The state of urban science in contemporary global policy debates

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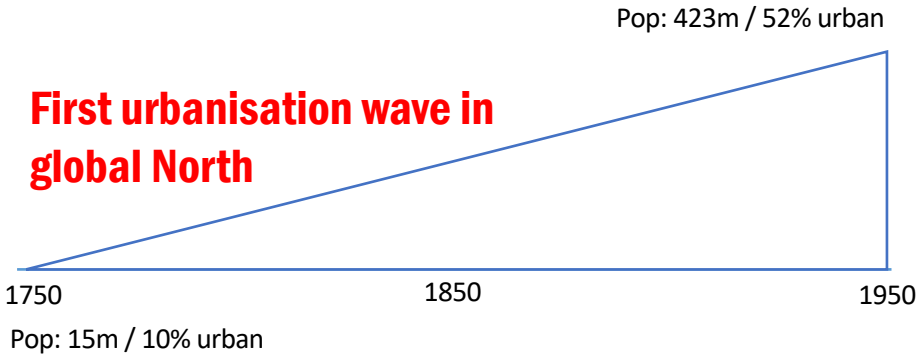
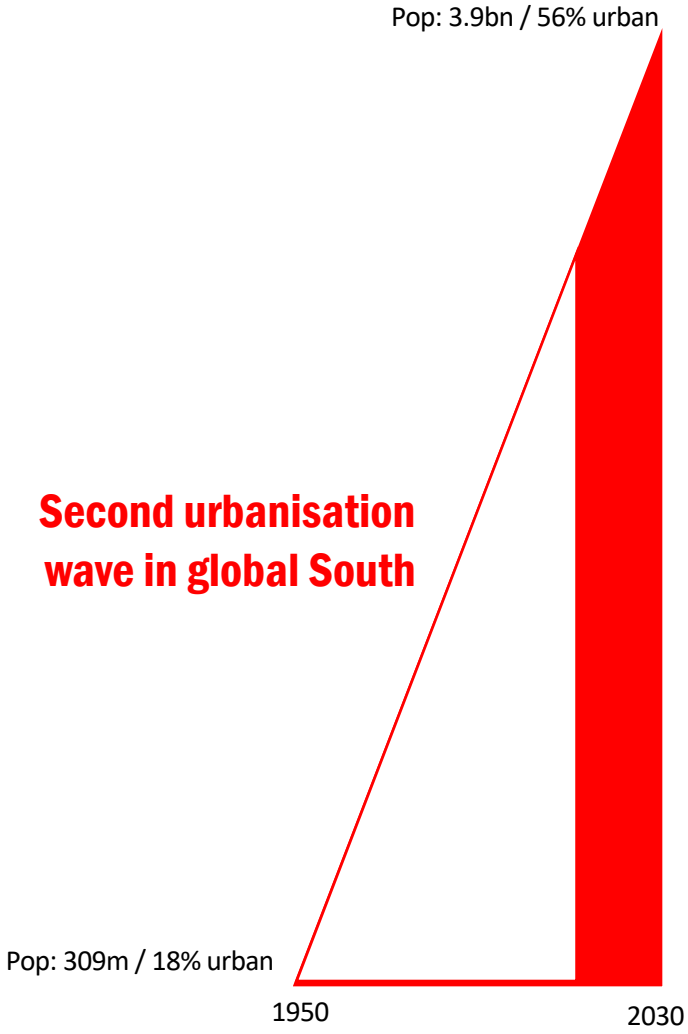
IUSSP Session at the weekly seminar organized by the French Institute for Demographic Studies (INED)
Monday 20 March 2023





The 2nd Urbanization wave must be managed whilst basic needs are satisfied at an unprecedented scale, economic foundations are built, and the low-carbon economic transition has to be effected!

