scientists experimented with electricity to understand and control it, and how mass generation and distribution changed our lives.

Through iconic objects such as Edison lightbulbs and emerging smart technologies, we uncover how supply companies convinced us of electricity's importance and explore electricity's place in a low carbon future.

Rocket Returns

Until September 2019
Free

Stephenson's Rocket has returned to Manchester for the first time in over 180 years. Rocket was built to run on the Liverpool and Manchester Railway, the world's first inter-city passenger railway line. In 1829, Rocket won the Rainhill Trials, which was a competition to decide on the best mode of transport for the railway.

Rocket was the only locomotive to successfully complete the trials, averaging 12 mph and achieving a top speed of 30 mph.

Designed by Robert Stephenson, Rocket's win proved once and for all that locomotives were better at pulling trains along the Liverpool and Manchester Railway, rather than stationary winding engines.

The technology applied to the design of Rocket was soon extended across the entire railway network, paving the way for the modern rail network and shaping the course of the history.

This is a once-in-a-lifetime opportunity to see an iconic symbol return to the site of the world's oldest surviving passenger railway, the terminus of the Liverpool and Manchester Railway which is now home to the museum.

PROGRAMME

Tuesday 30 October (University of Manchester)

1400-1600	Manchester Campus Neighbourhoods Walking Tour Humanities Bridgeford Street Building (HBS) Foyer (campus map no 35)
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Wednesday 31 October (University of Manchester)

1300-1800	Registration Humanities Bridgeford Street Building (HBS) Foyer (campus map no 35)
1400-1600	Research Student Workshop G7, HBS Session 1: Publish or Perish: dissemination of research findings Session 2: Career development
1630-1800	Welcome Reception Humanities Bridgeford Street Building (HBS) Foyer (campus map no 35)

Thursday 1 November (Museum of Science and Industry, Second floor)

From 0800	Registration and coffee
	Opening of conference: Professor Mark Baker
0900-0930	Welcome from Manchester Urban Institute: Professor Kevin Ward Welcome from Manchester China Institute: Professor Peter Hays Gries Welcome from Department of Planning and Environmental Management: Professor Richard Kingston Welcome from Chinese Academy of Sciences: Professor Xiangzheng Deng
0930-1100	Keynote Session Garratt Suite Chair: Professor Peter Hayes Gries
0930-1000	Professor Belinda Yuen (Singapore University of Technology and Design, Singapore) Inclusive Planning in Urban China
1000-1030	Mr. Richard Elliott (Manchester City Council, UK) Manchester's Recent Growth and Transformation: Parallels with China's Urbanisation and Opportunities for Future Collaboration
1030-1100	Discussion
1100-1120	Tea Break

1120-1300	Parallel Session 1	
	1A Mega-city and metropolitan region	Garratt Suite 1
	1B Energy and consumption	Garratt Suite 2
	1C Dynamics in urban-rural interactions	Lovelle Suite
	1D Urban health risks	Dalton Suite
	1E Dynamics of sustainable development	Joule Suite
1300-1400	Lunch Break	
1400-1540	Parallel Session 2	
	2A Liveable urban communities	Garratt Suite 1
	2B Governing low-carbon urban transitions	Garratt Suite 2
	2C Health and urban environment	Lovelle Suite
	2D Financing of urban development	Dalton Suite
	2E Regeneration and gentrification	Joule Suite
1540-1600	Tea Break	
1600-1730	Plenary Session Garratt Suite	
	Theme: ESRC-NSFC Collaborative Projects Speakers: Professors Ya Ping Wang, Fulong Wu and Cecilia Wong Chair: Dr. Ying Jin	
1800	Coach to Tai Pan restaurant	
1830	Conference Dinner Tai Pan Restaurant, 81-97 Upper Brook St, Manchester M13 9TX	

Friday 2 November (Museum of Science and Industry, Second floor)

From 0830	Registration and coffee
0900-1030	Keynote Session Garratt Suite Chair: Professor Yaojun Li
0900-0930	Dr. Gørild Heggelund (Fridtjof Nansen Institute, Norway) Addressing Climate Change in China: the Role of Cities
0930-1000	Professor Anthony Heath (University of Oxford, UK) Title TBC
1000-1030	Discussion
1030-1050	Tea Break

1050-1210	Parallel Session 3	
	3A European approaches to climate change adaptation and resilience	Garratt Suite 1
	3B Critical reflections on Chinese urbanism	Garratt Suite 2
	3C Migration	Lovelle Suite
	3D Urban regeneration	Dalton Suite
	3E Green transition and climate change	Joule Suite
1210-1310	Lunch Break	
1310-1430	Parallel Session 4	
	4A Social change and cohesion	Garratt Suite 1
	4B Spatial planning processes	Garratt Suite 2
	4C International comparisons	Lovelle Suite
	4D Creative industries	Dalton Suite
	4E Inequality and urban justice	Joule Suite
1430-1440	Regrouping	
1440-1600	Parallel Session 5	
	5A Urban environment and ecology	Lovelle Suite
	5B Smart city and technology	Dalton Suite
	5C Mobility and travel pattern	Joule Suite
1440-1600	PhD Researcher Roundtable (Town Planning Review bursary winners): Research Challenges of Sustainable Urbanisation Garratt Suite Chair: Dr. John Sturzaker, Town Planning Review, University of Liverpool	
1600-1615	Tea Break	
1615-1745	Plenary Session Garratt Suite	
	Theme: Sustainable Urbanisation - International Dialogue Speakers: Professor Wen Chen, Dr. Maurizio Marinelli, Dr. Zhu Qian, Professor Jianfa Shen, Professor Zhigang Li Chair: Professor Mee Kam Ng	
1745-1900	Conference Close and Wine Reception	

Saturday 3 Nov (Optional Mobile Tours)

0930-1300	Option 1: Walking tour of Manchester City Centre and key regeneration sites (meeting at City Library, St Peter's Square)
	Option 2: Manchester United Football Club and Salford Quays/Media City (meeting at City Library, St Peter's Square)

KEYNOTE SPEAKERS

Richard ELLIOTT



Richard Elliott is a Chartered Town Planner and experienced policy professional with over 35 years' experience of working in senior roles in planning, transportation and policy in London and Manchester, in

both local government and the private sector.

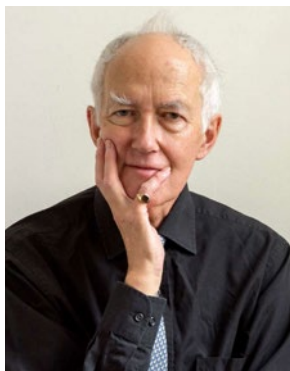
A previous Head of Transport Policy for Manchester City Council, Richard was closely involved in developing and implementing a new masterplan for Manchester City Centre following the 1996 IRA bomb explosion, a transport strategy for the 2002 Commonwealth Games in Manchester, and the city's Metrolink light rail system.

From 2007 until 2010 Richard was Associate Director at WSP Development and Transportation, leading high-profile transportation studies and projects across the UK, including for central Salford and Westminster City Council.

Richard returned to local government as director of a

housing regeneration project and was subsequently appointed as Policy and Strategy Manager in 2011 and Head of Policy, Partnerships and Research in 2016. In these roles Richard has played a leading role in developing a new city strategy for Manchester that identifies the important role of smart city related applications and enhanced digital connectivity. He has also played an important role in overseeing the development of City Verve, the UK's national demonstrator for the Internet of Things, a project that has sought to address some of the key challenges facing the city through the application of IOT technology.

Anthony HEATH



Anthony Heath, CBE, FBA, is Director of the Centre for Social Investigation at Nuffield College, Oxford and Professor of Sociology. He is a specialist in survey research and his

research interests cover social stratification and mobility, ethnicity, electoral behavior, social and political attitudes, national identity and social cohesion.

His most recent books include *Unequal Attainments: Ethnic Educational Inequalities in Ten Western Countries* (OUP, 2014), *The Political Integration of Ethnic Minorities in Britain* (OUP, 2013) and *Hard Times: The Divisive Toll of the Economic Slump* (with Tom Clark, Yale University Press, 2014).

He is currently leading a team designing and analyzing an online panel study of attitudes to the Brexit negotiations and is completing

a book on social progress in Britain for OUP.

KEYNOTE SPEAKERS

Gørild HEGGELUND



Gørild Heggelund is Senior Research Fellow at the Fridtjof Nansen Institute (FNI) – until recently as the FNI China representative – and has carried out research on China's

environmental, energy and climate change policy for three decades, including with regard to the Arctic.

Dr Heggelund's current research concerns China's efforts to implement the Minamata Convention on mercury; China's potential leadership role in energy and climate post-Paris; China's development of the Emissions Trading System as a greenhouse gas mitigation policy tool; and the role of cities in addressing climate change.

Dr Heggelund was also the Senior Climate Change Advisor at UNDP China (2009-2014), and an international expert in the China Council for International Cooperation on

Environment and Development (CCICED) Special Policy Study on Good City Models under the Concept of Ecological Civilization.

Belinda YUEN



Belinda Yuen, BA (Hons), MA (Town & Regional Planning), PhD (Environmental Planning), FSIP, MRTPI, MPlA, is a qualified urban planner. She is Professorial Fellow and Research Director with the Lee

Kuan Yew Centre for Innovative Cities at the Singapore University of Technology and Design, where she leads the Lee Li Ming Programme in Ageing Urbanism.

Professor Yuen's research focuses on spatial planning and urban policy analysis, most recently on planning liveable, sustainable cities. She is interested in understanding the interactions between the urban built environment and its social, cultural and environmental dynamics.

Professor Yuen has served on various Singapore urban planning committees including as Planning Appeals Inspector, and on numerous

international advisory committees and editorial boards of international scholarly journals. She has been elected as President of the Singapore Institute of Planners (2005-08), and Vice-President, Commonwealth Association of Planners (South-east Asia) (2006-08; 2010-12; 2014-16). Additionally, Professor Yuen has served as a Juror for the Shaikh Khalifa Bin Salman Al Khalifa Habitat Award (2008-09) and is a science reviewer of international pluri-disciplinary research centres/programmes.

PLENARY SESSION SPEAKERS

Wen CHEN



Wen Chen is Professor and Director of the Laboratory of Regional Development and Human-Economic Geography, and Urban and Regional Development Research

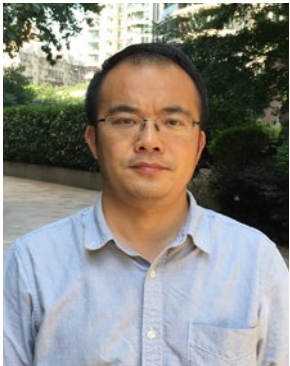
Centre at Nanjing Institute of Geography and Limnology, at the Chinese Academy of Sciences (CAS). She is also the Vice Director of the Sustainable Development Research Centre at CAS, and the Chair of Jiangsu Suke Academy of Innovation Strategy, China.

Prof. Chen's research has spanned regional sustainable development, urban planning, economic geography, and spatial analysis. She is the main participant in the planning research for the Yangtze River Economic Belt, China. Prof. Chen is also the Chief Technologist involved in the 'Developmental Planning for the Yangtze River Delta Urban Agglomeration, China', 'Planning for Jiangsu's Developing

Functional Zone, China', 'Developmental Planning for Jiangsu's Areas along the Yangtze River', and 'Regional Planning for the Nanjing metropolitan area, China' programmes. She leads the Science and Technology Service Network Initiative, CAS, which focuses on the exploration, application, and promotion of sustainable technologies in rural areas in China.

Due to her contributions in relevant research fields, Prof. Chen was awarded CAS's Science and Technology Development Award, and declared one of the Top 10 Most Outstanding Female Scientists within CAS in 2016.

Zhigang LI



Zhigang Li is a Professor of Urban Studies and Planning at the School of Urban Design, Wuhan University, China and has served as the Dean of the school since 2015.

Previously, Prof. Li worked at the School of Geography and Planning, Sun Yat-sen University, Guangzhou, China. As an urban geographer and planner, Prof. Li examines the socio-spatial transformation of Chinese cities, with a focus on such topics as residential segregation, integration, satisfaction, migration, and related planning issues and is particularly known for his pioneering work on the study of African neighbourhoods in China.

Prof. Li's recent work concentrates on the return migration of middle China, place attachments and community planning. He has been the principal investigator

of four research projects funded by China's NFC, including one for the Excellent Youth Foundation.

Additionally, Prof. Li was awarded China's National Award for Young Geographers in 2011 and the National Award for Young Planners in 2013.

PLENARY SESSION SPEAKERS

Maurizio MARINELLI



Maurizio Marinelli is an Associate Professor in East Asian Studies and Co-Director of the Asia Centre at the University of Sussex. He also is a Visiting Senior

Research Associate at the Institute for Global Prosperity, The Bartlett, University College London, where he leads the East Asian Cities Knowledge Network.

The focus of Dr Marinelli's research is located at the crossroads of Chinese urban history, politics and society. He has worked for several years on the socio-spatial transformation of the port city of Tianjin, from the foreign concessions era (1860-1945) to the present, leading an ESRC-funded project.

He recently published the co-edited volume *China: A Historical Geography of the Urban* (Palgrave, 2018) and

'How to Build a "Beautiful China" in the Anthropocene: The Political Discourse and the Intellectual Debate on Ecological Civilization', part of his co-edited special issue for the *Journal of Chinese Political Science* (2018).

Next year, his forthcoming book, entitled *Hong Kong: Markets, Street Hawkers and the Fight against Gentrification* (Zed, 2019), will be available.

Zhu QIAN



Zhu Qian is an Associate Professor and Associate Director in the School of Planning at the University of Waterloo, Canada. His research mainly focuses on comparative

urban planning and policy, urban restructuring, land use policies, and urban form in China.

He has also published widely on matters such as heritage tourism, historical urban transformation, and housing overbuilding in 21st century China.

Prior to joining academia, Dr Qian was a municipal land use planner in China.

PLENARY SESSION SPEAKERS

Jianfa SHEN



Jianfa Shen is a Professor at the Department of Geography and Resource Management and Director of the Research Centre for Urban and Regional Development in the Hong Kong

Institute of Asia-Pacific Studies at the Chinese University of Hong Kong.

His research interests focus on urbanisation, migration, urban and regional development, urban governance and urban competitiveness in China. Prof. Shen serves on the editorial boards of *The China Review*, *Population, Space and Place*, and *Applied Spatial Analysis and Policy*. He is the author/co-author of *Urbanization, Regional Development and Governance in China* (Routledge, 2018) and *Development and Planning in Seven Major Coastal Cities in Southern and Eastern China* (Springer, 2017).

Ya Ping WANG



Ya Ping Wang is Professor and Chair in Global City Futures at the School of Social and Political Sciences, University of Glasgow, as well as Director of the UKRI Global Challenge

Research Fund Centre for Sustainable, Healthy and Learning Cities and Neighbourhoods (SHLC).

Prof. Wang leads several ESRC and China collaborative research projects on urban transformation. His research focuses on housing, urban development and the living conditions of rural migrants.

Prof. Wang has been widely published and is the author of *Urban Poverty, Housing and Social Change in China* (Routledge, 2004), as well as co-author of *Housing Policy and Practice in China* (Macmillan, 1999) and *Planning and Housing in the Rapidly Urbanising World* (Routledge,

2006). Prof. Wang is a Fellow of the Academy of Social Sciences.

PLENARY SESSION SPEAKERS

Cecilia WONG



Cecilia Wong is Professor of Spatial Planning at the University of Manchester, as well as the Director of the Spatial Policy and Analysis Laboratory (formerly the Centre

for Urban Policy Studies) at the Manchester Urban Institute. Prof. Wong is also the co-editor of *Town Planning Review*.

Her research has spanned housing, urban regeneration and regional development, with research experience in both the UK and China. She is a Fellow of the Royal Town Planning Institute and the Academy of Social Sciences with expertise in policy monitoring and spatial analysis, strategic planning, and urban and regional development policies. Prof. Wong has conducted major research projects for UK central government departments, particularly the Department

for Communities and Local Government and its predecessors.

Fulong WU



Fulong Wu is Bartlett Professor of Planning at University College London. His research interests include urban development in China

and its social and sustainable challenges.

He has recently published a critically acclaimed text, *Planning for Growth: Urban and Regional Planning in China* (2015, Routledge). Professor Wu is also an Editor of the *International Journal of Urban and Regional Research*.

He was awarded the 2013 Outstanding International Impact Prize by the UK's ESRC and has previously taught at Cardiff University and the University of Southampton.

OPENING SPEAKERS AND CHAIRS

Mark BAKER



Mark Baker is Professor of Urban and Regional Planning within the School of Environment, Education and Development (SEED) at the University of Manchester, and a

chartered town planner (MRTP) with previous professional experience in local and central government in the UK. Within the university, he was previously the School's Director of Teaching and Learning and is a former Head of the Planning and Environmental Management Department.

An active member of the Spatial Policy and Analysis Laboratory within the Manchester Urban Institute (MUI), Professor Baker has well-developed research interests in regional and strategic planning, plan-making processes and development control procedures. His past research activities include work on the English structure planning process and on

stakeholder involvement in regional planning (for central government), sustainability appraisal of development plans (ESRC) and the future of English sub-regional planning (CPRE). More recently, he led the University's involvement in an EU-funded (FP7 IRSES ECURBS) partnership with Nanjing University in China and three other European universities.

Professor Baker also worked on the RTP's Map for England project and is a Co-Investigator on the ESRC/Newton Fund Urban Transformations in China Eco-Urbanisation project. He has been a Visiting Academic at Nanjing University, China on several occasions (2007, 2012 and 2013).

Xiangzheng DENG



Xiangzheng Deng is a Professor in the Centre for Chinese Agricultural Policy (CCAP) in the Institute of Geographic Sciences and Natural Resources Research at the Chinese Academy of Sciences.

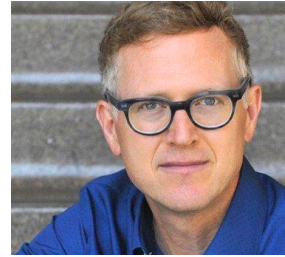
Professor Deng has specialised in environmental and natural resource economics, land change science, large-scale land use modelling, environmental monitoring and assessment, regional planning, and policy analysis for regional sustainable development. He has successively presided over or participated in more than 20 research projects and is a recipient of the Outstanding Young Scientist Award from the National Natural Science Foundation of China; Science and Technology Awards of the Chinese Academy of Fishery Sciences; Science and Technology Awards of Hainan Province; the Young Scientist Program (YSSP) Fellowship at

the IIASA-NSFC; and Young Scientist Fellowship of the UN MA Project, MA Board and Secretariat.

Professor Deng has attained achievements in the development and expansion of regional applications of the CGELUC (Computable General Equilibrium of Land Use Changes) and DLS (Dynamics of Land Systems) models. Additionally, his research interests include an innovative approach to and empirical studies on the competition and optimisation of land and water uses; and efforts in integrating econometric methodologies and spatial analysis approaches into the study on dynamics and consequences of urbanisation.

OPENING SPEAKERS AND CHAIRS

Peter GRIES



Peter Gries joined the University of Manchester as Professor of Chinese Politics in August 2017. After a fall of fundraising and a £5M donation endowing a new Manchester China Institute, in December 2017 he became the Lee Kai Hung Chair and MCI Director.

Professor Gries was born in Singapore and grew up in Hong Kong, Washington DC, Tokyo, and Beijing. He later earned bachelor's and master's degrees in Asian Studies at Middlebury and Michigan, and a PhD in politics from Berkeley.

After a two-year postdoctoral position at Ohio State University, Professor Gries was appointed Assistant Professor of Politics at the University of Colorado, Boulder for five years.

He then spent eleven years at the University of Oklahoma, where he founded and directed the Institute for US-China Issues, and its two signature programmes, the Newman Prize for Chinese Literature,

and the US-China Diplomatic Dialogue.

Professor Gries is the author of *The Politics of American Foreign Policy: How Ideology Divides Liberals and Conservatives over Foreign Affairs* (Stanford University Press, 2014) and *China's New Nationalism: Pride, Politics, and Diplomacy* (University of California Press, 2005), and dozens of peer-reviewed journal articles. He is also co-editor of *State and Society in 21st Century China* (Routledge, 2004) and *Chinese Politics* (Routledge, 2010). He studies the political psychology of international affairs, with a focus on China and the United States.

Ying JIN



Dr Ying Jin is Reader in Architecture and Urbanism, and Director of the Martin Centre for Architectural and Urban Studies in the

Department of Architecture at Cambridge University.

Dr Jin leads the Centre's research on urban data science and predictive city-scale modelling, which is providing core inputs to urban development plans for Greater Beijing to 2035 and for Greater Shanghai to 2040, an independent economic review of the Greater Cambridge-Greater Peterborough area to 2051, and analyses for the UK2070 Commission of Britain's spatial development scenarios to 2070.

Dr Jin is also a core executive committee member of the £22m Cambridge Centre for Smart Infrastructure and

Construction, a Principal Investigator for modelling the evolution of Britain's built-up areas to 2050 at the Cambridge Centre for Digital Built Britain, and the lead convenor of the international Symposium on Applied Urban Modelling since its founding in 2011.

