Bridging the ecologies of cities and of nature

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- Cities are a type of socio-ecological system that has an expanding range of articulations with nature's ecologies.
- Today, most of these articulations produce environmental damage.
- How we can begin to use these articulations to produce positive outcomes that allow cities to contribute to environmental sustainability.

Using complexity

- The complex systemic and multi-scalar capacities of cities are a massive potential for a broad range of positive articulations with nature's complex ecologies.

Cities are at the center of the environmental future.

- The massive processes of urbanization under way today are inevitably at the center of the environmental future.

- It is through cities and vast urban agglomerations that humankind is increasingly present in the planet and through which it mediates its relation to the various stocks and flows of environmental capital.

The urban hinterland is now global

- The urban hinterland was once a mostly confined geographic zone. Today it is a global hinterland.
- The expansion of the global economy has raised our capacity to annex growing portions of the world to support a limited number of industries and places.

Two aspects of cities that matter: multi-scalar and many ecologies

- Multi-scalar: The diverse terrains and domains, a) onto which cities project their effects and b) from which they meet their needs.

- Ecologies of cities: a) Multiple mechanisms and feedback loops of urban processes. b) Articulations between these urban ecologies and nature's ecologies.

Cities create new socio-natural conditions.

- The enormously distinctive presence that is urbanization is changing a growing range of nature's ecologies, from the climate to species diversity and ocean purity.
- And it is creating new environmental conditions: heat islands, ozone holes, desertification, and water pollution.

Cities as new kinds of socio-ecological systems

- As socio-ecological systems they often have planetary reach.

For instance: The impact of cities on traditional rural economies and their long-standing cultural adaptation to biological diversity.

- Rural populations have become consumers of products produced in the industrial economy, one much less sensitive to biological diversity.
- The rural condition has evolved into a new system of social relations, one that does not work with biodiversity.

Is it urbanization per se or the particular types of urban systems

- Is it agglomeration and density as such? NO.
- It is the contents we have historically and collectively produced: specific ***types*** of systems to handle it all: transport, waste disposal, building, heating and cooling, food provision, and the industrial process through which we extract, grow, make, package, distribute, and dispose of all the foods, services and materials we use.
- And the processes of path-dependence which kept eliminating alternatives as we proceeded.

Re-orienting the material and organizational ecologies of cities

- We need to use and build upon those features of cities that can re-orient the material and organizational ecologies of cities towards positive interactions with nature's ecologies.

- These interactions, and the diversity of domains they cover, are themselves an emergent socio-ecological system that bridges the city's and nature's ecologies.

Specific features of cities that help re: environment

- Economies of scale, density and the associated potential for greater efficiency in resource use.
- Dense networks of communication that can serve as facilitators to institute environmentally sound practices in cities.
- The temporal dimension becomes critical in environmentally sound initiatives: What is inefficient or value-losing according to market criteria with short temporal evaluation frames, is positive and value-adding using environment driven criteria.

- Urban systems are built party through systems of social relations and laws that support the current configuration.
- Beyond adoption of practices such as waste recycling, it will take a change in this system of social relations and the law itself to achieve greater environmental sensitivity and efficiency

The need to engage legal systems and profit logics

- Urban sustainability requires engaging the legal systems and profit logics that underlie and enable many of the environmentally damaging aspects of our societies.
- The question of urban sustainability cannot be reduced to modest interventions that leave these major systems untouched.
- And the actual features of these systems vary across countries and across the North-South divide.

Non-scientific elements are very significant in cities

- While in some of the other environmental domains it is indeed possible to confine the treatment of the subject to scientific knowledge, this is not the case when dealing with cities.
- Non-scientific elements are a crucial part of the picture: questions of power, of poverty and inequality, ideology and cultural preferences, are all part of the question and the answer.

- The city contains both, and in that regard can be described as instantiating a broad range of environmental damage that may involve very different scales and origins yet get constituted in urban terms: CO2 emissions produced by the micro-scale of vehicles and coal burning by individual households becomes massive air pollution covering the whole city with effects that go beyond CO2 emission *per se*.
- Air and water borne microbes materialize as diseases at the scale of the household and the individual body and become epidemics thriving on the multiplier effects of urban density and capable of destabilizing operations of firms whose machines have no intrinsic susceptibility to the disease.

- A second way in which the city is multiscalar is in the geography of the environmental damages it produces. Some of it is atmospheric, some of it internal to the built environment of the city, as might be the case with much sewage or disease, and some of it in distant locations around the globe, as with deforestation.

- A third way in which the city can be seen as multiscalar is that its demand for resources can entail a geography of extraction and processing that spans the globe, though it does so in the form of a collection of confined individual sites, albeit sites distributed worldwide.
- This worldwide geography of extraction instantiates in particular and specific forms (e.g. furniture, jewelry, machinery, fuel) inside the city. The city is one moment—the strategic moment—in this global geography of extraction, and it is different from that geography itself.

- a fourth way in which the city is multiscalar is that it instantiates a variety of policy levels. It is one of the key sites where a very broad range of policies—supranational, national, regional and local—materialize in specific procedures, regulations, penalties, forms of compliance and types of violations. These specific outcomes are different from the actual policies as they get designed and implemented at other levels of government.

In short…

- Cities are complex systems in their geographies of consumption and of waste-production and this complexity also makes them crucial to the production of solutions. Some of the geographies for sound environmental action in cities will also operate worldwide. The network of global cities becomes a space at the global scale for the management of investments but also potentially for the re-engineering of environmentally destructive global capital investments into more responsible investments. It contains the sites of power of some of the most destructive actors but potentially also the sites for demanding accountability of these actors. The scale of the network is different from the scale of the individual cities constituting this network.