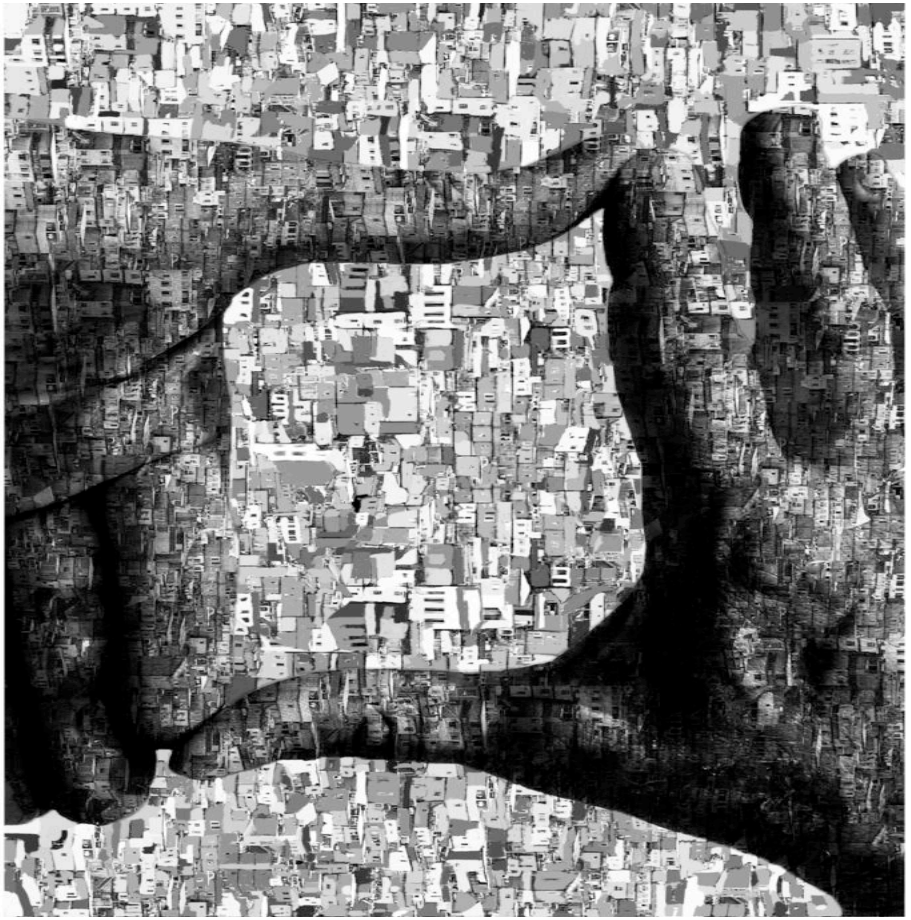
Global urban analytics and responses cannot be developed from the experience of the 1st wave cannot address the 2nd wave.

The 21st century move to urban living has had profound economic, social and environmental implications - that have already shifted C21st global policy

- Urban / place based / localisation agendas are prominent in the UN's 2030 Agenda for Sustainable Development
- Cities were well referenced in the last two IPCC assessments
- Cities have a special focus in the 2015 Paris Climate Agreement
- Cities featured prominently in the 2022 Biodiversity COP
- There is a global revival of interest in urban health policy, tied to the rise of 'One Health', 'Planetary Health' and 'Health and Climate Change'

The fact of what is now a predominantly urban world, concentrated in the south, has begun to generate a new genre of academic study focused on urbanisation and its myriad consequences.

The emerging Urban Science is both multidisciplinary and data oriented, and tends to understand cities as metabolic, complex and open systems



But ..no coherent, institutionalized Urban Science discipline has so far emerged, as promising innovations remain spread across diverse communities of scholarship and still over-concentrated in the global north

Emerging Urban Science: definitions differ across research portfolios, but four characteristics are regularly identified

- Each of these attributes has particular relevance for demographers

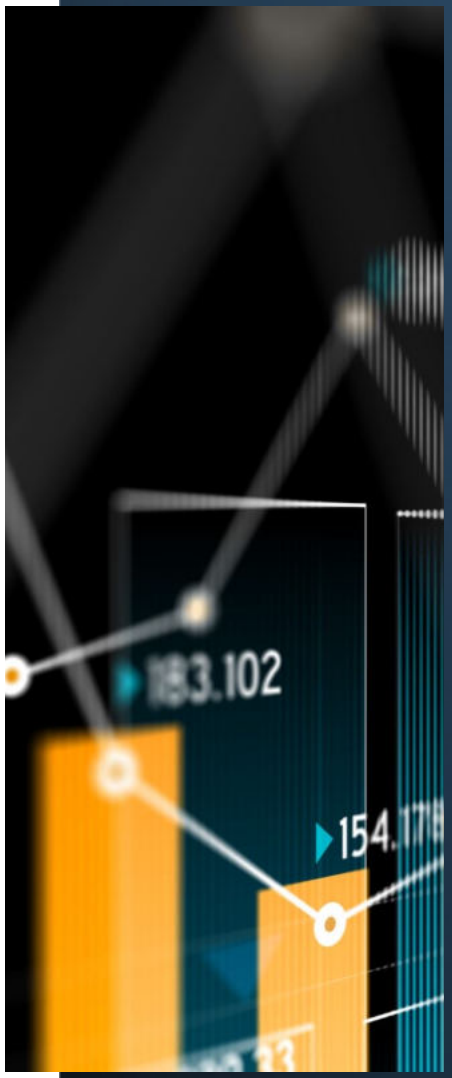
First, Urban Science seeks to offer coherent understandings of urbanization by presenting cities as adaptive complex systems or systems of systems.

They are characterized by scaling laws and increasing returns to scale, and as analogous to metabolisms, in which there are stocks and flows of resources connected via networks, rather than static objects and functions.