OPENING SPEAKERS AND CHAIRS

Richard KINGSTON



Richard Kingston is Head of Department and Professor of Urban Planning and GISc in the Department of Planning and Environmental Management and Deputy Director of the SPA lab at the

University of Manchester.

He has spent that past 20 years researching, developing, designing, testing and implementing web-based planning support systems at local, regional and national scales across the UK and Europe.

His research focuses on the role spatial technologies can play in better understanding how cities function and also how such technologies can facilitate improved participation in planning.

Recent projects include the ESRC funded www.commute-flow.net and the JRF funded www.climatejust.org.uk.

Further details can be found here: www.ppgis.manchester.ac.uk.

Yaojun LI



Yaojun Li is Professor of Sociology at Department of Sociology and Cathie Marsh Institute for Social Research, School of Social Sciences, Manchester University, UK.

He is also a Fellow of the Royal Society of Arts.

His research interests are in social mobility and social stratification, social capital, socio-economic integration of ethnic minority groups (in Britain) and migrant workers (in China), and international comparative studies. He has over 90 publications, including books, journal papers, book chapters and official reports.

His papers have appeared in the American Journal of Sociology, British Journal of Sociology, European Sociological Review, Research in Social Stratification and Mobility, British Journal of

Sociology of Education, British Journal of Political Sciences, Sociology, Work, Employment and Society, Ageing and Society, Social Inclusion, Journal of Ethnic Minority Studies, Sociological Research Online, Ethnicities and others.

He is also a frequent contributor to think-tanks such as Runnymede, and Centre for Social Investigation at Nuffield College, Oxford University.

He has conducted around 20 research projects funded by academic and government agencies in Britain, China, USA, Australia and Qatar.

OPENING SPEAKERS AND CHAIRS

Mee Kam NG



Mee Kam Ng is Vice-Chair of the Department of Geography and Resource Management, Director of the Urban Studies Programme, and Associate Director of the Institute of

Future Cities and the Hong Kong Institute of Asian Pacific Studies at the Chinese University of Hong Kong.

Professor Ng is also a Fellow of the Academy of Social Sciences in the UK, a member of the Royal Town Planning Institute, a fellow of the Hong Kong Institute of Planners and an academic advisor to the Hong Kong Institute of Urban Design.

Her publications have earned her six Hong Kong Institute of Planners' Awards and the 2015 Association of European Schools of Planning Best Published Paper Award.

Professor Ng has been a consultant to the United Nations as well as the

European Union; for example, the Urban Studies Programme is an Associate Member of the World Urban Campaign coordinated by UN-Habitat to promote the New Urban Agenda.

John STURZAKER



John Sturzaker is a Senior Lecturer in Civic Design/ Planning at the University of Liverpool. He has had a varied career as a planner in both

practice and research, and is keen to bring both areas closer together.

He tries to work across disciplinary boundaries, with the ultimate aim of improving people's lives by contributing to planning and development policy and practice.

Dr Sturzaker is particularly interested in how cities grow in more "sustainable" ways, with an understanding of sustainability that considers all those involved, including those with less power and influence in the planning and development systems.

His current external roles include being Chair of the Planning Schools Forum.

At Liverpool, he is Director of the Centre for Sustainable and Resilient Cities (SaRC), and Programme Director of the Master of Civic Design (MCD) and MA Town & Regional Planning programmes.

OPENING SPEAKERS AND CHAIRS

Kevin WARD



Kevin Ward is Professor of Human Geography and Director of the Manchester Urban Institute (www.mui.manchester.ac.uk).

He is an urban geographer with interests in the financing and governance of cities.

His current work explores

urban policies to see where they come from, how they travel, where they end up and what these journeys mean for the cities the policies pass through. Theoretically, this involves rethinking what is meant by 'the urban' in urban politics, as elements of different places are assembled and reassembled to constitute particular 'urban' political realms. Methodologically, this involves doing fieldwork in a range of sites inside and outside of the cities that are the objects of study, literally seeking to reveal the circuits, networks and webs in and through which policies are moved.

His co-edited book (with Eugene McCann) *Mobile*

Urbanism: Cities and Policymaking in the Global Age (Minnesota University Press) was published in 2011.

He is currently exploring the constitution of financial 'models' that have emerged in different areas of the world and that have been circulating as a means of funding infrastructure in the current economic condition.

PARALLEL SESSIONS

Session 1: Thursday 1 November

1A	Mega-city and metropolitan region Garratt Suite 1 Chair: Xingjian Liu
	An understanding of the Guangdong-Hong Kong-Macao Greater Bay Area from the perspective of a mega-city region Jinmiao Zhou (Sun Yat-sen University, China)
	Polycentric urban development in large Chinese cities: A cross-city comparison Yong Liu (Chongqing University, China)
	Polycentric urban development in China: A multi-scalar analysis of its environmental and economic effects Xingjian Liu (The University of Hong Kong, Hong Kong)
	Inside the Chinese metropolitan region: Spatial lectures from Zhengzhou and Zhaoqing Astrid Safina, Leonardo Ramondetti (Polytechnic of Turin, Italy)
	To What Extent is Shanghai a Polycentric City? Insights from Online Land Transaction Data 2001-2015 Tianren Yang (University of Cambridge, UK)
1B	Energy and consumption Garratt Suite 2 Chair: Jingke Hong
	Consumption and City Size: Evidence from China Bing Shen, Jiyuan Wang, Zhi Li (Institute of Spatial Planning and Regional Economy, National Development & Reform Commission, China)
	Embodied energy flows between China's industrial sectors: A combination of multi-regional input-output analysis and a complex network approach Miaohan Tang, Jingke Hong (Chongqing University, China)
	The spatiotemporal distribution of embodied energy consumption of major urban agglomeration economies in China Jingke Hong (Chongqing University, China)
	The Impacts of industrial structure on energy consumption and carbon emission changes across space and time: A case study of Beijing, China Zhihui Li (Chinese Academy of Sciences, China)
	Forecasting the world's building energy consumption using the machine learning-based Grey Model Saina Zheng (The Hong Kong Polytechnic University, Hong Kong)

Session 1: Thursday 1 November (continued)

1C	Dynamics in urban-rural interactions Lovelle Suite Chair: Maurizio Marinelli
	Rural land marketisation: Central policy and local practice Changchang Zhou (The University of Hong Kong, Hong Kong)
	Decentralisation in a Suburbanisation Era? Evidence from the spatial pattern of population growth in Tianjin Yu Wang (University of Glasgow, UK)
	Examining the degree of coordination between urbanisation and industrialisation in China Yiming Wang (Chongqing University, China)
	The transformation of the urban-rural gap and urbanisation in China Enping Li (Chinese Academy of Social Sciences, China)
	The vanishing village and evolving rurality in urbanising China: Evidence from Dengzhou, Henan Province Yong Zhang (The University of Manchester, UK)
1D	Urban health risks Dalton Suite Chair: Jianquan Cheng
	The Impact of Urban Built Environment on Respiratory Health and its Planning Implication: Shanghai as the Study Site Lan Wang (Tongji University, China), Xi Jiang (Tongji University, China), Pingping Bao (Center of Disease Control, Shanghai, China)
	The effect of context-based environmental exposure assessment on momentary and daily stress: Evidence from Beijing Yinhua Tao (Peking University, China), Yanwei Chai (Peking University, China), Jing Ma (Beijing Normal University, China), Mei-Po KWAN (University of Illinois at Urbana-Champaign, USA)
	Information stress: Measuring emotional environments in healthy cities Jianquan Cheng (Manchester Metropolitan University, UK), Juan Hu (Central China Normal University, China), Steve Miles (Manchester Metropolitan University, UK)
	The impact of intra-urban relocations on the well-being of the elderly in the transitional period of China: A case study in Guangzhou Suhong Zhou (Sun Yat-sen University, China), Jiaming He (Sun Yat-sen University, China), Lin Liu (Guangzhou University, China)
	The sustainable development of the Beijing-Tianjin-Hebei Region from the perspective of fog and haze impact based on physical geography patterns, resource endowment and industrial development Li Wang (Institute of Spatial Planning and Regional Economy, National Development & Reform Commission, China)

1E	Dynamics of sustainable development Joule Suite Chair: Wen Chen
	Rethinking the Urban Agenda in Hong Kong: Top-down Policies or Bottom-up Practices for Eco-Socially Sustainable Prosperity? Maurizio Marinelli (University of Sussex, UK)
	Sustainable development of the Yangtze River Delta Urban Agglomeration Wen Chen (Nanjing Institute of Geography and Limnology, CAS, China)
	Changing ideas of 'sustainability' in China's eco-city development: A case study of Chongming, Shanghai Xiaoxuan Lan (University College London, UK)
	Sociogenic Facilitators of Sustainable Development Crises in China Xiaoyang Zhang (Tsinghua University, China)
	Car-Free as a Sustainable Development Tool Kit for Cities in China Fu Li (Peking University, China)

Session 2: Thursday 1 November

2A	Liveable urban communities Garratt Suite 1 Chair: Alison Browne
	An Exploration of Cross-generational Childhood Outdoor Play Experiences in Chinese Communities, Taking Wuhan as An Example Yuanyuan Shi (The University of Sheffield, UK)
	Conceptualising 'community' and 'energy' in urban China Alison Browne (The University of Manchester, UK)
	Walkability and sustainable urban environments: an analysis in six neighbourhoods of Santiago, Chile Marie Geraldine Herrmann Lunecke (Universidad Diego Portales, Chile)
	Assessment of liveable urban communities: From the perspective of walkability Hao Wang (Central University of Finance and Economics, China)
	Paths and strategies for urban renewal at the community level: A framework for decision-making Lijie Huang (Chongqing University, China)
2B	Governing low-carbon urban transitions Garratt Suite 2 Chair: Fangzhu Zhang
	Do devolved powers lead to lower carbon footprints? The governance and delivery of sustainable development in Greater Manchester Caglar Koksai, Mark Baker (The University of Manchester, UK)
	Governing for urban low-carbon development in China: A case study of the Hongqiao Low-Carbon Business District, Shanghai Bing Sun (The University of Manchester, UK)

Session 2: Thursday 1 November (continued)

	Eco-innovation and low-carbon transition in China: a case study of Wuxi Fangzhu Zhang (University College London, UK)
	Urban ecological planning as a long-term instrument for risk governance in Guangzhou Jieling LIU (University of Lisbon, Portugal)
	Green infrastructure and Urbanisation: An assessment of neighbourhoods in the Beijing metropolitan region Wei Zheng (University of Manchester, UK)
2C	Health and urban environment Lovelie Suite Chair: Jianquan Cheng
	The impacts of medical facilities' accessibility on residents' health-seeking behaviours: A case study in Shanghai Yue Shen (East China Normal University, China)
	The job-housing spatial link, neighbourhood social cohesion and its impacts on mental health in Beijing, China: Contrasting the experiences of native and migrant residents Yan Zhang (Beijing Union University, China)
	Environment, development and health in China Linsheng Yang, Li Wang, Lijuan Gu (Chinese Academy of Sciences, China)
	The effects of green landscape pattern on thermal microenvironment: a case study in Beijing Liding Chen, Zhifeng Wu (Chinese Academy of Sciences, China)
	Understanding the variability of urban heat islands for climate change adaptation Ranhao Sun (Chinese Academy of Sciences, China)
2D	Financing of urban development Dalton Suite Chair: Fulong Wu
	'Government guide funds': a new way to finance urban infrastructure in China? Fenghua Pan (University College London, UK)
	Institutional barriers to financing transit-oriented development in China: Analysing the informal land value capture strategies Jinshuo Wang (Radboud University, Netherlands)
	From Upstart City to 'Ghost' City: Informal Housing Finance in Ordos, China Zhu Qian (University of Waterloo, Canada)
	Rethinking financialisation in China: the state and financial instruments Fulong Wu (University College London, UK)
2E	Regeneration and gentrification Joule Suite Chair: Jie Sun
	Research on approaches to cultural inheritance and regeneration in inclusive urban renewal Dandan Wei (Chongqing University, China)

	Commercial gentrification driven by the culture of consumption in areas featuring a high concentration of higher education institutes: A case study of Nanjing Jie Sun, Xigang Zhu (Nanjing University, China)
	Responsive or transformative regeneration? Remaking industrial space on collective land in Nanshan, Shenzhen Mingming Pan (The Chinese University of Hong Kong, Hong Kong)
	Regional responses to population mobility as a consequence of ecological resettlement: Evidence from Chongqing, China Tao Zhou, Xinyun Jiang (Chongqing University, China)
	Wellbeing and Quality of Life in the Context of Heritage-Led Urban Regeneration in China Sabina Ciobata, Giulio Verdini, Johan Woltjer (University of Westminster, UK)

Session 3: Friday 2 November

3A	European approaches to climate change adaptation and resilience Garratt Suite 1 Chair: Angela Connelly
	Co-creation in urban climate change adaptation and resilience Angela Connelly (The University of Manchester, UK)
	Methods for urban climate change adaptation and resilience Jeremy Carter (The University of Manchester, UK)
	Climate Ready Clyde: Working in Partnership for a Climate Resilient Future Kit England (Climate Ready Clyde, UK)
	Greater Manchester's Ambition to Adapt to the Changing Climate: Implementing Change on the Ground Matt Ellis (Greater Manchester Combined Authority, UK)
3B	Critical reflections on Chinese urbanism Garratt Suite 2 Chair: Ya Ping Wang
	China's Urban Transformation: A Neo-liberal Confucianism Perspective Ya Ping Wang (University of Glasgow, UK)
	Knowledge of Chinese cities: Socio-historical continuation and disruption Xiaoxue Gao (TU Berlin, Germany)
	The city after Chinese new towns Maria Paola Repellino (Polytechnic of Turin, Italy)
	Understanding and managing conflict in planning using selected aspects of Chinese pre-Qin philosophy Kang Cao (Zhejiang University, China)

Session 3: Friday 2 November (continued)

3C	Migration Lovelle Suite Chair: Jianfa Shen
	The 'Chinese Dream' and urban aspirations for internal migrants in Guangzhou, China Samantha Lim (National University of Singapore, Singapore)
	Learning from urban informality and the everyday life of contemporary migrants: The case of the La Chimba neighbourhood in Santiago, Chile Jorge Inzulza-Contardo (Universidad de Chile, Chile)
	Rural-urban linkages, the plight and agency of migrant women care workers in urban China Xiaohui Zhong (Sun Yat-sen University, China)
	Measuring and understanding migration in urbanizing China Jianfa Shen (The Chinese University of Hong Kong, Hong Kong)
3D	Urban regeneration Dalton Suite Chair: Andreas Schulze Baing
	Creating a framework for inclusive urban regeneration through the adoption of two-dimensional perspective which encompasses nature and society Boting Wu, Pengcheng Xiang (Chongqing University, China)
	An economic contribution analysis of the urban regeneration industry in China based on an input-output method Cong Chong, Guiwen Liu, Jingke Hong (Chongqing University, China)
	A method study of urban renewal planning based on the multi-level urban renewal unit: A case study of the old city of Jiyang County Zijing Li, Shijie Sun (Southeast University, China)
	The spatial and temporal differences in regenerating industrial spaces: A case study of the inner cities of Shanghai, Nanjing and Hangzhou Xue Mi, Shijie Sun (Southeast University, China)
3E	Green transition and climate change Joule Suite Chair: Gørild Heggelund
	New roles of householders to contribute to Chinese and Dutch retrofitting housing estates Frank De Feijter, Bas Van Vliet (Wageningen University, Netherlands)
	Feasibility of green housing transitions in the Chinese housing market: the developers' perspective Han Jiang (University of Sheffield, UK)
	A review of China's Urban Climate Research and Planning Application (1963-now) Feihao Chen (The Chinese University of Hong Kong, Hong Kong)
	Governance processes for urban carbon reduction: challenges facing policy intervention on low carbon transition Qianqian Wei (The University of Manchester, UK)

Session 4: Friday 2 November

4A	Social change and cohesion Garratt Suite 1 Chair: Yaojun LI
	Are mixed neighbourhoods more socially cohesive? A case study in Nanjing, China Ying Wang (University of Southampton, UK)
	Spatial-economic restructuring in suburban Beijing: the impact on rural migrants and their living environment Miao Qiao (University of Manchester, UK)
	Urbanisation as Social Inclusion: Evidence from the Social Welfare System Xueji Wei (Southern University of Science and Technology, China)
	Social Life and Political Trust in Urban China Yinxuan Huang (The University of Manchester, UK)
4B	Spatial planning processes Garratt Suite 2 Chair: Mee Kam Ng
	China's public participation in urban planning since 1990: A review of literature Limei Zhang (Nankai University, China)
	How can growth and the green belt mutually support each other in the context of China's New Urban Agenda? –Dilemmas in the implementation of Shanghai's Basic Ecological Network Planning Xin Feng (Tongji University, China)
	The New Urban Agenda and Strategic Spatial Planning in Shenzhen Mee Kam Ng (The Chinese University of Hong Kong, Hong Kong)
	The production of spatial plans Sichuanese towns: Planners' conflicting roles and tasks Lisa Melcher (Freie Universität Berlin, Germany)
4C	International comparisons Lovelle Suite Chair: Roger C K Chan
	Opposition and resistance: governance challenges around urban growth in China and the UK John Sturzakerk (The University of Liverpool, UK)
	The Nepal-China Friendship Highway under China's Belt and Road Initiative: A Tourism Area Life Cycle exploration Roger C K Chan (The University of Hong Kong, Hong Kong), Kishan Datta Bhatta (Far-western University, Nepal)
	Beyond growth – European experience with shrinking cities and urban regeneration. Some lessons to learn for China's urban development and urban policy? Andreas Schulze Baing (The University of Manchester, UK)
	Urbanisation lessons for urban-rural spatial planning for developing countries: Comparing experiences in China, India and South Africa Methembe Mdlalose (University of KwaZulu-Natal, South Africa)

Session 4: Friday 2 November (continued)

4D	Creative industries Dalton Suite Chair: Jorge Inzulza-Contardo
	Urban creative clusters in the sharing economy: Relationships between co-working spaces and youth communities Ke Wang (Zhejiang University, China)
	Female entrepreneurship in China in the internet era Yiling Luo (The University of Hong Kong, Hong Kong)
	An evolutionary analysis of the manufacturing industry innovation network of the Pearl River Delta using patent data Yawen Qin (Sun Yat-sen University, China)
	Retail Location Strategies in China in the Era of Online Shopping Rong Huang (Manchester Metropolitan University, UK)
4E	Inequality and urban justice Joule Suite Chair: Yanpeng Jiang
	Spatially Rebalancing China Manufacturing Industries? A Spatial Dynamic Analysis of Regional Industrial Development Yiwen Qiu (University of Cambridge, UK)
	Urban justice and public housing provision in China: An evaluative framework Ka Ling Cheung (The University of Melbourne, Australia)
	How the state builds cities: an analysis of the role of urban investment and development companies in Shanghai Yanpeng Jiang (East China Normal University, China), Paul Waley (The University of Leeds, UK)
	Temporal and spatial effects of urban landscape on housing price: A case study of Chongqing, China Jianping Gu, Xizi Wang (Chongqing University, China)

Session 5: Friday 2 November

5A	Urban environment and ecology Lovelie Suite Chair: Xuejun Duan
	A study of the expansion of construction land and its ecological effects in coastal areas of Jiangsu Province Xuejun Duan (Nanjing Institute of Geography and Limnology, CAS, China)
	Investigating the water sensitivity of watersheds based on spatial growth: regionalisation and correlation analysis - Lake Taihu Basin case study Wei Sun (Nanjing Institute of Geography and Limnology, CAS, China)

	China's urban park planning and design: existing roles and future potential of technical professionals Yangnan Guo (The University of Manchester, UK)
	Citizen Environmental Monitoring in Urban China Bettina Bluemling (Utrecht University, Netherlands)
5B	Smart city and technology Dalton Suite Chair: Richard Kingston
	An application of the Internet of Things technologies in prefabricated housing production in Shenzhen Clyde Z.D. Li, Zhe Chen, Bo Yu, Ru Sun (Shenzhen University, China)
	Mapping the effectiveness of urban function hubs using consumer review website Nguyen Thi Thuy Van (Zhejiang University, China)
	Using big data sets and spatial dynamic metrics to analyse the population spatio-temporal patterns of Shanghai Chaowei Xiao (University of Cambridge, UK)
	Using social media to analyze and locate successful shopping mall in Hangzhou, China Noman Sahito (Zhejiang University, China)
5C	Mobility and travel pattern Joule Suite Chair: Chia-Lin Chen
	An intelligent data mining approach to detect individuals' behaviour patterns and its use in real-time route optimisation Bingxia Sun (The Hong Kong Polytechnic University, Hong Kong)
	What factors influence walking route choices? A literature review Yue Wang (Imperial College London, UK)
	High mobility in China? Exploring the impact of high-speed rail on work-related travel patterns: A case study of Suzhou-based commuters Chia-Lin Chen (University of Liverpool in London, UK), Roger Vickerman (University of Kent, UK)
	High-speed rail network development and the winner and loser cities in mega-regions: The case study of Yangtze River Delta, China Lei Wang (The University of Manchester, UK)

KEYNOTE ABSTRACTS

Manchester's recent growth and transformation: Parallels with China's urbanisation and opportunities for future collaboration

Richard Elliott (Manchester City Council, UK)

Manchester is a well-known name in China. It's recognised, in particular for three things: as the birthplace of the first industrial revolution; as the place where Marx and Engels met and wrote about the condition of the poor; and as the home of two world-class football teams.

Manchester's recent history is less well known in China but no less noteworthy than the period of early growth in Victorian times. This presentation focuses on the city's transition from an industrial to a post-industrial economy, now poised to benefit from the fourth industrial revolution. In particular it focuses on the key milestones during the city's transition, the policy background that underpinned the changes that took place and some of the key challenges that were faced and overcome.

The discussion also addresses Manchester's links with China. Some parallels are drawn between Manchester's evolution and China's current rapid urbanisation. It concludes with reference to the opportunities which exist for mutual cooperation between Manchester and China, with particular reference to the relationship between Manchester and its sister city Wuhan.

Addressing Climate Change in China: the Role of Cities

Gørild Heggelund (Fridtjof Nansen Institute, Norway)

This paper analyses the role of low-carbon cities, the cities of the Alliance of Peaking Pioneering Cities (APPC) and the Emissions Trading Scheme (ETS) pilots in China to address emissions and develop low-carbon strategies. More than half of China's population now lives in cities, and it is anticipated that the urbanisation rate of the country will reach 60% by 2020; by 2030 more than 1 billion Chinese citizens are expected to live in cities. It is therefore crucial for China's sustainable future that cities become low-carbon and conducive to human health and that they are developed in a sustainable manner.

This paper presents and discusses the policies that are in place for realising the goals set by the low-carbon pilot cities, the APPC cities and the ETS pilots. The paper reviews the low-carbon cities and the APPC's establishment and goals, looking into the potential effectiveness and feasibility of low-carbon cities and the APPC in addressing GHGs in cities, and details the methods, experiences, achievements so far, and the actors involved in implementing and reviewing these goals. Additionally, the paper considers the factors and drivers that have led cities to be proactive, such as political leadership, other stakeholders, and other incentives (such as city networks, economy, and air pollution). Further, as some of the cities are both low-carbon pilots, APPC and pilots for the forthcoming national Emissions Trading Scheme, the paper reviews the coherence that exists between these policies.

Inclusive planning in urban China

Belinda Yuen (Singapore University of Technology and Design, Singapore)

Over the past 40 years, China has experienced unprecedented growth and transformation in its economy, environment and society. In 1980, 19.6% of China's population lived in urban areas. By 2017, the urban population increased to 59.4% and is projected to further increase to 70% (1 billion people) by 2030. In the process, the national poverty rate fell from 88% in 1981 to 1.85% by 2017, lifting 850 million people out of poverty (the highest poverty reduction number in the world). In parallel,



32. Improvements in healthcare have contributed to life expectancy increases. Coupled with a decline in fertility rate, longevity is shifting China's demographics towards ageing. In 2014, 9% of China's population was aged 65+; this population segment is projected to accelerate to 27.5% (348.8 million people) by 2050. The UN estimates that China is ageing more rapidly than Japan (the world's oldest country) and almost all other countries in the world. This presentation discusses China's urbanisation trend and, in particular, the social ramifications of this trend and the dynamics of population ageing. The presentation reviews age-friendly city development from selected cities around the world and interrogate what might be learned to seize opportunity in an ageing society. The presentation also attempts to put forward planning ideas towards developing an inclusive senior-friendly urban environment in China.

PARALLEL SESSION ABSTRACTS

1A Mega-city and metropolitan region

An understanding of the Guangdong-Hong Kong-Macao Greater Bay Area from the perspective of a mega-city region

Jinmiao Zhou, Xun Li, Yaofu Huang, Meiyun Huang (Sun Yat-sen University, China)

The Guangdong-Hong Kong-Macao Great Bay Area, a highly promoted initiative in the Pearl River Delta, is one of the most urbanised urban clusters in the world. This paper discusses the development of the Guangdong-Hong Kong-Macao Great Bay Area by adopting the theoretical framework of mega-city regions. We regard the Guangdong-Hong Kong-Macao Great Bay Area as a mega-city region and analyse its five characteristics thereof: vague boundaries, a functional network, public welfare facilities, core area, and development common consciousness. The paper concludes that there are four development trends: first, the boundary effect is reducing and border areas are growing rapidly inside the Great Bay Area. Secondly, industrial clusters have become functional districts in a functional network, replacing cities as the basic unit in global competition. Thirdly, rail transit station density has risen and a world transportation hub is emerging, which makes it convenient for people in the Great Bay Area to share transportation hubs and public service facilities, realising public welfare equalisation. Fourthly, two core city regions of Guangzhou-Foshan and Hong Kong-Shenzhen will be formed. Thereafter, the paper describes a vision as to the future spatial structure of the Guangdong-Hong Kong-Macao Great Bay Area, and suggests that the mega-city region will form a new structure of 'two cores and one bay'.

Polycentric urban development in large Chinese cities: A cross-city comparison

Yong Liu (Chongqing University, China)

Many Chinese cities have adopted the strategy of polycentric urban development in their spatial planning. How do we effectively identify polycentricity and what are the differences in polycentricity amongst various Chinese cities? Here we conducted a cross-city comparison of polycentricity based on a multi-dimensional measurement using multi-sourced data, including building volumes, heat maps, a points of interest mix, public transit accessibility, and night-time light intensity. We found that the degree of polycentricity varied among large Chinese cities. Natural factors and planning guidance had significant effects on the evolution of polycentricity. The provision of public transit and the concentration of population lagged behind the physical development of sub-centres. This suggests a need for long-term planning efforts to enhance the development of newly established sub-centres.

Polycentric urban development in China: A multi-scalar analysis of its environmental and economic effects

Xingjian Liu (University of Hong Kong, Hong Kong)

'Polycentric urban development' has received much attention in both academic and policy circles. This rising interest has resulted in a blossoming academic literature, but very few studies have examined if, and how, urban polycentricity unfolding at different geographical scales affects the urban economy and environment. Taking up this empirical challenge, this paper systematically examines how polycentricity at intra-urban and inter-urban scales is related to economic productivity and environmental outcomes in Chinese cities. With regard to the environment, the analysis uses a large sample of 209 Chinese cities for the years 2005, 2010, and 2015. While our results are in line with previous literature, the panel data analysis further suggests that: (1) polycentricity at both intra-city and inter-city scales shows significant

34. influence on electricity, transportation, central-heating-related CO₂ emissions and total CO₂ emissions; (2) the interactive effects of polycentricity and population size on residential CO₂ emissions are significant; (3) shrinking cities tend to be less energy efficient than their growing counterparts.

Inside the Chinese metropolitan region: Spatial lectures from Zhengzhou and Zhaoqing

Astrid Safina, Leonardo Ramondetti (Polytechnic University of Turin, Italy)

The intention of this contribution is to observe how certain elements of global contemporary urbanisation have verged in China. The research observes the progressive dissolution of borders and hierarchies, capillarity of infrastructure, increasing interweaving of the urban and rural, and intercity collaboration as elements that, besides emerging from specific places, allow the extrapolation of local peculiarities and characteristics to derive a possible reflection around how metropolitan regions globally (not just within China) are being transformed. To answer these questions, the research focused on two territories currently undergoing profound transformations: the city of Zhengzhou and the city of Zhaoqing.

Zhengzhou highlights the dynamics underway for the construction of a regional polarity and an infrastructural hub for the inland regions. Since 2005 the city has been designated by the Chinese government as the capital of a new conglomeration in central China (Zhongyuan City Group). Since then, Zhengdong New Town (1.5 million new inhabitants) has been designed and built. Following this, Zhengbian's construction was promoted, a widespread urbanisation that extends linearly over eighty kilometres into an area of about 40,000 hectares (already inhabited by 4.5 million people).

Secondly, Zhaoqing, a secondary city on the western border of the Pearl River Delta Region, represents municipal intentions for achieving regional prominence and integration. With a progressive urban expansion finalised in 2012 with the planning of Zhaoqing New Area (a new town for 600,000 inhabitants of over 115 sq. km), the city has been increasingly included in regional dynamics. In fact, in 2008, it became part of the Guangzhou-Foshan-Zhaoqing metropolitan area, driving the city's ambition for shifting the regional barycentre further west.

These two places are not intended to provide an exhaustive overview of the ongoing transformations, but to offer reflections on some aspects of the transformations of contemporary metropolitan regions.

To what extent is Shanghai a polycentric city? Insights from online land transaction data 2001-2015

Tianren Yang (University of Cambridge, UK)

Despite the importance of understanding planning outcomes, it has always been difficult to obtain urban land development information in a timely and accurate manner. The emerging online portal for land transactions has demonstrated a potential to provide a new window into dynamic land development patterns and land price movements. Through the verification of online records using traditional statistical data, this paper reveals significant sprawl trends in Shanghai, followed by the establishment of satellite cities and new towns. Furthermore, the database has enabled us to understand the diverse patterns of price growth along different urban expansion corridors compared with the theoretical polycentric bid-rent model. Up-to-date data shows that Shanghai is still, strictly speaking, a monocentric metropolis. Accelerated urbanisation with planned polycentric development in Shanghai is creating physical sub-centres, but their success has yet to be fully realised through market mechanisms. Urban planners, land developers, and decision-makers would all benefit from understanding the dynamic relationships that exist between spatial planning, land development and market feedback while optimising sustainable and efficient urban development schemes through the undertaking of timely decisions.

1B Energy and consumption

Consumption and city size: Evidence from China

Bing Shen, Jiyuan Wang, Zhi Li (National Development & Reform Commission, China)

Recent work on consumption-side agglomeration economies has argued that large cities can enhance household consumption. Using data from the 2011 China Household Finance Survey (CHFS), this study reveals a positive relationship between city size and various categories of household consumption expenditure. The results suggest that households spend more on dining out, daily necessities, housekeeping services, entertainment, education, healthcare, travel, and clothing in larger cities, after controlling for household sizes and income level. The results are further substantiated by the Tobit model ML estimation and IV 2SLS estimation. The analysis of region/location fixed effects indicates that households *ceteris paribus* have higher consumption expenditures in the more developed eastern region, central cities and large towns than the western/central region, outskirts and small towns/rural areas. The findings point to the crucial role of the market-driven urbanisation process in facilitating consumption-driven growth in the context of China.

Embodied energy flows between China's industrial sectors: A combination of multi-regional input-output analysis and a complex network approach

Miaohan Tang, Jingke Hong (Chongqing University, China)

The process of rapid urbanisation has produced considerable energy demand in China, which has increased pressure on sustainable development. Therefore, investigating embodied energy flows in the whole of China's industrial sectors is significant. Based on the multi-regional input-output (MRIO) model and the complex network approach, this study constructs China's embodied energy flow network (CEEFN) with sectors as nodes, embodied energy flows as edges, and the volume of embodied energy as the weight of edges. The results obtained show that the CEEFN reveals the small-world nature by evaluating the clustering coefficient and average path length, which indicates that changes in key sectors or flows can generate substantial impacts on the whole economy. Moreover, less than 10% of the embodied energy inflows and outflows account for more than 90% of total embodied energy. At the sector level, sectors such as smelting and pressing of metals, the chemical industry and the manufacture of non-metallic mineral products, have the highest values, both in degree centrality and betweenness centrality, which play critical roles in the entire CEEFN. At the regional level, Guangdong, Shandong, and Jiangsu are the largest energy consumers, while Hebei, Henan, and Hubei are the leading suppliers. Furthermore, the network also presents obvious regional and multipolar properties. The embodied energy intensity at the national level is relatively lower than that at the regional level. Sectors within a specific province are always inclined to cluster into the same community. In terms of multipolar property, more than 70% of sectors cluster into the two largest communities, whilst the community ranked at the bottom has less than 5% of the total sectors. The findings of this study can help formulate the conduct of fair and reasonable energy-saving policies.

The spatiotemporal distribution of embodied energy consumption of major urban agglomeration economies in China

Jingke Hong (Chongqing University, China)

China is currently in the 'fast track' of urbanisation and industrialisation processes. This presents a long-standing challenge with regard to environmental issues given booming energy consumption and carbon emissions. To tackle these problems, this study first quantifies embodied energy flows at the provincial level by using MRIO techniques, which can differentiate between the effects of regional disparities and technological differences with regard to environmental interactions. A community analysis was then conducted, based on the spatial interactions of embodied energy consumption within the Chinese economy. This sought to identify the effect of agglomeration economies on energy transmissions from a bottom-up perspective by combining provincial statistical data. To further analyse

the agglomerative pattern based on embodied energy consumption, the geographic proximities among provinces are considered as weights to embodied energy flows by using the exploratory spatial data analysis (ESDA) method to detect self-organising patterns of spatial autocorrection as well as heterogeneity. Subsequently, five major mega-urban agglomerations, namely the Beijing-Tianjin-Hebei, Northeast Three Provinces, Pearl River Delta, Yangtze River Delta, and Sichuan-Chongqing, were chosen and analysed simultaneously to provide insights on temporal effects on inner-area industrial structures and cross-regional energy connections.

The impacts of industrial structure on energy consumption and carbon emission changes across space and time: A case study of Beijing, China

Zhihui Li (Chinese Academy of Sciences, China)

Over the past few decades, China has undergone rapid urbanisation and socio-economic development. This transformation has led to accompanied increases in energy demand and subsequent greenhouse gas emissions. Economic growth and urbanisation are highly correlated with energy use and GHG emissions levels. In 2014, CO₂ emissions in China reached 10 billion tons, which equates to a 29% share of total global emissions.

The Paris Agreement (2015) drew attention to the dramatic actions necessary to reduce carbon emissions, and China has submitted its Intended Nationally Determined Contributions (INDC). China has entered a new stage of sustainable transformation, during which mitigation policies are urgently needed to promote industrial transformation and green economic development to improve emission reductions, especially in metropolitan regions. However, the application of mitigation policies for low carbon societies is complicated, and needs to take account of unique regional development conditions (socially, physically, economically and politically). In this study, taking Beijing metropolitan region as the case study area, we aim to build a picture of historical sub-city energy use and carbon emission inventories to analyse the socio-economic, political and institutional and biophysical factors (especially industrial structure) that explain the variations in these conditions across space and time. The results are of significance to mitigation policy making and low carbon city development.

Forecasting the world's building energy consumption using the machine learning-based Grey Model

Saina Zheng (Hong Kong Polytechnic University, Hong Kong)

Building energy consumption has been a major contributor to climate change worldwide. It follows that the accurate prediction of future building energy consumption is highly valuable to policy makers. Grey theory is a truly multidisciplinary theory that deals with systems which are characterised by poor information and/or for which information is insufficient. Leveraging an integrated grey model GM (1,1) and hybrid neural networks (HNN), this study analyses the domestic data of countries worldwide during the period 1980-2016 to present a probabilistic forecast of national building energy consumption. Real input and output data influencing building energy consumption were adopted in the training, validation and testing processes, including population, gross development production, urbanisation rates, per capita income, floor area and number of households. The proposed approach contributes to the existing arsenal of energy policies by providing an accurate solution to the energy consumption prediction problem.

1C Dynamics in urban-rural interactions

Rural land marketisation: Central policy and local practice

Changchang Zhou (University of Hong Kong, Hong Kong)

Ambiguous rural collective landownership has contributed greatly to China's land-financed urbanisation. China is challenged by the need to promote integrated socio-economic development whilst sustaining its rapid economic growth rate. Local governments, especially in highly urbanised areas, seek to innovatively redevelop existing rural construction land for space and capital. Villagers are proactively making use of loosened regulations regarding rural land development. In 2015, the central government designated 33 sites nationwide as areas where experimental rural land marketisation would take place. This meant that direct transactions could be undertaken between rural collectives and land users without unitary state expropriation. This was, essentially, a re-arrangement and re-distribution of land development rights and appreciated land value among multi-stakeholders by incorporating underprivileged villagers. The emerging land practice complicates China's rural land politics. Against this backdrop, this paper first analyses the evolving attitude and policy shifts of central government towards rural land conversion and development. Thereafter, it empirically examines the experiment, by taking Wujin as a study area, which is an urban district within the Changzhou Prefecture and is renowned as the origin of the Sunan Model. The paper addresses the following questions: How is the rural land marketisation trial substantially different from existing spontaneous land-based rural shareholding reforms and the official 'increase in urban construction land with linked decrease of rural construction land' scheme? What are the incentives for Wujin's governments in implementing this reform since they will lose lucrative land-transferring fees? The answers to these two questions will enable a fuller understanding of China's rural land politics to be garnered.

Decentralisation in a suburbanisation era? Evidence from the spatial pattern of population growth in Tianjin

Yu Wang (University of Glasgow, UK)

Chinese cities are facing spatial restructuring in order to embrace more sustainable growth patterns and coordinate urban-rural development. Though the decentralisation phenomenon has emerged in many Chinese cities, the real outcomes that arise from it are still not fully clear. This paper answers the key question whether the rise of suburban areas means that there are decentralised central cities in China. The paper addresses this by looking at the spatial pattern of population growth. A case study was conducted in Tianjin to measure whether there had been a decentralised pattern of population growth over the past few decades. By using census data, we analysed the change of distribution patterns of different social groups in the city centre and nearby suburbs. The results obtained suggest that local residents are still largely concentrated within the central city and that the penetrative growth of migrants in the entire region is prominent. The permanent urban population in China has no significant willingness to embrace decentralisation and resistance can be noted from the imbalanced hukou and welfare policies. Based on the evidence from Tianjin, we conclude that the rise of suburban areas in China does not demonstrate a decentralisation trend, and that this is a significantly different from the trajectory of Western cities (as determined via a literature review). The restricted decentralisation process and the dichotomised spatial structure have become a key challenge for the implementation of new urbanisation policies.

Examining the degree of coordination between urbanisation and industrialisation in China

Yiming Wang (Chongqing University, China)

As a key issue in China's economic restructuring, the coordinated development of urbanisation and industrialisation is an engine for modernisation and economic growth. With reference to the value engineering method, I developed a dynamic coordination model in order to examine the degree of coordination that existed between urbanisation and industrialisation in China between 1996 and 2016. The results show that: (1) the coordinated development of urbanisation and industrialisation can be divided into three stages, which is consistent with China's major reform of rural and urban policy system time nodes; (2) most of the time, industrialisation occurs ahead of urbanisation while, with regard to rapid economic development, urbanisation and industrialisation are gradually synchronising in China. The results of this study hold important implications for efforts to improve urbanisation and industrialisation quality, as well as the ability to achieve more sustainable development.

The transformation of the urban-rural gap and urbanisation in China

Enping Li (Chinese Academy of Social Sciences, China)

This paper illustrates the changing trend of China's urban-rural gap and its impact on urbanisation. The paper examines the unsynchronised characteristics of different types of urban and rural gaps and pays special attention to the inverted U-shaped trend of the urban-rural income gap since the beginning of this century. In so doing, special attention is given to the urban-rural consumption gap since the beginning of the year 2000. The paper also pays attention to the transformation of the urban-rural consumption gap evident since the beginning of this century, from benefiting rural areas to the increasingly unfavourable status of rural areas. The paper also shows the changes in the orientation of urbanised populations caused by the unsynchronised urban-rural gap in China, with particular attention being given to the differences in the urbanisation process between the labour population and the non-labour population at different stages of development.

The vanishing village and evolving rurality in urbanising China: Evidence from Dengzhou, Henan Province

Yong Zhang (University of Manchester, UK)

How do rural villagers, as insiders, construct rurality in a rapidly urbanising China? How do they perceive the changes to themselves, their families, and their villages brought by rapid urbanisation? What insights regarding rurality in contemporary China can be obtained through the interpretation of their opinions? Based on field research in some 'hollow villages' in Dengzhou County-level City in Henan Province, these questions are explored from the perspectives of why rural people migrate, why immigrant workers come back home, and how homesickness is constructed by rural villagers. This research echoes the controversial debate on 'the vanishing villages (rurality)' in China, and it finds that the mutual gaming between rurality and urbanity has permeated into different layers and facets of rural villagers in respect of their rurality construction.

1D Urban health risks

The impact of the urban built environment on respiratory health and its planning implications: Shanghai as the study site

Lan Wang (Tongji University, China), Xi Jiang (Tongji University, China), Pingping Bao (Centre of Disease Control, Shanghai, China)

Urban planning has the authority to promote public health through improving built environments. With the difficulties associated with respiratory disease as a consequence of air pollution in China, this study focuses on the impact of built environment on respiratory health. It develops a theoretical framework for analysis of the linkages between built environments and respiratory health, and then identifies multiple spatial factors that potentially negatively impact upon respiratory health. Adopting the specific disease of lung cancer to represent respiratory health as a whole, the study establishes an empirical model based on the location data of lung cancer patients in Shanghai. It attempts to explore those factors of the urban built environment that significantly influence respiratory health and its features. It concludes with a series of improvement strategies for urban planning focused upon improving respiratory health with regard to aspects of land use mix, green and open space, and road densities; each of which has been identified as factors in the promotion of the disease.