Resource flows might include disease vectors, energy, capacity, capital or data.

Urban scientists employing these analytical lenses draw upon complexity theory and sophisticated mathematical modelling, which allow the actions of individuals, objects and agents to produce patterns at city and urban system levels that are often unpredictable using existing macro theories.

New analytical methods that are temporal, spatial and statistical are evident



Second, Urban Science is increasingly concerned with sustainability issues and interactions within coupled socio-ecological systems

Some of this work seeks to understand viable strategies for urban adaptation and climate-proofing, as well as mitigation and future urban design.

- Of special importance for health, the IPCC has highlighted urban climate impacts and stressed the urban risks associated with heat extremes, increased air pollution, and increased incidence of inland flooding, which are damaging infrastructure and urban economies
- The vulnerability of high-density informal settlements is also highlighted.
- There is a call for investment in climate resilient infrastructure.

The climate-health-infrastructure-demography nexus is emerging as key

Third, much Urban Science is enabled by new digital data collected using mobile phones, sensors in Internet of Things applications and satellites, as well as the increased computational capabilities to analyse these data.

- Harnessing the latest computational advances has attracted attention and investment spawning a wide range of research centers, such as ETH Zurich's Future Cities Laboratory in Singapore, New York University's Center for Urban Science and Progress (CUSP), and MIT's SENSEable City Laboratory.

Seeing cities, or parts of cities, that were once invisible is now possible, redrawing demographic intelligence and reshaping the urban map

Fourth, Urban Science is a multidisciplinary endeavour. Arguably, it is dominated by demographers, physicists, mathematicians, engineers, economists, quantitative geographers, and ecologists.

- Multidisciplinarity is a cooperation of disciplines whose framings remain mostly intact and as one end of a spectrum of interdisciplinarity.
  - Partly because of this Urban Science, like research on cities more widely, lacks coherence and remains dominated by “specialized academic disciplines and professions associated with, amongst others, demography, economics, health, planning, engineering and design”

New communities of practice where demographers are core, are evident but they are fragile

The nascent Urban Science community has yet to give considered attention to the political strategies required to effect policy change.

A REDUCED IMPACT OF URBAN SCIENCE

Political recognition of Urban Science is often due to the actions of motivated individuals and fortuitous political timing, rather than a robust institutional base and body of evidence based on co-produced research.


Urban Science is transforming knowledge, but we need to refresh the global urban agenda and build effective platforms of influence.

Comment

https://doi.org/10.1038/s41893-022-00979-5

A new urban narrative for sustainable development

Michael Keith, Eugenie Birch, Nicolas J. A. Buchoud, Maruxa Cardama, William Cobbett, Michael Cohen, Thomas Elmqvist, Jessica Espey, Maarten Hajer, Gunnar Hartmann, Tadashi Matsumoto, Susan Parnell, Aromar Revi, Debra C. Roberts, Emilia Saiz, Tim Schwanen, Karen C. Seto, Raf Tuts and Martin van der Pütten

Check for updates

Our planet is rapidly urbanizing. Research has recognized the complexity of city-driven dynamics, but our political realities have yet to catch up. A new narrative of sustainable urban development must become central to global policymaking to help humanity respond to the most pressing social and environmental challenges.

Almost all growth of the human population this century will be

definition of urban settlements, following a decades-long and hotly contested debate[4].

Together these agreements have helped to shape a 'Global Urban Agenda', which has continued to gain ground among technical audiences, exemplified by the Intergovernmental Panel on Climate Change's commitment to issue a Special Report on Cities and Climate Change in its 7th Assessment cycle and recent discussion of urban challenges in the reports of Working Groups II and III[5–9]. However, the turbulence of recent world events and the need for post-pandemic reconstruction is limiting the political and fiscal space for upscaling and even maintaining global urban deliberations. This is despite the fact that the pandemic revealed opportunities for more systemic interventions to reduce future pandemic and climate change risk in cities

To keep the spotlight on how to govern complex urban dynamics, global urban stakeholders need to organize themselves into a coherent epistemic community, with clear political messaging: self organization is overdue

- Coalesce around a new narrative of what urban sustainable development really is, building on recent literature that foregrounds complexity and systems thinking
- Address emergent challenges e.g. the necessity to foster resilient and equitable social systerms rather than focusing only on economic development
- Engage meaningfully with policy experts and social scientists who are immersed in the complex architecture of the international governance system and can help place key messages at the top of political agendas
- Embrace a new and changing political geography and address the regionalized nature of urban concerns and governance

A reinvigorated agenda, built on findings from urban science, can bring coherence to a global urban narrative to help foster greater political engagement with urban issues than ever before

At times of global crisis such as we have seen over the last few years, it it critical to know that the future of sustainable planning and emergency response is local and regional. For the majority of the world's residents, local means urban.