The effect of context-based environmental exposure assessment on momentary and daily stress: Evidence from Beijing

Yinhua Tao (Peking University, China), Yanwei Chai (Peking University, China), Jing Ma (Beijing Normal University, China), Mei-Po Kwan (University of Illinois at Urbana-Champaign, USA)

Residential neighbourhoods have, in the past, often been used as the context in which to assess environmental exposure. It is well documented that deteriorating physical environments around residences pose threats to an individual's mental health and long-term well-being. For example, high-density, low-green and poor-accessibility built environments tend to aggravate psychological stress and trigger health problems. Ambient air pollution exposure, which is interpolated by outdoor monitoring stations in neighbourhoods, might induce mental health disorders and life dissatisfaction.

However, Kwan (2018) argues that the very notion of 'neighbourhood' is highly limiting because people move around in their daily lives and are exposed to many different spatiotemporal contexts. This inevitably causes an uncertain geographic context problem (UGCoP) to arise. Owing to differences in mobility and associated spatiotemporal backgrounds, individuals are exposed to multiple built environments and environmental hazards within a given day. Taking context-based environmental exposure assessments into consideration, this paper examines situational variations in moods and interprets the interaction between momentary and daily well-being. Employing real-time data and innovative methods, the paper clarifies how dynamic air pollution exposure and changing built environments within activity spaces influence an individual's momentary stress and daily stress level.

An activity diary and health survey was conducted in the Meihuyuan community, Beijing in 2018. Real-time measures were developed to collect high-resolution space-time data with, specifically, GPS data making it possible to analyse surrounding environments at different activity places. Carry-on PM2.5 monitoring data can effectively display spatiotemporal variations of air pollution exposure, especially indoor and outdoor differences. Ecological momentary assessment (EMA) involves the repeated sampling of residents' current mood and perception, and aims to minimise recall bias and allow the interpretation of psychological status in a real context. In order to calculate the built environment within an individual's activity spaces, the study used a context-based crystal-growth activity space as an innovative method based on both GPS trajectories and geographic context. Finally, structural equation models were constructed to explain potential mechanisms among dynamic environmental exposure, momentary stress, and subsequent daily stress.

Jianquan Cheng (Manchester Metropolitan University, UK), Juan Hu (Central China Normal University, China), Steve Miles (Manchester Metropolitan University, UK)

China has been facing increased health challenges due to increasing environmental degradation in a variety of formats. To respond to these environmental changes, central government launched a national initiative dubbed 'Healthy China' in 2016, which aims to improve people's quality of life by providing a more liveable environment. With increasing rates of urbanisation, there has been an urgent need for theoretical, methodological, technical and empirical studies of healthy cities as more and more residents are living and working in urbanised areas. There has been a number of significant studies on the physical (and even social) aspects of healthy cities (e.g. the built environment) but few studies have been undertaken on the issue of their emotional environment. In this paper, we explore the urban emotional environment conceptually and empirically by using street-based health advertising across Nanning City in China as a case study. Geotagging, a questionnaire survey, and semi-structured interview methods were extensively utilised to collect objective and subjective data. The quantitative and qualitative analyses of these data provided evidence regarding the increasingly intensified urban space and enabled us to develop a theoretical and empirical model of understanding the impacts of such space on the emotions of different social groups. The paper ends with an extensive discussion of the theoretical concept.

The impact of intra-urban relocations on the well-being of the elderly in the transitional period of China: A case study in Guangzhou

Suhong Zhou (Sun Yat-sen University, China), Jiaming He (Sun Yat-sen University, China), Lin Liu (Guangzhou University)

Rapid aging and the well-being of the elderly have become important public issues in modern China. A growing body of Western literature has explored the relationship between intra-urban mobility, well-being, and social interactions, especially in the fields of medical science, public health, and psychology. However, the impact of residential mobility on well-being amongst older adults in the Chinese context has received less attention, despite this age group being potentially more vulnerable to the changing social and physical environments as a result of rapid urbanisation.

Based on a questionnaire survey conducted in Guangzhou in 2016, this paper analyses the cumulative effect of intra-city residential mobility on the well-being of elderly people. A structural equation model was utilised to explore the mechanism and influencing paths of the cumulative disadvantages concerning the relocated elderly. The results demonstrate that relocation factors have both significant direct and indirect cumulative disadvantages on the well-being of the elderly in China.

The sustainable development of the Beijing-Tianjin-Hebei Region from the perspective of fog and haze impact based on physical geography patterns, resource endowment and industrial development

Li Wang (Institute of Spatial Planning and Regional Economy, National Development & Reform Commission, China)

The natural, economic and social compound system is a complex and huge system wherein all the constituent elements are not independent but closely correlated. Taking the Beijing-Tianjin-Hebei region as an example, this paper analyses physical geography patterns, regional resource endowment and industrial development, and analyses the impact of the above factors on the occurrence of local fog and haze. It is concluded that fog and haze management should not only focus on resources and the environment, but also be analysed from broader perspectives such as economic development and physical geography. It concludes that it is better to promote the overall sustainable development of the region by studying objective events with systematic comprehensive thinking.

Rethinking the urban agenda in Hong Kong: Top-down policies or bottom-up practices for eco-socially sustainable prosperity?

Maurizio Marinelli (University of Sussex, UK)

This paper focuses on the socio-spatial politics of gentrification and displacement in Hong Kong. It offers both an investigation of the dominant ideology of economic prosperity (Tang et al., 2011), through an in-depth study of its impact on the daily lives of local residents. Additionally, it analyses forms of social activism and resistance to the urban planning intervention, which have determined the transformation of the physical and socio-economic structures of retailing and dwelling in colonial-global Hong Kong. The selected focus of the paper is the progressive annihilation of street markets to create space for ultra-modern, luxury high-rise buildings. Street markets offer a unique lens to investigate the political discourses of the urban (Lefebvre, 1970) and to analyse the negotiation processes between the vertical strategies of gentrification and the horizontal tactics of urban resistance. Street markets are barometers of equity and economic development, collective sociality and sustainability, living heritage, social prosperity and community cohesion (Watson, 2005; Stillerman, 2006; Shepherd, 2009; Marinelli, 2018). This paper concentrates on the Sham Shui Po markets area in Kowloon, Hong Kong, to analyse two main elements: 1) the nexus between politics and policy, as well as policies and practices; and 2) the critical role that place-shaping and people-making play in the construction of collective identity in public space. I use the concepts of stratification and precarity, both in a spatial-temporal and a political sense, to unpack the multi-layered identity of the Sham Shui Po markets area. This allows a better understanding of the tactics of street hawker associations in the battle 'to save the market', and sheds light on the ways in which they challenge the dominant ideology of economic prosperity, suggesting alternative heterotopic geographies of social prosperity.

Sustainable development of the Yangtze River Delta Urban Agglomeration

Wen Chen (Nanjing Institute of Geography and Limnology, Chinese Academy of Sciences, China)

Regional integration can promote cost reductions and improvements in efficiency in the division of labour, and thus bring about new dynamics of economic development. A body of literature on regional integration has focused on cross-boundary areas between countries. Some regions located in cross-administrations and at the edges of metropolitan areas, also exhibit the motivation for regional integration in the form of a core-periphery structure. Centred by Shanghai, the Yangtze River Delta has been developed with the highest level of integration among cities in regional China. The rapid process of integration has promoted further industrialisation and urbanisation in the region, which has attracted significant attention in both academic and policy circles. However, intensive urbanisation and industrialisation has also resulted in serious resource and environment degradation, with deteriorations in water quality particularly prominent. The problems are closely related to ineffective and inefficient development control, cross-administrative resource management and ecological protection, which need serious policy attention in future regional development. Additionally, rapid regional transport development, boosting intercity accessibility significantly, has resulted in more resources being polarised towards large cities at the regional scale. Further data analysis suggests that differences in public service resources play an important role in the enlarged development gap between large and small cities.

Changing ideas of 'sustainability' in China's eco-city development: A case study of Chongming, Shanghai

Xiaoxuan Lan (University College London, UK)

In recent years, China has widely embraced an additional concern for environmental issues, which has resulted in a proliferation of eco-planning initiatives. While a rich vein of literature has illustrated the burgeoning eco-city initiatives as another round of land-speculation encouraged by entrepreneurship

⁴² local states, few studies have analysed the dynamics of eco-city initiatives, and how they respond to changes in the urban political ecological context. This paper contributes to the latter strand of research by situating the development of eco-city initiatives within the broader discussion of the environmental, land, financial and territorial aspects of urban governance. This research refers to eco-city planning and implementation in Chongming, Shanghai, where the first eco-city project in China was proposed, abeyant and now reworked. It argues that eco-city initiatives are making important additions to the repertoire of 'sustainable fixes' in Chinese municipal areas, where planners and officials wish to achieve more than short-term economic benefits. This research explores the planning and implementation of eco-city initiatives within a multi-scaled socio-regulatory framework, and addresses how ecological goals are selectively incorporated and achieved in the planning and implementation process. It also addresses how these actions correspond with the regulations and concerns of the central state. The promotion of eco-cities by planners and officials in Shanghai reflects an attempt to boost new industrial growth as well as a desire to achieve environmental benefits in the longer term. This research calls for academics to think of China's urban sustainability as a dynamic process.

Sociogenic facilitators of sustainable development crises in China

Xiaoyang Zhang (Tsinghua University, China)

With the rapid development of China's economy and the continuous advancement of urbanisation, environmental and sustainable development crises are appearing frequently. Harvey (2015) points out that the crisis of sustainable development is driven by sociogenic facilitators. As a result, sustainable development crises have not only caused the destruction of natural resources, but also a series of social problems. Analysing the social facilitator of these crises from a sociological perspective not only enables a full exploration of the interactions and interdependence that exists between society and nature, but also enables one to develop understanding beyond the reach of the previous Chinese research which has only focused on natural facilitators. The social facilitators of sustainable crises are also closely linked to the transformation of industrial structures and consumers' everyday life behaviours, as reflected in China's drinking water provision system, for example.

This research links the study of sustainable development with the people-oriented ecological civilisation construction and the concept of green development and consumption in China through historical and case studies. This research thus explores the particularity of China's sustainable crises and their specific social effects on individuals as citizens and consumers. The purpose of this research is to provide an innovative sociological theoretical support for the construction of ecological civilisation in China and to link Chinese reality with the frontier theories and methods of international sociology.

Car-Free as a Sustainable Development Tool Kit for Cities in China

Fu Li (Peking University, China)

With the rapid growth of the domestic economy, cities in China are facing problems from the number of cars that are owned within cities. Roads in cities are getting crowded and are dangerous to citizens. This is in part because most cities' roads and traffic systems are designed in a way that is unfriendly to public transport, pedestrians and bicycles. Therefore, a car-free policy is proposed as a sustainable development tool kit to help China's cities face their systematic sustainable development problems. In addition, this tool kit could be applied to a development plan in Wenzho, in order to create a paradigm in the construction of ecological civilisation in China.

2A Liveable urban communities

An exploration of cross-generational childhood outdoor play experiences in Chinese communities, taking Wuhan as an example

Yuanyuan Shi (University of Sheffield, UK)

Accelerating urbanisation has brought dynamic interactions and changes for Chinese citizens in recent years. Children, as the most vulnerable group in society, are affected by the rapid changes in urbanisation without any choice. The value of outdoor play has been emphasised in many research fields with its physical, psychological and social benefits for children's development. However, due to rapid urbanisation in China, current children's outdoor play experiences have seen a dramatic reduction in children's playing time, frequency, and their experiencing of natural environments, compared to those enjoyed by their parents and grandparents in their childhoods.

This research conducted fieldwork in different housing areas to investigate cross-generational childhood play experiences in Wuhan. As the biggest city in central China, Wuhan has witnessed massive changes through national and local policies of urban development over recent decades. Such rapid urbanisation has addressed great challenges in urban green space, transport, and migration. Using multiple disciplinary research methods, the findings from this research show substantial differences in cross-generational childhood play experiences and how children have been influenced by the transition of physical attributes, social structures and policy changes around them.

This research is innovative and makes an important contribution to an area for which there is currently limited research evidence. More specifically, this research offers new insights into the issue of children's outdoor play which is becoming increasingly important due to rapid urbanisation, both in China and the broader global context.

Conceptualising 'community' and 'energy' in urban China

Alison Browne (University of Manchester, UK)

The notion of 'community' has become increasingly mobilised in discussions of energy and climate governance across the world. Such debates have been predominantly driven by two main processes. Transnational policy processes have positioned local and bottom up actors as responsible for low carbon energy transitions while, in East Asia, post-Fukushima, there has been a reimagining of large-scale energy infrastructures. New forms of energy infrastructure and governance have emerged as a result, including a variety of actors and diverse socio-technological innovations. While in the Global North a plethora of literature explores the nuances of the concept of community and its application within energy governance, there is much less understanding of this concept in other geographical contexts, especially in East Asia. It is nonetheless clear that we cannot rely solely on Anglophone interpretations of community when analysing the rise of these new forms of energy production-consumption. This paper therefore unsettles dominant understandings of community. I set out a new research agenda exploring the ways in which 'community' is conceptualised within the Chinese and English literature, how community has been theorised in relation to energy transitions, and how an expanded understanding of community opens up the possibilities for deeper analysis of energy transitions in the Chinese context.

Walkability and sustainable urban environments: An analysis in six neighbourhoods of Santiago, Chile

Marie Geraldine Herrmann-Lunecke (Diego Portales University, Chile)

Promoting walkability is a key policy to encourage 'sustainable urban development' and an 'ecological civilisation'. Walking is not only a sustainable transport mode, it is also crucial for urban vitality and several studies have shown that walking improves the physical and mental health of urban populations. In this context, the concepts of 'walkability' and 'walkable environments' have gained increasing

attention since the mid-1990s worldwide, including within New Urban Agendas. In Chile, the recent National Urban Development Policy (2014) sets out the promotion of walking as an important urban policy and sustainable development goal.

This research analyses how pedestrian environments are perceived by urban communities, with the aim of understanding which urban features promote walking, and which features inhibit pedestrian movement. The study cases are six neighbourhoods in Santiago (Chile), a metropolis of almost seven million people in the global south, with growing traffic and pollution problems. Through semi-structured interviews and 'projective mapping techniques' with 153 residents, this research analyses, in detail, which routes and urban environments are preferred by residents to walk to tube stations and which factors of the urban environment residents consider when choosing a walking route. First findings show that features which promote walkability are active uses, wide sidewalks, lack of traffic noise, and the presence of trees.

Assessment of liveable urban communities: From the perspective of walkability

Hao Wang (Central University of Finance and Economics, China)

As a major component of sustainable urban development, the liveable community concept was introduced based on people-oriented planning concepts and became an essential way in which to enhance people's quality of life. A community with an accessible and walkable footpath network will encourage people to undertake more physical activities, which helps make residents healthier and the community more liveable. In this paper, 'liveable urban community' is defined and assessed from the perspective of internal walkability. In order to assess the liveability of communities, the accessibility and walkability of footpath networks in communities are examined through geographical information system (GIS) spatial analysis. Comprehensive analysis and comparison of the accessibility and walkability of communities will help to identify the critical factors that influence the liveability of communities. Furthermore, the effectiveness of possible improvements for liveable communities can be evaluated by comparing the walkability of communities before and after the implementation of improvement solutions. Based on the results of a quantitative assessment of community liveability, some measures are offered which, it is believed, will improve the internal walkability of communities. Findings from this research could provide practical implications for the construction of liveable and healthy cities.

Paths and strategies for urban renewal at the community level: A framework for decision-making

Lijie Huang (Chongqing University, China)

With the rapid process of urbanisation, the challenges for cities regarding urban space and human living conditions are enormous. Urban renewal provides opportunities for addressing these challenges. Some scholars consider an indicator-based approach to be a useful tool for selecting and evaluating strategies for urban renewal. Although there are many sets of indicators or frameworks, frameworks including subjective and objective evaluations are rare. This study proposes an indicator system and an integrated decision-making framework for urban renewal at the community level by considering land use form, functional structure, and the physical conditions of communities as well as human perceptions. The indicator system is comprised of five categories, namely, social, economic, and environmental aspects, land use form, and facility conditions. The required data in the indicator system for sustainability and facility conditions evaluation are mainly derived from questionnaires, field surveys and statistical data. A decision-making framework is designed to provide an implementation path and corresponding strategies for urban renewal based on the sustainability and facility conditions of a specific community. The proposed framework was tested using the Qixinggang community in Chongqing as a case study. The results indicate the status quo and problems of the community, and specific strategies are proposed accordingly. The proposed framework can also be regarded as a reference framework for studying other cities that possess similar local contexts.

2B Governing low-carbon urban transitions

Do devolved powers lead to lower carbon footprints? The governance and delivery of sustainable development in Greater Manchester

Caglar Koksal, Mark Baker (University of Manchester, UK)

This paper explores the effects of recent devolution deals in England on sustainable development by using Greater Manchester as a case study. The Conservative government has been committed to a devolution programme that continues to devolve more powers and responsibilities from central to local governments to stimulate sustainable growth. However, there has yet to be a thorough analysis of the extent to which the devolution deals that have been agreed so far have informed, influenced and leveraged sustainable development at the local scale. The present research fills this gap by exploring how the Greater Manchester Combined Authority (GMCA) has been using these deals to govern and deliver sustainable development. We argue that the good practice found in Greater Manchester which reconciles climate change and sustainability issues with economic growth and local authority working demonstrates that devolution can significantly contribute to the sustainable development agenda at the local scale, if a transparent and well-thought out delivery strategy, backed up by strong political leadership and commitment, is put in place. This paper contributes to ongoing debates on the effects of English devolution, as well as examining the governance of sustainable development in Manchester and elsewhere. The GMCA case is a good place to start thinking about the challenges of governing and delivering sustainable development at the local scale in times of austerity, and to identify the ways that these challenges might be overcome. The next step for this research will be to expand the geographical remit to include other CAs in England, thus building a better understanding of the effects of devolution deals on sustainable development at the local scale.

Governing for urban low-carbon development in China: A case study of the Hongqiao Low-Carbon Business District, Shanghai

Bing Sun (University of Manchester, UK)

While understanding urban climate governance thoroughly is important, how low-carbon governance arrangements are operationalised at the local scale in China remains largely unexamined. This paper develops a multilevel governance framework to help understand urban climate governance in China. Using the Hongqiao Business District (2009-2017) in Shanghai as a case study, it addresses the core problem of how governance arrangements are operationalised at the local scale in China. In particular, it conceptualises how regulatory governance (e.g. coercion, framework regulation, targeting, and technical regulation), enabling governance (e.g. pilots, consultancy, partnerships, and financial subsidies), and provision governance (i.e. purposive services and projects) have been arranged for low-carbon development in the Hongqiao Business District – the largest and the most well-known low-carbon district in China. In addition, the roles of actors at various scales are examined. Twenty semi-structured interviews were undertaken with documentary analysis and a literature review being used to offer contextual background and triangulation.

A number of key findings is identified. Hongqiao has used a mix of governance modes to promote low-carbon development as part of a broader approach to improve local and regional competitiveness. While strategic approaches (mainly through regulatory governance) play a fundamental and dominant role, fragmented approaches in other forms of governance (e.g. enabling, provision) have also worked together to push forward low-carbon development. Further, low-carbon development emerges as a multilevel (i.e. a cross-level, cross-scale, cross-sector, and cross-form) issue, not simply confined to a specific locality, but stretching across territorial and administrative boundaries to mobilise ideas, knowledge, and practices.

Fangzhu Zhang (University College London, UK)

During the past three decades, China's fast economic growth and rapid urbanisation have resulted in unsustainable development in economic, social and environmental respects. Today, with increasing energy demand, climate change, rising labour costs and global financial crises, China's government has committed itself to developing a sustainable and low-carbon economy as a top policy priority. A 'Green GDP' with balanced economic growth and environmental quality has been targeted as a new economic measure from central government to cities and regions in China. Chinese cities were used as the instrument for fostering economic growth during its rapid urbanisation transition. Post-reform urban transition has created intense inter-city competition, and requires localities to act entrepreneurially to focus on economic growth through place promotion or city re-branding. Eco-innovation technologies have been widely applied towards the goal of achieving a low-carbon transition in many Chinese cities. However, the implementation process of these eco-innovation technologies remains unclear, as does the transition of governance to one that promotes sustainable urban development. This paper systematically reviews the development of eco-innovations in China and reveals the dynamics of eco-innovation development under various low-carbon initiatives. This paper explores the driving forces for eco-innovation development and the roles of local government and green industrial market in the implementation process. Using a case study of Wuxi eco-city, I ask what lessons can be learned from the case study of Wuxi's eco-innovation development. How effective is governance? Will China's recent promotion of eco-innovation technologies turn China's urban development into a substantial reality? What are the challenges and discourse of China's sustainable development?

Urban ecological planning as a long-term instrument for risk governance in Guangzhou

Jieling LIU (University of Lisbon, Portugal)

Urban ecological planning (UEP) has been adopted in many Chinese cities to restore the degraded urban ecosystems which resulted from the country's rapid processes of urbanisation, socio-economic development and population growth over the past four decades. The aim of UEP is to steer sustainable socio-economic development, achieve its New Urban Agenda and enhance ecological civilisation. Urban ecological systems, with their multiple ecosystem services, are essential to building resilience to climate change impacts and also bring benefits to the health and well-being of urban inhabitants. What is the role of UEP in environmental risk governance and what can UEP contribute to sustainable socio-economic development in the megacity, Guangzhou? This key question leads to an empirical knowledge inquiry on the guiding principles and major goals of UEP policies and actual institutional and policy frameworks of risk governance, from which the paper proposes a number of ways forward with regard to resilience thinking in UEP and governance innovation in sustainable developments.

The methods adopted within the study were in-depth interviews with key urban ecological planners and policy analysis.

The expected findings which are discussed are: 1) UEP comprises a fundamental part of risk governance in Guangzhou. 2) Risk governance in Guangzhou is mainly a top-down model yet is in transition towards more collaborative, inter-sectoral governance. 3) The notion of resilience used in UEP in Guangzhou is mainly on the technical (environmental) level, while the success of risk governance also requires broad socio-economic engagement considering the fast-changing dynamics of urbanisation.

Green infrastructure and Urbanisation: An assessment of neighbourhoods in the Beijing metropolitan region

Wei Zheng (University of Manchester, UK)

Green infrastructure (GI) and their multiple functions have been widely discussed across various disciplines. Currently, urban policy agendas emphasise more on the promotion and planning of GI in both urban and urban-fringe areas for moving towards an ecologically-led urbanisation model. Neighbourhood, as the scale where new development and redevelopment take place, plays an important role in improving green infrastructure planning. Both subjective and objective evaluations on neighbourhood GI can benefit the decision-making of GI planning. Therefore, this paper proposes an integrated framework for neighbourhood GI assessment under the rapid urbanisation context by considering residents' satisfaction, spatial indicators, and researcher's criterion-based field assessment. The assessment involves the quality, quantity, variety, distribution, accessibility, and connectivity of the GI, as well as residents' satisfaction within and surrounding the neighbourhood. Different neighbourhoods in Beijing that represent various types of neighbourhoods under the rapid urbanisation process were selected as the case studies. The results show the problems of GI provision in different neighbourhoods and offer planners and policy makers some insights for sustainable urbanisation.

The impacts of medical facilities' accessibility on residents' health-seeking behaviours: A case study in Shanghai

Yue Shen (East China Normal University, China)

The distribution and accessibility of medical facilities (hospitals or health service centres) are key issues in medical geography and health research. Health-seeking behaviour reflects the demand and utilisation of medical facilities, and is closely related to residents' health and quality of life. However, the relationship between the accessibility of medical facilities and health-seeking behaviour is still not clear. In the big cities of China, although the government has promoted the equalisation of public medical services effectively, differences in spatial accessibility to medical treatment facilities still exist, such as the concentration of high-quality medical resources and the inadequate coordination of basic public health services. This phenomenon has a great influence on patients' disease treatment modes and their choice of medical institution. In addition, the medical security system makes the effects of the accessibility of medical facilities more complicated.

Geographical research on space-time behaviour mainly focuses on frequent activities in daily life, such as commuting, shopping and leisure, but health-seeking behaviours have been relatively ignored. Health research in China pays a lot of attention to differences between population groups, especially the effects of the hukou system, the medical insurance system, and other institutional attributes. Accordingly, there is a need to clarify the impact on health-seeking behaviours from the perspective of the accessibility of medical facilities.

The study takes Shanghai as the case study area and the dynamic monitoring data of floating population in 2013 as carried out by the National Health and Family Planning Commission. Nested logit regression models were constructed to explore the influence of spatial accessibility on residents' health-seeking behaviours and the spatial heterogeneity of the effects, after controlling individual socio-economic attributes and institutional factors.

The results show that, apart from demographic attributes, institutional factors and the severity of illness, spatial factors, such as the proximity of medical facilities and the accessibility of public transportation, have moderate effects on residents' medical behaviours. It also confirms that the mechanism is relatively complex. According to these findings, the study suggests that relevant decision-making departments pay more attention to the spatial factors in the planning of medical facilities. Moreover, it is more reasonable to consider the actual geographical background of different regions and promote the spatial equalisation of medical services according to local conditions.

The job-housing spatial link, neighbourhood social cohesion and its impacts on mental health in Beijing, China: Contrasting the experiences of native and migrant residents

Yan Zhang (Beijing Union University, China)

Urban scholars of cities in Western countries have widely documented the benefit of neighbouring and neighbourhood social cohesion on the health outcomes of individuals, especially within lower socio-economic status neighbourhoods. Concurrently, evidence from Western cities has shown that urban sprawl often leads to severe job-housing mismatches and prolonged commuting for lower-income households, prohibiting their ability (collectively and individually) to participate in neighbouring activities and develop place attachment. Recent literature has also found that Chinese urban residents have begun to suffer from job-housing spatial mismatch and longer commuting times due to rapid urban expansion. In addition, there has also been a decline in neighbourhood social cohesion and 'loss of community' due to housing commodification and marketisation, increased residential mobility, as well as rapid suburbanisation and spatial transformation over the last three decades. However, few studies have directly investigated the impacts of home-work separation, and perceived neighbourhood social cohesion on mental health in urban China, with even less research having been undertaken on the differentiated impacts that may exist between native and migrant residents.

This paper fills this academic lacuna by investigating the cumulative effects of the home-work link and neighbourhood social cohesion on the mental health of individuals (especially conditions such as stress and exhaustion) in the context of the suburbanisation of Beijing. Based on a case study of the Tian-Tong-Yuan Area, a mega-project of suburban residential development with a concentration of lower-income residents in northern Beijing, and severe job-housing mismatch, data from a questionnaire survey of 1,362 residents living in this area conducted in May 2015 is examined, including a sub-sample of 836 commuters who have lived for at least a year in the case area. The residential makeup of the survey was 42.4% local residents (with local Beijing hukou) and 57.6% migrant residents. A SEM model was applied to reveal, first, how home-work distance is associated with less frequent interaction with neighbours or participation in community activities, and a lower level of neighbourhood trust but is not significantly associated with the sense of community; secondly, how lower perceived neighbourhood social cohesion might be associated with individual's mental health; and thirdly, the nature of the differentiated pathways between local residents and migrants. The findings suggest that planning measures aimed at improving job-housing balance may lead to enhanced neighbourhood social cohesion and facilitate socially sustainable community building in urban China.

Environment, development and health in China

Linsheng Yang, Li Wang, Lijuan Gu (Chinese Academy of Sciences, China)

The economic growth and fast urbanisation of China has pulled more than 500 million people out of poverty over the past three decades. However, the environmental pollution and social issues that have accompanied these two processes have been tremendous. Severe air pollution, water pollution, and soil pollution are challenging the eco-environment and threatening public health. Interacting with social issues such as migration and raising social inequity during the transition, sustainable urban development in China is being challenged. In this study, the interconnections of socio-economic development and environmental degradation on urban public health are interpreted and the implications on health equity illustrated. The mechanisms and some of the typical major hurdles that exist with regard to regional collaboration for pollution control in mega-urban agglomerations are illustrated based on a case study of air pollution control in the Beijing-Tianjin-Hebei region. Recommendations for improving the conceptual design of pollution control are given and an overarching suggestion for a sustainable social-environment-health development is also provided.

The effects of green landscape pattern on thermal microenvironment: A case study in Beijing

Liding Chen, Zhifeng Wu (Chinese Academy of Sciences, China)

Increasing population and rapid urbanisation may lead to the loss of green spaces and ecosystem services whilst also generating traffic congestion. With an increasing percentage of the global human population residing in urban areas, the need to improve human living environments and human health has become an important issue. Rapid urban expansion may lead to an extensive replacement of natural surfaces by artificial alternatives and massive anthropogenic heat emission may result in the creation of strong urban heat islands and thermal environmental deterioration. Increasing green landscapes is seen to be a vital strategy to ameliorate the negatives associated with the urban thermal environment whilst also meeting the needs that humans place on ecosystems. However, the degree to which the green landscape can contribute to thermo-environmental amelioration is not clear. In this study, a residential quarter with high-rise buildings in Beijing was chosen to study the effects of the green landscape on the thermo-environment. The urban microclimate model ENVI-met was employed to analyse changes in air temperature and the mean radiant temperature on a summer day (11 August 2014). The results demonstrated that even the presence of grass alone can lower air temperatures by 1°C. Adding trees and increasing LAD could further lead to a cooler environment. When considering mean radiant temperatures, grass plays a minor role in improving thermal environments. Trees, however, can significantly decrease mean radiant temperature by as much as 32°C. Finally, the contribution of the green landscape and its spatial configuration in improving environmental comfort are discussed.

Understanding the variability of urban heat islands for climate change adaptation

Ranhao Sun (Chinese Academy of Sciences, China)

Climate change adaptation in urban areas is among the biggest challenges humanity faces, partly due to the combined effects of urban heating and global warming. The variability of urban heat islands (VUHI) is known to influence the effectiveness of climate adaptation strategies, but current understanding of VUHI is limited. Here, I quantify the diurnal and seasonal VUHI in 245 Chinese cities that vary in population and physical size based on remote sensing data from 2002 to 2012. Taking the VUHI in 2012 as an example, I examine the relationships between the VUHI and underlying drivers of background climate and urbanisation. The results show that: (1) the VUHI from 2002 to 2012 has obvious periodicity in different years and that there is significant diurnal and seasonal variability; (2) the explanation rates of local background climate for the diurnal VUHI are 30% (spring), 19% (summer), 29% (autumn), and 25% (winter); (3) the explanation rates of urbanisation for the diurnal VUHI are 13% (spring), 22% (summer), 11% (autumn), and 21% (winter); and (4) these two variables also account for 32% and 12% of the seasonal VUHI during the daytime, and 25% and 23% during night-time, respectively. Our research suggests that the improvement of urban climate-change adaptation necessitates local 'climate-smart' strategies, a reduction in local anthropogenic heat emissions, and the rational use of green planning for sustainable urban development.

2D Financing of urban development

'Government guide funds': A new way to finance urban infrastructure in China?

Fenghua Pan (University College London, UK)

Recently Chinese local governments have been enthusiastic in setting up 'government guide funds' (chanye yindao jijin). In essence, operating as a private equity fund, the government contributes to a fund and endorses it to raise a large amount of capital from various channels. While local governments across the country have increasingly used this new tool to finance urban infrastructure, very little research attention has been paid to the government guide fund as a new approach to the financialisation of urban development in China. Drawing on a comprehensive dataset of government guide funds, this paper focuses on the funds' investment in infrastructure. This study is the first to explore the overall temporal-spatial patterns of government guide funds at varied scales in the country. It is found that the government guide funds grew dramatically after 2014 and spread across the whole country quickly. There exist significant spatial disparities. Zhejiang, Guangdong, Shandong and Jiangsu are the leading provinces with regard to setting up government guide funds. At the city level, Beijing, Shanghai, Hangzhou and Chongqing are the most active in applying this new development tool. I also investigate a few cases of government guide funds in a more detailed way, which helps us to understand why and how local governments apply this tool to finance urban development and the consequences of so doing. Finally, I discuss the limitations and risks of this new tool as a way to finance infrastructure in China.

Institutional barriers to financing transit-oriented development in China: Analysing informal land value capture strategies

Jinshuo Wang (Radboud University, Netherlands)

As a response to severe traffic and environmental issues, transit-oriented development has been encouraged in Chinese cities, and is characterised by integrated transport and land development. Land value capture strategies have been used to finance transit-oriented development, and their effectiveness is constrained by institutional context. This paper aims to identify the interaction between institutional context and land value capture mechanisms for transit-oriented development in China. By applying an institutional analysis framework, this paper explores how current institutional contexts affect the application of land value capture mechanisms to integrated transport and land development, and how local governments react to these constraints through informal practices. The findings from the case study highlight several insights: 1) the effectiveness of current land value capture strategies is constrained by unsupportive planning, limited value capture instruments and inefficient governance; 2) the informal practices of 'rail plus property' and 'land reserve' have been experimentally applied by several local governments to circumvent these institutional barriers; 3) three alternative strategies – joint development, two-step tendering, and inclusive land leasing – are analysed as possible financing instruments by referring to international cases; and 4) the effectiveness of innovative land value capture strategies tends to be hindered by the tension that exists between informal practices and formal rules.

52 **From upstart city to 'ghost' city: Informal housing finance in Ordos, China**

Zhu Qian (University of Waterloo, Canada)

This paper applies the informality perspective to trace the source and practice of informality in housing finance that has emerged as a response to the insufficiently regulated housing financing system in China. As an alternative to formal housing financing institutions, informal housing finance has fundamental impacts on property markets, homeownership, and people's socio-economic status. By exploring the causes, formation, influences, and consequences of the informal housing financing mechanism in the resource-based Ordos, this paper argues that as an institutional adaptation to the increasingly restrictive formal housing financing system, informal housing finance facilitates local property market booms and has become an instrument of upward social mobility through multi-homeownership. However, informality in housing finance has also been one of the critical drivers for exclusion and marginalisation. The study illuminates the dynamics that exist between state power and speculative capital accumulation where the state exercises decisive controls. The paper further discusses the possibilities of institutionalising informal housing finance, diversifying economic sectors and coordinating regional investments.

Rethinking financialisation in China: The state and financial instruments

Fulong Wu (University College London, UK)

This paper reviews the transformation of China's development strategy through the perspective of changing capital accumulation. Rethinking the so-called China model and its land finance, which heavily depends upon land sales as a source of local public finance, this paper seeks to understand how two explanations – land finance and the circuits of surplus capital – are two sides of the same coin. From the notion of 'state entrepreneurialism', which is in essence based on planning centrality and market instruments, this paper reveals how the recent financialisation of urban development was intrinsically triggered by fiscal stimulus to cope with the global financial crisis in 2008. Concrete channels and operations are examined, in particular the development of local government finance vehicles (LGFVs), the development of municipal corporate bonds and the recent shift from formal finance to shallow banking as an ad hoc process of financialisation in China.

2E **Regeneration and gentrification**

Research on approaches to cultural inheritance and regeneration in inclusive urban renewal

Dandan WEI (Chongqing University, China)

During the process of China's urbanisation, a large number of construction activities have caused the breakdown of urban cultural contexts and the disappearance of characteristic cultures. The concept of inclusiveness is gradually integrated into urban renewal, and cultural heritage and protection have been highly valued in the reform of historic districts and old industrial areas, but there is still a lack of vitality after this change. This paper first defines the concept of inclusive urban renewal through literature analysis. Then it takes the Eighteen Steps, the Testbed2 and the Yuanshan Pottery Kiln as three concrete cases based on a survey of urban renewal projects in Chongqing. Finally, this paper considers the activation effects of the sharing economy and the mobile internet on the cultural industry, and puts forward three ways to inherit and regenerate the urban renewal culture: (1) develop commercial real estate with cultural themes; (2) transform regeneration areas into cultural and creativity districts; (3) design 'traditional culture + folk custom + B&B' experience zones.

Commercial gentrification driven by the culture of consumption in areas featuring a high concentration of higher education institutes: A case study of Nanjing

Jie Sun, Xigang Zhu (Nanjing University, China)

In post-industrial societies, culture consumption has become increasingly prominent in urban-space reconstruction. Based on research in Nanjing, this study finds that there has been commercial gentrification in the Nanjing University (NJU) and Nanjing Normal University (NNU) commercial district driven by the cultural consumption of university students and staff, young white-collar workers, middle-class families, and visitors. The university students and staff were the initial driving force for the commercialisation of space in this area, and their cultural activities have changed the sense of place. Government has reproduced this culture through physical space upgrades, and has set a model for private businessmen to reinvest and self-renew. Finally, it is recognised that this area has attracted lots of middle-class consumers. Though commercial gentrification has led to the slight exclusion of grass-roots businessmen, low-income local residents and students, its result has nevertheless been evident in terms of physical, economic and cultural dynamics. It follows that moderate commercial transformation can be an effective approach by which to revive areas that have a high concentration of higher education institutes.

Responsive or transformative regeneration? Remaking industrial space on collective land in Nanshan, Shenzhen

Mingming Pan (Chinese University of Hong Kong, Hong Kong)

To advance industrial upgrading, the Government of Shenzhen Nanshan District has constantly loosened restrictions and offered more funding for regeneration, creating incentives for village shareholding corporations (VSCs) to revitalise old industrial sites. Focusing on the remaking of old industrial sites on collective land based on the case study of Longjing Industrial Site, this paper investigates the implementation and effectiveness of these new regeneration policies. First, it compares the industrial site before and after regeneration. The results of the revitalisation may be summed up as follows: the renovation of physical environment and infrastructure; the professionalisation of operational models; the diversification of enterprises; and demographic change (the inward migration of more high-income, white-collar workers). Thereafter, the performance of the regeneration is assessed with regard to industry clusters, industry ecology and social costs, and the limitations of the transformation and upgrading of industrial zones are identified. In comparison to government-led regeneration projects and based on the analysis of the motives and actions of stakeholders, three underlying factors that exert negative impacts on the effectiveness of regeneration have been found:

1) formalistic industry planning; 2) recruiting enterprises with loose restrictions; and 3) imperfect regulation, supervision and final acceptance standards. The findings provide a critical rethinking of the 'sustainable remaking of industrial space', which therefore sheds light on the transformative regeneration governance of countries in the global south.

Regional responses to population mobility as a consequence of ecological resettlement: Evidence from Chongqing, China

Tao Zhou, Xinyun Jiang (Chongqing University, China)

Ecological resettlement, guided by governments and mostly involuntary, is always regarded as an effective way to resolve or alleviate environmental deterioration, especially in developing countries, as it leads directly to large population mobility. This paper analyses the impact of such involuntary population movements on regional economic and social development in the context of resettlement, focusing on the effects of spatial disparity and how the effects change over time. In examining 52 towns in Wanzhou, Chongqing, regression analysis was applied to explore the influences of population mobility as well as other factors, including four models that reflect aspects of regional society and economy. GIS shape files were used to present spatial disparity and the effects of transformation after 2007. With the process of migration, divergent changes in the growth of land and population have taken place in three areas. The difference in land growth between two extremes – the mountainous area and the riverside area – continued to increase; the gap of population growth between the riverside area and the shallow hilly area went up from 2007 to 2011, then converged gradually. From the perspective of the regional economy, the three areas show similar tendencies in growth rates relating to the remaining labour force and rural income. After nearly one decade of empirical analysis, we find that there is no permanent beneficiary or victim from resettlement.

Well-being and quality of life in the context of heritage-led urban regeneration in China

Sabina Cioboata, Giulio Verdini, Johan Woltjer (University of Westminster, UK)

The concepts of 'well-being' and 'quality of life' have been increasingly utilised in global political and intellectual efforts to define a new direction for evaluating human progress. These concepts, coupled with one of China's principal commitments to the New Urban Agenda, and people-centred urbanisation, has led to the country's increasing engagement in discussions on taking urban progress beyond economic growth. These efforts have been translated into a growing body of literature exploring issues of urban well-being in China. Nevertheless, most of this literature has been centred on measuring well-being by utilising definitions and indicators which arguably do not reflect the country's socio-economic and cultural dynamics. Additionally, with regards to urban revitalisation in general, and heritage-led regeneration in particular, well-being and quality of life are a particularly uncharted and under-researched topic, with associations between the two still lacking in strength, substance, and more holistic, refined perspectives. In this sense, the qualitative research hereby discussed reviews existing academic and professional discourses on the understanding of concepts of well-being and quality of life in the context of urban regeneration in China, and analyses a series of cases through this novel lens. This in turn highlights the ways in which a more contextually-appropriate and holistic reading of urban well-being could provide a relevant framework for assessing, through further research, whether or not heritage-led renewal projects in China are heading in a more people-centred, sustainable direction, and may provoke a discussion on the unequivocal links between heritage, urban regeneration, well-being and quality of life.

3A European approaches to climate change adaptation and resilience

Co-creation in urban climate change adaptation and resilience

Angela Connelly (University of Manchester, UK)

Co-creating tools, products and systems are at the heart of the European agenda on climate change adaptation. Co-creation involves bringing stakeholders together in order to design research, undertake research, to develop outputs and to co-implement climate adaptation as well as resilience strategies and options.

This paper demonstrates how cities can benefit from approaching climate change adaptation and resilience using co-creation approaches. The paper also provides an overview of the different manifestations of co-creation in practice in order to draw out the lessons learned when undertaking a co-creative approach. Whilst there are many opportunities to be gained through implementing co-creation, the paper shows why it is important to understand the challenges. These include the different expectations that arise from the process and time and resource commitments, as well as sustainability beyond the end of project. I apply these insights to the RESIN project in order to demonstrate the impact that co-creation had on RESIN's various outputs and to set the context for the city case studies examined in this session.

Methods for urban climate change adaptation and resilience

Jeremy Carter (University of Manchester, UK)

China's New Urban Agenda includes addressing the inevitable impacts of a changing climate. This is an agenda that European cities and regions have led for around thirty years through recognising that extreme weather events and climate change impact upon the quality of life and prosperity of urban areas. The European Commission has also funded research and development into adapting and building resilience to the changing climate in urban areas through novel processes, products and services.

Within this context, the Climate Resilient Cities and Infrastructure (RESIN) project is supporting cities and regions to understand their climate change risks and develop strategies to adapt to those risks. This paper gives a background to the key concerns that the RESIN project is addressing in the wider European focus on climate change adaptation and resilience. It then focuses on the methodology and application of the European Climate Risk Typology, which is a key output of the RESIN project. Developed around the spatial unit of NUTS3 regions, the European Climate Risk Typology allows cities and regions to strategically screen for the climate hazards that they face, and their levels of exposure and vulnerability to hazards. Such an overview can be used as a starting point for a more detailed risk assessment. The paper demonstrates that the standardised methodology behind the typology can be applied easily to other spatial contexts.

Kit England (Climate Ready Clyde, UK)

Glasgow is situated in the west of Scotland on the Clyde Estuary and features a population of 1.7 million inhabitants. This region is heavily urbanised, with a third of Scotland's population and associated economic output. Like many other cities, Glasgow is facing numerous projected impacts from climate change including sea level rise, flooding and increasing temperatures. Climate Ready Clyde has been set up to address these issues and to provide a strategic approach to ensure that the wider region can address the issues posed by climate change in terms of adaptation and resilience. In addition to assisting Glasgow to become one of the Rockefeller 100 Resilient Cities, Climate Ready Clyde is helping Glasgow to develop and undertake a strategy and action plan to deliver climate adaptation and resilience in partnership with a range of public and private organisations.

This paper provides an overview of Climate Ready Clyde and critically reflects on the success of the programme to date, as well as the challenges that it will face in the future in order to advance the climate change adaptation agenda. The paper provides an insight into the application of existing tools and data that can help Glasgow to overcome these challenges in order to improve the quality of life of its citizens.

Greater Manchester's ambition to adapt to the changing climate: Implementing change on the ground

Matt Ellis (Greater Manchester Combined Authority, UK)

Greater Manchester consists of 2.7 million inhabitants and covers ten local authority districts. The authority has policies in place to underscore its ambitions to adapt to the changing climate. This paper gives a critical insight into how Greater Manchester has benefitted from the co-creation approach in the European Union Horizon 2020-funded RESIN project in order to progress its adaptation planning.

The paper shows how Greater Manchester, supported by risk assessment, is moving towards adaptive action on the ground and how a risk assessment allows a focus on priorities and helps to shape and drive action. The paper describes a process of zooming in from a non-spatial multi-climate hazard risk assessment to a spatial risk assessment of the city-region focused on the risk of flooding to transport infrastructure. The paper concludes by reflecting on the challenges of financing adaptation options, particularly where there is a complex landscape of multiple public and private stakeholders. The paper gives an insight into the challenges of moving from data and knowledge to implementing adaptation and resilience in one city-region.

China's urban transformation: A neo-liberal Confucianist perspective

Ya Ping Wang (University of Glasgow, UK)

China's progression from a rural and agrarian society to one that is predominantly urban has been rapid; China's urban development in the last three decades is seen by many as one of the greatest human achievements in history. Researchers have applied various theories and frameworks in an effort to understand this dramatic and unprecedented urban transformation. Of the most commonly adopted theories, neo-liberalism provides an important lens of critical analysis. China's urban development has, however, demonstrated many unique features which are lacking in other cities that operate under neo-liberal influences. These include, for example, the excessive and fast trend of centralisation; wealth generation and property-led development in top ranked cities; the production of uniformed and architecturally homogeneous residential areas with very high building heights and density; the persistence of hukou effects; the continuous prominence of the work unit system; and emerging new patterns of urban community management and governance. Many of these features and their dynamic changes cannot be easily explained by either generic or imported theories. This paper examines some of these key features of urban change in China and their linkage to dominant Chinese culture – Confucianism. It shows that the integration of neo-liberalism and Confucianism (neoliberal-Confucianism) may provide a better theoretical framework and approach to understand China's urban transformation and the Chinese development model.

Knowledge of Chinese cities: Socio-historical continuation and disruption

Xiaoxue Gao (Technical University of Berlin, Germany)

It is noticeable that administratively defined urban-rural territorial and demographical dichotomies dominate discourses of Chinese cities in public policies and scientific studies, as if 'city is city' and 'village is village'. Theoretical lenses such as urban entrepreneurialism derived from neo-classical neo-liberal social contexts, as well as concepts such as (re)scaling and networking, have been mobilised to bridge social and spatial (re)configurations and to analyse their dynamic interrelations. However, 'spatial anomalies' such as new types of conjoined city regions or the hybrid spaces within cities created by the rural-based lives defined by the hukou system have not been fully understood when reading Chinese cities through essentialist or relativistic lenses. This paper undertakes an exploration of what counts as knowledge of a city in a contemporary Chinese context. I ask how one can conceptualise contemporary Chinese cities without losing sight of their extraordinary variety, vitality and idiosyncrasies through intimations of urban discourses themselves. Following the sociology of knowledge tradition, it regards discourses of cities as exemplifications of spatial knowledge, which are contextualised, embodied, and constantly (re)constructed relationally by social actors' communicative actions.

This paper examines the production, distribution and transformation of city discourses in administrative, scientific and everyday life spheres from the late imperial period until the present day. Conflicting social relationships and competing politics are examined through the case study of Beijing. As is shown, there has been both continuation and disruption between socio-historical processing of knowledge of the city and its actor groups.

The city after Chinese new towns

Maria Paola Repellino (Polytechnic University of Turin, Italy)

In the early twenty-first century, the Chinese Government announced it had decided to build twenty new towns each year for the next twenty years; in total, approximately 400 new towns will be designed and built before 2020. Research carried out for three years by scholars from Politecnico di Torino, Tsinghua University and École Polytechnique Fédérale de Lausanne considers Chinese new towns as a laboratory in which, and from which, we can observe the characteristics and current changes in contemporary cities. It follows that questioning new towns is a way to question what cities are (and what have they become) in China and elsewhere. In this sense, new towns help us to better understand and reconsider wider urbanisation processes and the forms and features of contemporary cities, as well as the ways in which they are now inhabited. In essence, Chinese new towns allow us to rethink the ways of interpreting and designing the city. Mixing critical-descriptive and design-oriented approaches, the research focuses on three places: Tongzhou, in the Tongzhou district of Beijing; Zhaoqing New Area, twenty kilometres from the city of Zhaoqing in the Pearl River Delta; and Zhengdong, near Zhengzhou in Henan Province. The selection of these three new towns does not provide a comprehensive atlas of the many situations or generalities of new towns in China. The three places are neither exemplary nor representative: they are just specific sites from which to move forward questions that refer to broader, elusive problems and trends.

Understanding and managing conflict in planning using selected aspects of Chinese pre-Qin philosophy

Kang Cao (Zhejiang University, China)

The focus on conflict in spatial planning has recently seen a resurgence in urban studies. In order to manage conflict in political, economic, and social contexts that are different to those of the north-western world, I advocate alternative ways of thinking about and managing conflict. This current study aims to understand and deal with the issue of conflict and related notions in Chinese spatial planning practice through a culturally more appropriate system inspired by the Chinese pre-Qin philosophy. The first section presents two preconditions which underpin the pre-Qin thinkers' perspectives on conflict. The next section provides an understanding of conflict and its correlated concepts by focusing on the divergent perspectives of the representative figures of several pre-Qin philosophical schools. Thereafter, the paper explores possible pathways inspired by the doctrine of pre-Qin philosophers to manage conflict that is generated from China's urban regeneration and the practice of multiple-plan integration. Although there is not enough space to compare the Western world and China, I endeavour to create an opening for non-repressive, creative, and democratic approaches to conflict resolution to emerge in a state in which democratic spirit and mechanisms are not fully developed.

3C Migration

The 'Chinese Dream' and urban aspirations for internal migrants in Guangzhou, China

Samantha Lim (National University of Singapore, Singapore)

The 'Chinese Dream' serves to remind people to integrate their individual and personal dreams and aspirations with the national Chinese Dream. The China imagined is one that is rejuvenated, inclusive (for both rural and urban inhabitants), prosperous and peaceful. Several policies in China have seemed to encourage inclusivity, such as promoting the conversion of rural hukou to urban hukou for internal migrants and coordinating rural and urban development to narrow the gap between these areas. However, what does this mean for the urban aspirations of internal migrants in cities? Generating qualitative data through in-depth interviews and participatory-observations with internal migrants who have lived in, or are currently living in, Shipai village in Guangzhou, China, I look at the relationship between their urban aspirations and their perceptions of their action spaces and room for manoeuvre. I propose that first, migrants in the city tend to perceive their action space as one overlapped by their hometowns and their destination city (Guangzhou). Policies to reform the hukou system in China have also shifted the drivers of change in these action spaces; however, it is beneficial for the migrants only if they meet the requirements of the local government. Secondly, the social and political environment in China means that their decisions are more individualistic than collaborative. Hence, this is also contradictory to the common rhetoric of the government which primarily emphasises collectivism as the way to achieve the common Chinese Dream.

Learning from urban informality and the everyday life of contemporary migrants: The case of the La Chimba neighbourhood in Santiago, Chile

Jorge Inzulza-Contardo (University of Chile, Chile)

According to Mitlin and Satterthwaite (2013, p.297) 'one in seven of the world's population live in poverty in urban areas, and the vast majority of these live in the global south – mostly in overcrowded informal settlements with inadequate water, sanitation, health care and schools provision'. However, this situation can also be observed since the beginning of the twenty-first century in historic areas of more affluent Latin American cities such as Santiago, Chile, which is receiving a great number of migrants mainly from Peru, Bolivia, Ecuador, Colombia, Venezuela, Haiti and the Dominican Republic. Although this situation increases the 'urbanization of poverty' (Carrión, 2012) and illustrates migration informality and social polarisation, it is possible to draw lessons from these urban practices.

This paper explores the current socio-spatial patterns of migrant residents in the La Chimba neighbourhood, to understand how everyday life practices are modifying ways of living and working in the area. It is argued that immigrants deliver new knowledge through their spontaneous urban practices, and that these contribute to integral urban development. The methodology includes both quantitative data from official sources and ethnographic analysis and semi-structured interviews with migrants and long-standing residents, to identify relationships amongst them and ways of inhabiting. The results show that the new urban social fabric of migrants in La Chimba has attracted greater cultural flows and vitality in public spaces. These could be included in the Latin American New Urban Agenda to promote better sustainable development.

Rural-urban linkages and the plight and agency of migrant women care workers in urban China

Xiaohui Zhong (Sun Yat-sen University, China)

This paper examines how rural-urban linkages have affected the work and family relationships of migrant women care workers, and how they exercise agency to cope with the resultant pressures. This research is important in that migration is a main source of labour supply for urban care and the plight that the workers face indicates that there is a number of unsustainable problems in the labour supply. Existing studies of care workers are mostly concerned with transnational migration, such as migration from Southeast Asian countries. However, this is a domestic issue in China that is important for coordinated planning. This paper draws on research of women migrant care workers in an elderly care institution in Beijing in 2016. I first identify the rural-urban linkages between migrant women care workers and their rural-based families. They are frequently torn between self-fulfilment and satisfying family needs. They cannot take advantage of urban resources for making professional progress and their employers are hesitant to enter into formal contractual relationships. However, in facing these challenges, they exercise agency to balance the needs of their families in the villages and their employers' demands in the cities.

I argue that the agency they deploy, which has helped them to cope, is structurally embedded and at a private level. However, to obtain a sustainable labour supply, social policy makers and social workers need to acknowledge the social needs of the rural population, and develop coordinated strategies for rural and urban care.

Measuring and understanding migration in urbanising China

Jianfa Shen (Chinese University of Hong Kong, Hong Kong)

This paper examines the intensity and spatial patterns of internal migration in China. The data on internal migration and its spatial framework in China are complicated and the population mobility (migration intensity) cannot be calculated easily. These issues are reviewed and discussed in this paper. The main results are as follows. China demonstrated low mobility from the 1950s to the 1970s due to hukou control but its mobility has now increased to a medium level. From the 2000 census to the 2010 census, inter-provincial crude migration intensity doubled for registration migration and at the five-year interval migration level. The crude migration intensity was 19.58% based on registration migration data in the 2010 census. It is estimated that the five-year interval total crude migration intensity was 14%. The migration effectiveness index was over 68% in the period from 1995-2000 to 2005-2010. This places China at the top of Asian countries and indicates that China is at a stage of rapid urbanisation with large-scale rural to urban migration. This massive migration takes place in three distinct forms; temporary migration, rural to urban migration, and inter-provincial migration. This means that most migrants have moved without local hukou at destination. Many migrants have moved from rural to urban areas as well as to coastal cities and provinces. Thus internal migration is closely related to the process of rapid urbanisation that has occurred in China over recent decades. It is likely that mobility may further increase, especially with regard to inter-city and intra-city migration with the further development of the country.

3D Urban regeneration

Creating a framework for inclusive urban regeneration through the adoption of two-dimensional perspective which encompasses nature and society

Boting Wu, Pengcheng Xiang (Chongqing University, China)

Integrating urban regeneration with the idea of inclusive development is a response to a variety of problems that exist in the process of urbanisation. To make urban regeneration more effective and efficient, it is imperative to solve the natural and social problems that exist within urban regeneration in China. Nature-based solutions (NBS) and society-based solutions (SBS) are two top-level designs which are useful to enhance the natural and social environment of a city. NBS is put forward by the EU and SBS is advanced innovatively by this paper as a complement to NBS. Based on these two top-level designs, a framework of inclusive urban regeneration is set up through adopting a two-dimensional perspective that encompasses nature and society. This paper provides a comprehensive introduction to inclusiveness, as well as nature-based and society-based solutions. A system is proposed to be constructed which contains both the nature-inclusiveness purpose and the society-inclusiveness purpose. Specific aspects of inclusive urban regeneration are elaborated under the proposed system. Finally, a security system is put forward based on technical support, economic security and institutional guarantees.

An economic contribution analysis of the urban regeneration industry in China based on an input-output method

Cong Chong, Guiwen Liu, Jingke Hong (Chongqing University, China)

With China's urban development, urban regeneration has become an important way to release inefficient land usage and promote the sustained growth of the urban economy. In this context, this paper proposes an examination of the 'urban regeneration industry', which is defined as the economic activities that occur in urban, built-up areas which are related to remediation, functional changes, demolition, reconstruction, and so on. In order to quantitatively measure the national economic impact of the urban regeneration industry, a new I-O table containing 43 industrial sectors was created by dividing the construction industry into an urban regeneration industry and a traditional construction industry based on the 2012 I-O table. This paper predicts the scale of the urban regeneration industry in the period between 2018-2030 using the RAS method. From this, the impact of the urban regeneration industry on national economy-related industries and its contribution to GDP can be studied. The conclusion shows that the influence coefficient of the urban regeneration industry is greater than the social average; although the sensitivity coefficient is lower than the average, its importance as a driving force for other industries cannot be denied. According to our estimates, the direct contribution rate of the urban regeneration industry to GDP in 2012 was 1.72%, ranking 20/43. By 2030, its direct contribution rate and comprehensive contribution rate to GDP might reach 3.08% and 24.21% respectively. The added value of the urban regeneration industry accounts for 44.03% of the added value of China's construction industry. Finally, this paper proposes a series of suggestions for the further development of the urban regeneration industry from management, technology and educational perspectives.

A method study of urban renewal planning based on the multi-level urban renewal unit: A case study of the old city of Jiyang County

Zijing Li, Shijie Sun (Southeast University, China)

Urban renewal refers to not only an important strategy to excavate the potential of urban land use but also the carrier in sustainable urban development. The application of a multi-level 'Urban Renewal Unit (URU)' is used in evaluating urban renewal potential and managing urban renewal control. This research explores the Urban Renewal Planning Method System of the old city from potential evaluation of URU, division of URU as well as regulation and management of URU, corresponding to macroscope, mesoscope and microscope. Taking the old city of Jiyang County in Shandong Province as an example, the research attempts to regulate the urban space from different types based on the multi-level URU. The results can be summed up in three dimensions including the guidelines for city development direction and interregional development from a macroscopic level, the resolution and implementation of urban renewal regulation to each unit as to improve efficiency in solving urban problem from mesoscopic level, the revitalisation of communities and activation in land stocking from the microscopic level.

The spatial and temporal differences in regenerating industrial spaces: A case study of the inner cities of Shanghai, Nanjing and Hangzhou

Xue Mi, Shijie Sun (Southeast University, China)

Community is the basic unit of social management, the integrated carrier of urban life. Different stakeholders affect the redevelopment of the urban community, which is endowed with a more significant role in urban space reproduction. Based on the case of the Shibati community in Chongqing, the street life of old Chongqing is evaluated from three aspects – social, economic and spatial – so as to deconstruct the urban life of the old Chongqing community. This then enables a discussion on how to reconstruct the original social network, and how to upgrade inefficient traditional industries. The idea of how to build a multiplicity of social attributes, economic properties, and spatial properties is addressed, as is the need to build up a design method and explore the ideas of modular and tactile updates at the micro-level.

3E Green transition and climate change

New roles of householders to contribute to Chinese and Dutch retrofitting housing estates

Frank De Feijter, Bas Van Vliet (Wageningen University, Netherlands)

Conventional governance of retrofitting housing focuses on the macro-level of production via more private-led or public-led institutional settings. These different institutional settings determine the direction of retrofitting packages in a one-way linear process through financial incentives connected to energy labelling standards for technological innovations. The strong focus on 'upstream' supply chains implicitly ignores the 'downstream' domestic routines of everyday life. Domestic practices are assumed to change automatically when production-distribution systems are made more sustainable. In addition, acceptance of the status quo in basic technocratic and economised principles of power do not always include focus on issues of poverty and inequality. The user is a passive object of study in the design-process. In contrast to this conventional view, this paper shows that the urban governance of retrofitting can gain insights on the social and spatial implications of such programmes at a household level. When undertaking a systemic view on retrofit governance, it becomes clear that retrofit packages not only entail physical measures but also social and political implications. Empirical data is gathered in qualitative case studies of housing retrofitting in Amsterdam, Beijing and Mianyang (Sichuan province, South-West China) by interviewing local retrofit providers and numerous householders, combined with site observations. The findings show the need to complement top-down, technology-oriented forms of retrofit governance with bottom-up, socio-technical and life-world oriented forms of retrofit governance. This coincides with the co-creation of the development of 'soft' social skills at face-to-face organised interactions to determine shared problem-definitions and solution-directions which are considered as important as technical skills.

Feasibility of green housing transitions in the Chinese housing market: The developers' perspective

Han Jiang (University of Sheffield, UK)

Climate change has become a core issue worldwide. The concept of 'green housing' (GH) has been introduced to deal with climate issues in the housing sector. GH development requires complex sociotechnical transitions; it does not just refer to using green materials or technologies, but most importantly, the awareness and behavioural transitions needed by all market actors. China became the world's largest energy consumer in 2014. Reducing carbon emissions in the Chinese housing market has challenges but also great possibilities and may require a dramatic improvement in its institutional frameworks. Whilst there is some emerging evidence from Western countries in this regard (Osmani and O'Reilly, 2009), little is known about developers' attitudes and behaviours towards GH or the efficacy of current GH regulations in the Chinese context.

This research fills this gap and investigates the market responses to the Chinese government's GH regulations by examining developers' attitudes and behaviours towards the implementation of GH targets. It also identifies the key barriers to GH development. In doing so, this research provides adoptable regulation recommendations in support of alternative modes of GH development in China.

The results of analysis indicate that developers believe that GH will be the predominant future trend in the Chinese housing market, but that the Chinese housing industry has a resistance to promoting GH development due to a variety of political, cultural, financial and technical barriers.

The research provides a lens to observe the constraints to achieving green housing transitions and the loopholes that exist in the current housing market institutional environment in China. The findings of this research could help policy makers identify problems in GH regulation adoption and also assist them in developing suitable strategies for the market. From the perspective of international experts, the research also contributes to the enhancement of existing knowledge pertaining to Chinese urban governance and sustainable planning within non-Western and non-liberal contexts.

A review of China's urban climate research and planning application (1963-now)

Feihao Chen (Chinese University of Hong Kong, Hong Kong)

The study of urban climate and planning applications is of great significance to the sustainable development of cities. So far, there has been little systematic review of China's long-term urban climate research and planning applications. In this paper, the CNKI database was used as a platform for a literature search. With the help of CiteSpace and VOSviewer – two pieces of scientific knowledge mapping software – existing literature (1963-now) was reviewed. The analysis showed that, first, although the number of studies in this field is relatively large now, compared with foreign countries, there is still a lack of in-depth research on cities' responses to climate challenges from the perspectives of administrative management, public policy and so on. Secondly, current research hotspots mainly focus on urban climate problems and their effects, numerical simulations on a given city's microclimate, and urban planning and design issues considering climate adaptability. After 2010, climate change issues have attracted more and more attention. Most recently, the research frontiers have expanded to include, amongst others, urban climatic maps and urban ventilation corridor studies. Thirdly, China's urban climate research is closely related to the urbanisation process and policies, and existent research content is in line with the climatic problems that have occurred. In addition, the evolution of technologies of acquiring and applying climate information is presented. Finally, some suggestions are proposed, such as broadening the research perspective, actively preparing for new climate issues that may be encountered in future urbanisation processes, exploring ways of integrating climate research into the planning system, and further developing corresponding climate information application technologies.

Governance processes for urban carbon reduction: Challenges facing policy interventions on low-carbon transitions

Qianqian Wei (University of Manchester, UK)

This paper sheds light on the role and constraints of governance for low-carbon transitions in Chinese cities. This is done through investigating the interaction of characteristics between different types of actors and their views on constraints. This paper presents an analytical framework grounded in four bodies of literature: multilevel governance and fragmented authoritarianism regarding an understanding of the influence of different governance processes; and sustainable transition literature and institutional theory to discuss the constraints facing governing low-carbon transitions. This framework is exploited with an empirical case study in Guangzhou, China. The analysis diagnoses a duality of low-carbon transitions. Even though Guangzhou demonstrated an adaptive capacity in delivering the national binding targets during the past decade, this paper provides evidence that Guangzhou faces difficulties in institutionalising new initiatives to achieve carbon reductions. Finally, this paper also discusses how this would bring forward further challenges that will need to be addressed in the future.

4A Social change and cohesion

Are mixed neighbourhoods more socially cohesive? A case study in Nanjing, China

Ying Wang (University of Southampton, UK)

The great urban transformation that has occurred in China has given rise to a new 'crisis in social cohesion'. New characteristics of residential segregation have emerged in recent years, such as the self-segregation of the middle classes in gated communities and social isolation in large-scale public housing projects. Cumulatively, such processes have resulted in growing levels of social segregation and exclusion. To tackle the urban problems associated with social segregation, the benefits of mixed housing have been promoted in recent policies on citizenship, social integration, and land-leasing. However, the relationship between mixed housing and social cohesion is not as straightforward as expected by policymakers, who contend that a mixture of people from heterogeneous cultural, economic and educational backgrounds will cultivate more positive social interactions and community attachment. This study sets out to explore the roles of heterogeneity in social cohesion at the neighbourhood level. Based on a resident survey in 32 neighbourhoods in Nanjing, China, multilevel analyses were carried out to test the general relationships that exist between heterogeneity and neighbourhood interactions and attachment. The result shows that the role of heterogeneity in social cohesion should be interpreted more in-depth in the Chinese context, where a diversified social environment does not necessarily lead to dense networks, cooperative behaviours and cohesive neighbourhoods.

Spatial-economic restructuring in suburban Beijing: the impact on rural migrants and their living environment

Miao Qiao (University of Manchester, UK)

Large cities under rapid growth often draw on a huge number of rural migrants who are in hopes of finding better life opportunities. Since the reform era in the 1980s, total population in Beijing, China's capital city, has grown from 9 million in 1980 to 21.7 million in 2016. At the moment, it is estimated that there are about 5 million rural migrants in Beijing. Rural migrants who usually participate in low-payment jobs are concentrated in 'urban villages', an informal housing market created by China's unique system of dual land ownership. In the last decade, spatial-economic restructuring processes in Beijing have a profound impact on rural migrants and their living environment. This paper reviews key policies of spatial development in Beijing and examines their impacts based on empirical studies of three urban villages. This paper argues that urban villages emerge as suitable niche locations for migrant because of its low-cost housing, good transport access, and convenient daily life; however, government-led urban development projects have been pushing rural migrants further out to the urban peripheries and squeezing their living spaces through cracking down informal renting. Drawing upon lessons from the experience of other large cities, this paper also highlights key challenges to large cities in China to deliver its New Urbanisation agenda.

Xueji Wei (Southern University of Science and Technology, China)

Concerns about social inclusion have always been at the core of sustainable urbanisation. Studies of the urban poor suggest that the equal access of different population groups to urban spaces, markets, social services, and politics plays a crucial role in inclusive urbanisation. Existing literature on social inclusion in China focuses on the discriminatory exclusion of rural migrants from social welfare and social services caused by rural-urban dualism. The central state of China has made efforts to eliminate the structural disadvantage that is suffered by the rural population by removing the policy restraints related to the dual household registration system and equalising social welfare between rural and urban populations. Similar measures have also been applied to tackle those social inclusion issues that have arisen through the process of urban expansion, in which rural populations are passively urbanised. However, it is unclear to what extent the inclusion measures have contributed to the integration of the rural population into the urban system. By conducting an in-depth case study, this paper analyses how the reforms in the social welfare system affect rural-urban integration. Based on the evaluation of social welfare reforms, policy proposals as to how to achieve more inclusive urbanisation are discussed.

Social life and political trust in urban China

Yinxuan Huang (University of Manchester, UK)

Previous literature has provided little evidence regarding the ways in which China's burgeoning social life and rapid urbanisation shape Chinese people's level of trust in their government leaders. This paper builds on Robert Putnam's conceptualisation of 'maching' and 'schmoozing' as formal and informal forms of social involvement, respectively. Using the 2012 Chinese General Social Survey, I identify four types of participants in social involvement, namely the inactive, machers, schmoozers, and all-rounders, to untangle various aspects of social life in urban China. Empirical analysis shows that the sociodemographic positions of the four types of social involvement are largely distinct. The findings also contribute to the study of political trust by offering insights into the complicated associations that exist between social involvement, hukou status and political trust in contemporary Chinese urban society.

China's public participation in urban planning since 1990: A review of literature

Limei Zhang (Nankai University, China)

China's construction of modern cities has been significantly influenced by Western urban planning theories. It is necessary to review and reflect on the practice of those theories in China as its rapid urbanisation continues. 'Public participation' as one of the classical urban plan theories from Western countries, was introduced to China in the early 1990s and has been widely applied to the urban planning field. This paper examines the background, process, and challenges that the theory has faced and will continue to face in China in the future. The paper objectively describes the research status of China's public participation in urban planning, summarises its characteristics and deficiencies, and points out the specific role of planners, as described by scholars. With the deepening of urban transformation, public participation will play a more important role in urban planning in the future. Finally, the paper puts forward a few topics which need to be strengthened to study the challenges of planning practices in China.

How can growth and the green belt mutually support each other in the context of China's New Urban Agenda? –Dilemmas in the implementation of Shanghai's Basic Ecological Network Planning

Xin Feng (Tongji University, China)

There has been much debate about how to shape urban development in order to achieve greater sustainability. This is especially true in the Chinese context, where accelerated urbanisation has generated continuous rapid growth that has led to a series of environmental problems.

The UN's Sustainable Development Goals recognise the spatial dimension of development. How do Chinese planners respond to these environmental challenges? Shanghai's Basic Ecological Network Planning was published as a method of planning control for ecological environmental protection in 2012. The content included implementing a regional ecological space layout system defined in the General Land Use Plan of Shanghai (GLUP) which focused on clarifying the total amount and layout structure of ecological land; defining control lines for ecological network spaces in combination with the classification and grading of planning management; and formulating policy measures and guarantee mechanisms for ecological space control and implementation. The planned scope covered 6,787 km² land area (including coastal wetlands) with ecological land (3,500 km²) accounting for over 50% of the land area. The aim was to realise the goal of achieving 18% urban forest coverage by 2020.

However, the policy does not seem to have worked well. This leads to further questions, such as how, in facing these challenges, growth and ecological environmental protection can mutually support each other in the context of China's New Urban Agenda.

The New Urban Agenda and strategic spatial planning in Shenzhen

Mee Kam NG (Chinese University of Hong Kong, Hong Kong)

The United Nation's New Urban Agenda (NUA) outlines three fundamental principles in urban development: leaving no-one behind, promoting sustainable and inclusive urban economies, and fostering environmental sustainability. The NUA stresses the importance of national and local governments in planning, financing, developing, governing and managing cities through appropriate policies, competent modes of governance, long-term and integrated planning, and viable and creative financing frameworks. The NUA also calls for transformative commitments for implementing sustainable urban developments that are just and inclusive, and seek to end poverty. In addition, it calls for a boosting of local and general economic growth that addresses social needs, youth and aging problems and encourages the development of a sustainable and resilient environment in the course of urban development. The NUA also highlights the importance of participatory governance, knowledge

and evidence-based spatial planning and management, as well as financial instruments as important implementation mechanisms.

The URA's principles, commitments and implementation frameworks are used to review Shenzhen's strategic spatial plans; Shenzhen 2050 (SZ2050) was made by the China Academy of Urban Planning and Design Shenzhen and is the latest round of Shenzhen's Master Plan (2016-2030). As specified in the NUA, national development policies play a very important role in sustainable urban development. The Fifth Plenary Session of the 18th CPC Central Committee meeting adopted five key development concepts: 'innovation, coordination, green, open and co-sharing'. These concepts coincide with the NUA's 'leaving no-one, no place and no ecology' behind principles. SZ2050 highlights the importance of going back to the basic social and ecological needs of people and the nature of cities, while providing the best environment for technological environment to boost competitiveness. Shenzhen aims to become a more just and liveable model sustainable city for its citizens; a more inclusive, innovative and pioneering city; and a more open, sustainable and creative global city. These visions are translated into spatial development strategies as well as the Shenzhen Master Plan.

The review of the 2010 Master Plan started in 2016 but the draft Master Plan (2016-2030) has not been approved by the Central Government. However, preliminary investigation shows that the new Master Plan will be people-centred and ecology-sensitive in order to reposition the once economic-oriented and functional city into one that underscores sustainability and people-friendliness. The Plan also focuses on ecology, innovation and culture as ways in which to assist the branding of Shenzhen as a liveable and internationally competitive city, playing a strategic role in the 'Belt and Road Initiative' and the development of the Guangdong-Hong Kong-Macao Bay Area. It also attempts to develop a digital and technological platform to 'bring multiple types of planning into a blueprint' in order to enhance the implementation of the Master Plan.

Strategic spatial planning in Shenzhen has arguably addressed the important aspects of the NUA.

The production of spatial plans: Sichuanese towns and planners' conflicting roles and tasks

Lisa Melcher (Free University of Berlin, Germany)

Urban development is shaped both by the institutional set-up of administration and policy making as well as by the people who decide upon and implement policy. These need to be taken into consideration when designing programmes for sustainable development. I have ethnographically followed a team from a planning company in Chengdu, focusing on the planning system as well as the ideals and values that form spatial plans.

In China, spatial plans are not produced by governments and administrations themselves, but by specialised and licensed planning enterprises. In the planning process, these spatial planners find themselves caught between conflicting roles: on the one hand, they consult local government about development strategies and spatio-economic opportunities, while they are also responsible for the technical formulation of spatial plans. Even in this regard, there is a mismatch between the required expertise. In addition, planners are legally responsible for fully implementing planning regulations in the formulation of plans. Thus, spatial planners take on three roles; they are policy consultants, provide technical support, and are regulators vis-à-vis local government. Additionally, at their company, planners were faced with both professional and business pressures.

My presentation analyses how this tension between different roles and objectives impacts on spatial plans: business-related efficiency requirements lead to the routine application of technical solutions and compromises have to be found on a political level. At the same time however, striving for professional status led the planning company to invest considerable resources into research and reflection about currently trending topics.

4C International comparisons

Opposition and resistance: Governance challenges around urban growth in China and the UK

John Sturzaker (University of Liverpool, UK)

This paper proposes that, different though they are, the processes of urban development in China and the UK can be analytically compared by looking at commonly occurring opposition and resistance to that development. Such opposition and resistance can delay and limit the development of land in and immediately surrounding cities. The paper first reviews literature on opposition and resistance to development in both the UK and China, before going on to suggest that this opposition and resistance can in part be explained by a common cause – resentment at opaque and top-down/centralised planning processes. Consequently, the paper concludes that a common solution may be applicable in both contexts – increasing participation and building institutional/civic capital amongst communities – and considers the likelihood of implementing this solution, particularly in China.

The Nepal-China Friendship Highway under China's Belt and Road Initiative: A tourism area life cycle exploration

Roger CK Chan (University of Hong Kong, Hong Kong), Kishan Datta BHATTA (Far-Western University, Nepal)

With the introduction of China's Belt and Road (B&R) Initiative and the launch of the Asian Infrastructure Investment Bank (AIIB), the Government of Nepal has agreed to develop its connectivity with China through cross-border infrastructure projects such as railway and road networks. It is assumed that increased connectivity will bring dynamism in urban and regional development and that tourism plays a significant role in shaping urban-rural economic dynamics. Tourism destinations are influenced by tourism activities, and undergo different developmental stages that are correlated with temporal and spatial dimensions. Improved connectivity promotes accessibility and enhances economic activities which may increase tourism within destinations. According to the Tourism Area Life Cycle (TALC) Model, destinations experience changes over time which are linked to developmental stages, appropriate management and policies. It is therefore needed to maintain tourism for long term sustainability (Butler, 2006). In Nepal, most of the settlements along the Nepal-China Friendship Highway are expected to experience increases in tourism, economic activities and urbanisation under the B&R Initiative. Considering the transformation of Dhulikhel and Banepa, two key towns along the Nepal-China Friendship Highway, this paper explores the potential impacts of the development of cross-border transport infrastructure projects on tourism. Empirical data collected from a semi-structured questionnaire survey with residents as well as tourism entrepreneurs and tourists is used alongside in-depth interviews with key informants and participant observation to inform the comments made in this study. This paper highlights the perceived impact of tourism, and identifies locations experiencing rapid growth of tourism with the completion of cross-border transport infrastructure projects. Finally, the paper proposes strategies that will guide future tourism development of the destinations from a sustainability perspective.

Beyond growth – European experience with shrinking cities and urban regeneration. Some lessons to learn for China's urban development and urban policy?

Andreas Schulze Baing (University of Manchester, UK)

While currently much attention is focused on global urbanisation, including the rapid urbanisation in China (Wu, 2015), this paper discusses what may come after urban growth. First, this paper provides an overview of the European experience with urban decline and regeneration, with a particular focus on the German and UK experience with shrinking cities. Subsequently, the paper reviews policy responses to shrinking cities in the form of economic and subsequent population decline, focusing on comparing Stadtbau Ost/West in Germany (Radzinski, 2016; Nelle et al., 2017) with the Housing Market Renewal scheme in Northern England (Ferrari, 2018, Couch et al., 2015), both responding to urban decline in the late 1990s and early 2000s. Both initiatives are described and contextualised in their respective wider planning and regeneration framework. Furthermore the paper addresses how different forms of urban environment may provide stronger resilience to socio-economic challenges. Consideration of this may help to make current forms of urbanisation in China more sustainable. Finally, a key focus within this research relates to the adaptability of urban environments (Rauws, 2016) and the capacity to respond to future changes.

Urbanisation lessons for urban-rural spatial planning for developing countries: Comparing experiences in China, India and South Africa

Methembe MDLALOSE (University of KwaZulu-Natal, South Africa)

Research on the spatial distribution of economic systems spans a wide variety of disciplines, including economics, geography and urban planning. The interdisciplinary connectedness of these disciplines assists significantly in the understanding of overall patterns of economic growth, urbanisation and context specific social issues. Of greater importance, however, is how long-term shifts in global trade and investment are reshaping the world economy and international politics. Chief among these developments is the emergence of rapidly growing economies, particularly those of China, India and Japan. The decline of long-standing hegemonies after World War II, such as Germany and Russia, has given space for new regional centres of power, i.e. BRICS. With the rapid growth of Gross Domestic Product (GDP) in many of these newly developed and developing countries, population and urbanisation may also come into play when talking about per capita figures. Further south, South Africa, is one of the most advanced economies in the region. South Africa's modern infrastructure, high export levels and liberal market economy has been its competitive advantage amongst its regional neighbours. However, unlike its Asian counterparts, which have experienced urban sprawl due to a rapidly growing population, South Africa harbours a segregationist spatial past; a consequence of the apartheid legacy. Inequality and urban-rural disparities still define the social context, owing to apartheid master planning and land ownership issues. That said, the paper critiques patterns in economic growth and urbanisation in China, India and South Africa and attempts to find ways of addressing the increased disparity between core and peripheral regions.

4D Creative industries

Urban creative clusters in the sharing economy: Relationships between co-working spaces and youth communities

Ke Wang (Zhejiang University, China)

Co-working space is a relatively new notion within the sharing economy. Known as the 'third working space', it contributes to forming urban creative clusters (Spinuzzi, 2012). Even though nuances exist in this definition, the huge impact that co-working space has had on spatial patterns cannot be ignored (Holienska, 2015). Present studies have focused on the spatial distribution of the new sharing economy and its influence on the urban context. However, generational issues have not been considered. Youth communities can be highly correlated with the distribution of the sharing economy, since young people are expected to be the main users of co-working spaces according to the Deskmag report.

This study tested two hypotheses: urban co-working spaces' spatial pattern is highly correlated with the location of youth communities, and the different value-in-use of co-working spaces is influenced by neighbouring property types, reflecting spatial homogeneity. The research methods used to test these hypotheses were GIS and spatial statistics. By collecting samples of all the existing co-working space and youth communities in Shanghai, Shenzhen and Beijing in China, the correlation was examined using the ordinary least square (OLS) regression and general weighted regression (GWR) models. Spatial lag analysis was implemented to study the lag effect of surrounding property types on co-working spaces, whilst local indicators of social associations was used to learn the local spatial auto-correlation of co-working spaces. The results obtained suggest that co-working spaces have helped to form creative clusters in the three cities. The results also suggest that they are highly correlated with youth communities and are influenced by surrounding properties.

Female entrepreneurship in China in the internet era

Yiling Luo (University of Hong Kong, Hong Kong)

This paper examines the potential new gender order through investigating female entrepreneurship in the internet industry in China. Socialist feminists believe that gender relation is integral to the production process and varies across places while being simultaneously interwoven into processes of industrial transformation, changing labour markets and regulations. The development of the network society proposed by Castells, which was accompanied by the infiltration of information technology into traditional sectors and increasing instances of niche entrepreneurship in the production network, could potentially generate new gender relations in place. As the internet industry is the core of this social-economic transformation, this paper empirically examines how government policies and the gender division of labour persistently influence female entrepreneurship in this new emerging industry. The paper discusses the gender implications of project capitalism, and reviews the internet and entrepreneurial policies of China. It then turns to the gender effect of entrepreneurship in the internet industry.

An evolutionary analysis of the manufacturing industry innovation network of the Pearl River Delta using patent data

Yawen Qin (Sun Yat-sen University, China)

With intelligent manufacturing development, manufacturing's migration to Southeast Asian countries and the export of Chinese high-tech products facing huge pressures from competition, how the Pearl River Delta, as a 'world factory', will achieve a new comparative advantage in global production networks is of great significance. This paper uses enterprise as the linking foundation, matching patent data to the manufacturing industry networks of 2008 and 2013 respectively, which were built based on the theory of 'product space' proposed by Hidalgo. In addition, this paper analyses the relationship between manufacturing evolution and technological innovation in the Pearl River Delta from the perspective of industrial clusters and company scales. The results show that, over a period of five years, the development of the electronic communication and electrical machinery manufacturing industries in the Pearl River Delta has become more and more specialised. The results show that, with these developments, companies have produced more patents and that the larger the enterprise, the more patents it has produced. This paper also gives some advice as to what the government and individual enterprises should do to ensure that the Pearl River Delta maintains its innovation and manufacturing competitiveness.

Using big data sets and spatial dynamic metrics to analyse the population spatio-temporal patterns of Shanghai

Chaowei Xiao (University of Cambridge, UK)

The use of spatial statistical methods to study the geographical and spatial distribution of people's movement, socio-economic factors, land use and other spatial perimeters has attracted the attention of many scholars recently. This research begins by reviewing the literature on spatial metrics and then analyses three categories thereof. Subsequently, the research tries to determine the most appropriate metrics to analyse the population's time and space variation in Shanghai during a calendar week, focusing on techniques such as a weighted mean centre, standard deviational ellipse, space-time cube and emerging hot spot analysis.

4E Inequality and urban justice

Spatially rebalancing China's manufacturing industries: A spatial dynamic analysis of regional industrial development

Yiwen Qiu (University of Cambridge, UK)

Reducing regional disparities has become a key concern for policy makers given China's current imbalanced economic development. The significance of manufacturing industries can be reflected in the fact that their output now accounts for almost one third of the total and will continue to contribute significantly to economic prosperity in the long term. This paper examines the spatial dynamic relationship that has existed between local and neighbouring industrial development across Chinese cities over a period of 15 years. Spatial and temporal dependence has been widely considered within a range of disciplinary areas, and urban planning, as a field, is no exception. Fundamental to this spatial dynamic perspective, are micro, meso and macro interactions which provide mechanisms by which to study complex adaptive city-region systems. The recent development of spatial econometrics technically enables the estimation of such relationships across time and space, not only to forecast the economy with a dynamic component, but also to distinguish different sources of spatial dependence. This research fills this gap through the integration of spatial heterogeneity and temporal dynamics, which can help shed light on what kinds of connections between cities are displayed, the extent to which they can accelerate or impede regional prosperity, and how their spatial implications can help rebalance the economic geography. While space and history matter, place-specific factors are also found to have an important bearing on economic connections and performance.

Urban justice and public housing provision in China: An evaluative framework

Ka Ling Cheung (University of Melbourne, Australia)

This paper focuses on the experience of public housing provision in China from the perspective of urban justice. Facing growing complexities in urban housing provision since the market-oriented housing reforms, many studies have looked at issues of housing injustice pertaining to housing inequality, residential segregation, and the disadvantages of migrant housing. Such studies have led to a number of questions arising: What constitutes a just housing policy? How can a more just city be produced that makes urban life better for all citizens? Chongqing benefits from a public rental housing programme that is more progressive than those found in other Chinese cities as a consequence of the fact that migrants have been granted access to public housing welfare and it also has a large-scale provision of such housing. As a consequence of these two factors, Chongqing was chosen as a case study. This paper develops an evaluative framework to conceptualise urban justice within China's public housing provision. It starts with general criteria of urban justice synthesised from Susan Fainstein's formulation of the just city, namely equity, diversity and democracy. Employing these criteria, this paper proposes a number of different features of public housing provision for evaluation. The evaluative framework explores the role of state institutions in urban housing provision at various scales; from municipality, street, and neighbourhoods, to households in a large Chinese city. The findings enable us to analyse housing policies and evaluate whether they take us closer to urban justice within a specific socio-political context.

74 **How the state builds cities: An analysis of the role of urban investment and development companies in Shanghai**

Yanpeng Jiang (East China Normal University, China), Paul Waley (University of Leeds, UK)

A common feature of urban projects in China is the establishment by government of what are commonly called urban investment and development companies (UIDCs) to manage projects on behalf of government. The literature, however, is largely silent on the development-related activity of these state interventions in the urban terrain, with discussion largely limited to their financing activities. This presentation responds to this lacuna in the literature by presenting a close-up analysis of one of these state-owned companies, Shanghai Shenhong Investment and Development Co., Ltd, the organisation that undertook the development of Hongqiao, the new transport and business hub in the west of Shanghai.

We present a picture of the ways in which this state-owned company, in common with other UIDCs, 'disguised' itself as a private firm in order to borrow funds on the market and the manner in which it oversaw a host of other state-owned companies, all of them involved in this city-building project. By drawing attention to the primacy of state-owned companies in the execution of China's urban projects, we challenge those readings of contemporary urban restructuring that draw on straight-line narratives of neoliberalisation and financialisation. At the same time, we recognise that the state in China is ultimately working to create what it sees as the most favourable environment for business in a form of 'state entrepreneurialism'.

Temporal and spatial effects of urban landscape on house prices: A case study of Chongqing, China

Jianping Gu, Xizi Wang (Chongqing University, China)

Urban landscapes have an implicit amenity value and provide sites of aesthetic and recreational functions for residents. Evaluating the external effects of landscape variables on property prices has attracted scholars' attention. However, the willingness of home-buyers to pay a premium for urban landscapes with varied the temporal and spatial contexts needs to be further researched. This paper, which uses Chongqing as a case study, investigates the heterogeneity of spatial and temporal effects of urban landscape views via three spatial econometric analyses.

The samples are 29,882 apartment transactions in Chongqing city between 2015 and 2017. By controlling the construction structural and location-based attributes, the spatial and temporal effects of the amenities to urban landscapes (including mountain views, river reviews and peninsula landscapes) are examined through three hedonic models. The significant and heterogeneous amenity values are tested for proximity to urban landscape. The key findings suggest that consumers are more selective when buying housing and demand more in terms of mountain views, river views or peninsula landscapes during boom periods, while during bust periods, consumers prefer to focus on selecting houses with more services or public resources. This study also suggests that the impact of neighbourhood characteristics has an effect on property prices.

The findings contribute to broader discussions on the importance of applying hedonic pricing to house valuations and provides useful messages to urban planners and developers with regard to issues of landscape and how to attract potential investors.

5A Urban environment and ecology

A study of the expansion of construction land and its ecological effects in coastal areas of Jiangsu Province

Xuejun Duan (Nanjing Institute of Geography and Limnology, CAS, China)

The Jiangsu coastal area mainly includes three prefectures: Lianyungang, Yancheng and Nantong. The economy and built-up areas have been expanding rapidly since China's reforms of the 1980s and particularly after the implementation of a provincial coastal development strategy in the 2000s. Alongside this rapid development, lots of ecological areas have been occupied by urban development, which has led to ecological and environment degradation which has subsequently affected regional sustainable development. This paper examines the spatial and temporal characteristics of construction land expansion in the coastal areas of Jiangsu Province from 1985 to 2015. By employing the principles of both regional landscape processes and patterns, this research evaluates the relationship between different landscape processes and their ecological security and recognises the issues of ecological security in Jiangsu's coastal areas. Based on examining security patterns including geological disasters, flood storage, driving water safety, biodiversity and recreation conservation, this study evaluates the effects of built-up area expansion on ecological security. Finally, this paper proposes relevant suggestions on future ecological protection in Jiangsu's coastal areas.

Investigating the water sensitivity of watersheds based on spatial growth: regionalisation and correlation analysis - Lake Taihu Basin case study

Wei Sun (Nanjing Institute of Geography and Limnology, CAS, China)

Water is the most important and sensitive factor in the spatial growth of watersheds. Water sensitivity in different sections of the basin will have different restrictive effects on spatial growth. However, during the rapid development of urbanisation and industrialisation, the disorder caused through the expansion of construction land has ignored the spatial differences of water sensitivity. It has also resulted in changing surface hydrological conditions and the process of water circulation, which have, in turn, caused a series of resource and environmental problems. Based on this, and from the perspective of space growth, this paper seeks to construct a water-sensitive regionalisation index and method taking into account four aspects: water resources, water ecology, water environment and water disasters. Taking Lake Taihu Basin as a case study, a water sensitivity assessment based on small watershed units was carried out, and land use data from 1985, 1995, 2007 and 2017 were used to characterise the correlation relationship between land use extension and water sensitivity in Lake Taihu Basin over the past 30 years. The study shows that the water sensitivity of Lake Taihu Basin is very strong, especially in the hilly areas located in the upper reaches and the vicinity of the inflow channel. Although the limitation of water sensitivity to the expansion of construction land is enhanced, the correlation between them is not high enough, and water sensitivity has not become a key constraint for space growth. The results can be used to coordinate the economic and social development of the basin and to enhance the relationship between resources and the environment, as well as providing a scientific basis for formulating future water growth responsive management policies.

China's urban park planning and design: The existing roles of, and potential for, technical professionals

Yangnan Guo (University of Manchester, UK)

In urban park planning and design processes in China, urban planners, landscape architects and urban designers tend to have humble positions; they possess technical skills but have no administrative power. This research investigates these technical professionals' current roles in China's urban park planning and design, and the potential for their better performance in the future. The data was collected through interviewing seventeen technical professionals with relevant practical experience nationwide, and was analysed using a thematic approach. The results show that their roles can vary with the stage and the scale of individual projects. Their performances in local practices rely on and are also constrained by technical guidance, administrative mechanisms and value orientation at the national level, while time allowances and the will of local decision makers are important factors, too. For the better performance of technical professionals, the study suggests that there is a need for more specialised national guidance and mechanisms, and ideological adjustments among both governmental and technical actors.

Citizen environmental monitoring in urban China

Bettina Bluemling (Utrecht University, Netherlands)

Cities are facing tremendous environmental problems. According to the OECD, urban air pollution is going to be the top environmental cause of mortality worldwide by 2050. China here comes into particular focus as it has the highest rate of premature deaths linked to urban PM pollution per million inhabitants; this is projected to more than double by 2050. While citizens have always been aware of the detrimental state of the environment, there has been a lack of environmental data to provide proof to substantiate their worries. With new web and mobile applications that turn mobile phones into 'networked mobile personal measurement instruments' a shift has taken place from an 'information-poor environment' to an environment with abundant data. However, environmental data is often collected incidentally, and may be used to illustrate a problem, instead of indicating the severity of it. Under which conditions can the widespread use of smartphones in urban China support the transition towards citizen environmental monitoring? Who is the addressee of collected data and what kind of transition towards urban sustainability may be expected from citizen environmental monitoring? This paper provides a review of the use of web and mobile applications to monitor the urban environment in China and how these uses may converge with governmental policies of Ecological Civilisation or people-centred urbanisation.

5B Smart city and technology

An application of the Internet of Things technologies in prefabricated housing production in Shenzhen

Clyde Z D Li, Zhe Chen, Bo Yu, Ru Sun (Shenzhen University, China)

With its generally recognised benefits of faster processing, its clean and safe working environment and good quality, the mass production of prefabricated public housing is gaining momentum in the face of various challenges in the construction industry in Shenzhen. However, the benefits of using prefabrication cannot be cultivated without overcoming the inherent drawbacks of data fragmentation, process discontinuity, poor interoperability between different enterprise information systems and the lack of real-time information visibility and traceability. To address these drawbacks, an Internet of Things and BIM-enabled cloud platform has been designed by integrating big data analytics systems with cloud computing and Internet of Things technologies to manage the mass production of prefabricated public housing in Shenzhen. Intelligent building elements and smart gateways are defined and devised to collect real-time data throughout the supply chain of the production of prefabricated public dwellings, including production, storage, logistics and on-site assembly. Captured data are uploaded to cloud platforms to be processed and analysed using big data analytics systems, so that intelligent decisions can be made to inform production managers. Visibility and traceability modes have been developed with building information modelling and virtual reality technologies so that managers can supervise construction safety, as well as monitor issues of quality, progress, and cost information for multiple projects in a real-time manner. The cloud platform can provide various tools and mechanisms and decision-support services to different stakeholders, thereby improving the efficiency and effectiveness of daily operations, as well as decision-making and supervision throughout the management of the production of prefabricated public housing units. It also provides universal and flexible public support for different integrated smart city applications, forming the backbone of China's future Smart Cities with other intelligent systems.

Mapping the effectiveness of urban function hubs using consumer review websites

Nguyen Thi Thuy Van (Zhejiang University, China)

Traditional public spaces have worked as places for social life, the enhancement of social cohesion, cultural expression, and engender a sense of belonging and ownership. However, in contemporary society, privatised public spaces, like shopping, catering and entertainment centres have become the new civic centres and social hubs, due to financially-driven urban redevelopment and because previous public spaces like parks are now spatially-restrained and environmentally-polluted. Recently, research on recommendations relating to urban points-of-interest (POI), for instance restaurants and coffee shops, based on consumer review websites have attracted much attention. It is of practical importance to screen and recommend the most popular POIs to consumers as such information is crucial to every urban dweller. This paper applies data from the consumer review website called Dianping.com, a food and service review website in China. A '5-Ds' (density, diversity, design, distance and destination) model was introduced to measure the effectiveness of each urban function hub. All the information was collected from the corresponding application programming interface (API) platform. POIs and comments were then mapped using a geographic information system (GIS). A factor score coefficient matrix was used to derive a set of parameterised linear equations which permitted a spatial representation of the factors across the urban function hubs. The results of the study in Hangzhou city, China, show that the proposed metric can explicitly describe the inherent function and structure of the region's typology. This paper contributes to an understanding of how to improve the effectiveness of privatised public spaces and enhances the predictability of each urban hub with regard to their socio-economic performance.

Rong Huang (Manchester Metropolitan University, UK)

The paper addresses the concern that established retail locations and planning practices are failing to adapt to changing consumer behaviour due to the fast growth of the internet. This has major implications for the 'vitality and viability' of traditional centres and neighbourhoods, through the decentralisation of retail activities. Traditional centres are greatly affected by the growth of online shopping, which is further disrupting retail business models and location-based decision-making. Existing analysis of online shopping, however, draws mainly on Western experiences, overlooking developments in other important global markets. China, for example, now has global significance in terms of retail, with a huge consumer population and a fast-developing online shopping sector.

This paper describes and analyses online shopping practices in China, to offer an alternative to Western conceptions and assumptions about how omni-channel retailing affects urban growth and change.

Using social media to analyse and locate successful shopping malls in Hangzhou, China

Noman Sahito (Zhejiang University, China)

Technological and socio-economic developments are transforming the routines of consumption into post-consumerist practices. Location-based check-in services in various social media applications have enabled individuals to share their activity-related choices, providing a new source of human activity data. Social media networks as open sources of data allow researchers and professionals to acknowledge which city places are preferred, used and liveable. In recent years, the rapid developments in Asian cities have resulted in the transformation of traditional integrated urban patterns into semi-connected systems of discreet and estranged patches, often of mega-block size. This paper identifies the most liked (attracted/visited) shopping malls with the help of social media Sina Weibo and analyses why people visit these malls frequently. Daily, around 91% people use smartphones; about 154 million people use Sina Weibo in China, with the number of users increasing daily. The prominent shopping malls in Hangzhou, the capital city of Zhejiang Province, was selected as a case study area. The data was conducted by using the Sina Weibo technique to retrieve data from photographs that had been geo-tagged within selected malls. The results reveal that the shopping malls were within the urban network and their proximity to the main axes of the city. Shopping malls have become places where social life is experienced and leisure time is spent through the wide range of activities that are offered in addition to shopping itself.

An intelligent data mining approach to detect individuals' behaviour patterns and its use in real-time route optimisation

Bingxia Sun (Hong Kong Polytechnic University, Hong Kong)

Passive GPS has become a promising method for collecting individuals' activity-travel behaviour data due to its limited burden on respondents. However, activity-travel behaviour information such as trip purpose and transportation mode are not readily available in passive GPS data and have to be derived from that data which is available. The detection of trip purpose is known as the most challenging issue and the commonly used methods reported in existing literature can accurately derive no more than 70 percent of trip purposes. This study develops an intelligent method based on a genetic algorithm for detecting individuals' behaviour patterns. This offers a fundamental database to support various uses for building smart cities. Specifically, this method establishes a set of classification models through self-learning to extract the information of trip purpose from data on land use types pertaining to trip ends, trip duration and timing, as well as the socio-economic characteristics of respondents, and so on. The results of both the internal and external validity tests show that the method developed in this study is reliable to derive trip purposes from passive GPS data. Furthermore, once household-activity travel behaviour information is more reliably detected, this big data may help shift the behaviour of citizens towards more efficient and sustainable utilisation of city resources (e.g., route optimisation). Within the paper the innovative use of such activity-travel behaviour data is presented from the micro/individual level in terms of real-time and green travel planning.

What factors influence walking route choices? A literature review

Yue Wang (Imperial College, London, UK)

The past decade has seen a dramatic increase in empirical investigations into the correlation between built environments and physical activity. To create places that facilitate and encourage walking, practitioners need a better understanding of the specific characteristics of built environments that correlate with walking behaviour. This paper reviews existing literature pertaining to how the built environment correlates with walking route choice.

Included in this review are two reviews published between 2000 and 2017 and 23 original studies published in 2000. The results are summarised based on specific characteristics of the built environment and daily commute walking versus recreational walking behaviours.

Previous reviews and newer studies document consistent relations between walking route choice and density, distance to destinations, and land use mix. Findings for connectivity, parks and open space, and personal safety are more equivocal. The results regarding recreational walking were less clear.

More recent evidence supports the conclusions of prior reviews, and new studies address some of the limitations present in the earlier studies. Although additional research is needed, existing evidence appears sufficient to support policy changes.

High mobility in China? Exploring the impact of high-speed rail on work-related travel patterns: A case study of Suzhou-based commuters

Chia-Lin Chen (Xian Jiaotong Liverpool University, China), Roger Vickerman (University of Kent, UK)

'High mobility' refers to work-related forms of long-distance travel (Viry and Kaufmann, 2015). The high-speed rail (HSR) network in China has revolutionised time-space perceptions, potentially restructuring social and economic relationships across space through new spatial and temporal arrangements that were once unimaginable and unrealisable. Most HSR research has been devoted to accessibility studies and spatial-economic impacts while little has been explored from social-spatial perspectives, such as to what extent and how HSR has impacted on high mobility practices. This paper introduces new insights by bringing concepts of mobility studies into the field of territorial planning to enhance existing understanding of social and territorial transformations in the age of HSR in China. Although high mobility practice existed prior to the arrival of HSR, an emerging phenomenon of long-distance commuters who travel to work between neighbouring cities by HSR has been observed in Suzhou. Hence, Suzhou-based commuters have been targeted as a focus group for a pilot study. This paper discusses research findings and implications through analysing a questionnaire survey and travel diaries from approximately 350 long-distance commuters who are members of a WeChat group and commute daily from Suzhou to Shanghai and other neighbouring cities by HSR. This paper sheds light on HSR-related spatial patterns and social-economic characteristics that could offer valuable policy implications and lessons for HSR-related urban planning practice.

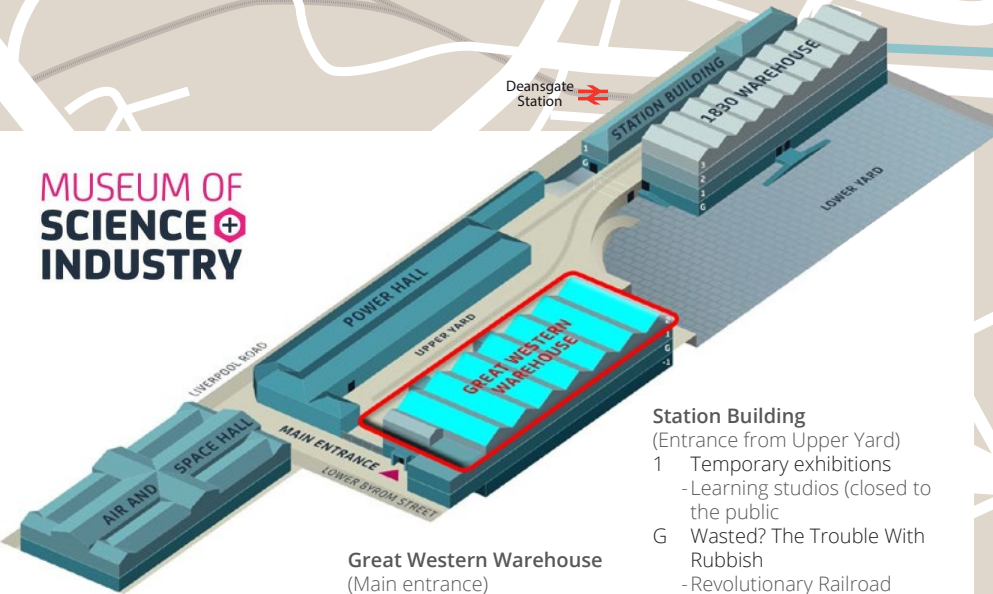
High-speed rail network development and the winner and loser cities in mega-regions: A case study of Yangtze River Delta, China

Lei Wang (University of Manchester, UK)

Using a door-to-door approach to integrate inter- and intra-city travel times, this paper simulates the changes in regional territorial and population accessibility, spatial equity, as well as the winner and loser cities resulting from high-speed rail (HSR) network development in the Yangtze River Delta, China. HSR network development has had a minimal effect on decreasing disparities in overall territorial accessibility but has led to an obvious decrease in the disparity that previously existed with regard to population accessibility. Seven types of winner and loser cities are summarised according to their net winner population and station locations. Poor access to the city centre from HSR stations is a common problem for many cities in the YRD, and more integrated development is needed for future HSR planning and construction.



MUSEUM OF SCIENCE + INDUSTRY



Air and Space Hall
(Entrance on Lower Byrom St)
G Air and road transport collection
- Live Show Space
- Picnic Area
- Information and toilets

Power Hall
(Entrance from Upper Yard)
G Working engines and locomotives

Great Western Warehouse
(Main entrance)
2 Conference Centre
1 Experiment! Hands-on exhibits for all ages
- Warehouse Restaurant
- Accessible toilets and baby-changing facilities
G Revolution Manchester: Manchester's role in science and industry
- Textile Gallery and machinery
- My Den Sensory play area
- Warehouse Café
- Visitor information point and museum shop
- Accessible toilets and baby-changing facilities
-1 Collections Centre

Station Building
(Entrance from Upper Yard)
1 Temporary exhibitions
- Learning studios (closed to the public)
G Wasted? The Trouble With Rubbish
- Revolutionary Railroad
- How the Liverpool and Manchester Railway changed the world

1830 Warehouse
(Entrance from Lower Yard)
3 Closed to the public
2 Connecting Manchester
- Discover how technology helps us communicate
1 Closed to the public
G Visitor information point
- Accessible toilets and baby-changing facilities

China's New Urban Agenda: An International Dialogue on Sustainable Development
Second Floor, Conference Centre, Great Western Warehouse





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