# MONITORING PARTICLES AND POPULATIONS: EXPO-URBANISM AND THE RISE OF ECO-GOVERNANCE REGIMES
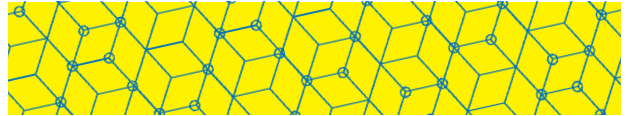
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When UNESCO admitted Shanghai to its Creative Cities Network (CCN) in 2010 as a City of Design, it emphasized 'Shanghai's clear vision on the significant role creative industries can play in urban development'. The acceptance of Shanghai's Expo bid in 2000 has accelerated a process of urban renewal that attempts to turn China's commercial and industrial hub into an exemplary green metropolis, combining creativity and sustainability. This process is visible across the city – from apartment highrises that replace and shield from view old, often dilapidated homes, and the establishment of one of the world's largest metro systems to new green corridors and a 'pedestrianization' that facilitates urban walks despite the expansion of cross-city expressways. It has also become the core concept of the Expo itself. The 2010 Expo is not simply another case of urban renewal, but a restaging of the drama of sustainable urbanization as a tightly-monitored process under the biopolitical slogan 'Better City, Better Life'.

The greening of the Expo indicates the shift from development at all costs to the vision of a competitive green economy, reflecting the rise of a new geopolitics around climate change, raw materials, and corresponding (if often competing) approaches to sustainability. The emphasis on sustainability, hailed as A major innovation of (and by) the Shanghai Expo, actually begins in the 1970s – the fairs in 1974 (Spokane, US), 2000 (Hannover, Germany), and 2005 (Aichi, Japan) also included environmental themes. The Shanghai Expo is nonetheless unique in its emphasis on the future of the urban form and the sustainability of its contemporary articulations, including the Expo, a machinic ensemble whose creation has in turn transformed the city of Shanghai.

In the context of this process, the Expo has served as a catalyst of 'green development' and the implementation of a comprehensive eco-governance framework. The first world expos were held in the major cities of the west, and their function as trade shows (above all,

displays of the machinery of the industrial revolution) was a product of the mindset that flourished under the first internationalization of capital. Today, the speed of urbanization across the globe has occasioned another global environmental emergency. The Shanghai Expo stages this combined emergency of urbanization and pollution in a single event, situated in the world's largest manufacturing area, to document and embody a transformation of the urban form. In conjunction with the national government and a host of international governmental and non-governmental actors, Shanghai has established a vast system to administer and monitor this process of transformation.

Integrating some of the structural residue of what was once the biggest shipyard in China into its ensemble of pavilions, the 'Urban Best Practices Area' (UBPA) rises like the proverbial Phoenix out of the ashes of an industrial age. The main smokestack of the shipyard's old powerplant was decorated with a big thermometer to raise awareness of global warming. Such allegorical substitutions (giant empty construction halls to host the small displays of urban practices, abandoned smokestacks as sleek sensors of environmental conditions) amount to a strategy of urban experience design – smart cities with wireless infrastructures disconnect the urban form from the manufacturing base largely responsible for the generation of pollution. While the propaganda onslaught that celebrates China's massive upgrading of its energy and transportation infrastructures betrays the extent to which the country continues to depend on coal-and-steel based industrial development, the UBPA was to offer the (mainly Chinese) visitors glimpses of an urban form that is both under tremendous stress and still capable of dynamic transformation – if only such transitions were properly managed.

As the green transition will be planned or it will not be, the experience design of the Expo invokes the multi-level agency of a (neoliberal) developmental state

competent to manage the totality of the urban space. To visit the Expo is to participate in a giant experiment of rapid citizen education, including a carefully curated cosmopolitical sampling of the world beyond China's borders, but above all a crash course in environmental citizenship. In the classical citizenship model that prevails in the west, environmental awareness implies the design of specific protocols to access environmental information. This is a necessary step (if rarely successfully implemented, as the ongoing struggles over the re-municipalization of privatized resources like waste and water in many cities show) in order to become an active stakeholder in the decision making processes required by the collective management of natural resources. Not surprisingly, in Shanghai, such an eco-information regime was established without such participatory mechanisms. Instead, its design illustrates the extent to which the urban renewal associated with 'creative' cities has become intertwined with the architectural adjustments called for by an environmental governance regime.

To host the Expo, Shanghai cleared the huge site along the Huangpu River, which snakes through the heart of Shanghai, relocating 18,000 families and about 270 factories, including the colossal Jiang Nan Shipyard, which used to employ 10,000 workers. Such clearance is a common precondition of land development. The commitment to a green Expo – measured not least by the extent to which Shanghai would be able to feature blue skies, especially after the 2008 Beijing Olympics had failed to deliver – also implied a sophisticated system of environmental monitoring. This aimed to link, in a new eco-politics of space and mobility, the movement of tiny particle matter to the massive structures that characterized the historic industrial port area, the intricate network of environmental monitoring stations to large-scale infrastructures (including the construction of one of the world's largest metro systems), and even the rural hinterland, whose inhabitants were invited to visit the Expo at the government's expense only to be confronted with modelizations of future eco-villages designed to optimize agricultural output and restrict migration.

Needless to say, such a co-management requires corresponding protocols. When international agencies like UNEP speak of environmental governance, they mainly refer to the (transnational) coordination and harmonization of (local, regional, national) environmental regulation. When we speak of eco-governance in the Expo context, we refer to the much broader, more extensive and more invasive ways in which such protocols are established and compliance is monitored. Eco-governance is, first of all, not a national system, despite the massive

commitment of Chinese (and especially municipal) resources to its establishment. It is a system that directly involves a wide array of translocal governmental and non-governmental actors, whose idioms and techno-scientific expertise are used (and, of course, improved upon) by local authorities.

A case in point is the cooperation between the U.S. Environmental Protection Agency (EPA) and the Shanghai Environmental Protection Bureau (SEPB). The Shanghai Expo made air pollution control a key element in its attempt to stage, in the context of a series of interlocking economic and environmental crises, a vision of the urban future – in an Expo enclave literally carved out of the city's historical industrial base. The EPA-developed AirNow International platform is at the core of the environmental monitoring system set up to guarantee a blue-sky Expo experience. All monitoring devices output data in interoperable formats. The system aggregates the data and offers online real-time air quality reporting from the Expo.

The Shanghai Environment Monitoring Centre (SEMC) has several main divisions, such as air quality division, water pollution division, biologic hazardous materials division and noise division. There are 46 monitoring stations in Shanghai, but only 8 of them have been selected by the NEP (National Environment Protection) to transfer the API (Air Pollution Index) to the public. SEMC collects information from each specific monitoring station to the appropriate 'information division'. The collected data is processed by their database and information systems and transferred later to internet or intranets. Their work is controlled and monitored by the Shanghai Environment Protection Bureau (SEPB), the 'executive office to which the SEMC reports'. 'Forecasting air quality is a craft', says the engineer in charge of the monitoring room of the SEMC. Three forecasters in their late twenties are gathered around a screen that is showing several wind scenarios for the next hours in the coastal areas of China. The monitoring room is constantly receiving 'modelizations' of air data from several sources. One is from a room situated in another part of the building of the SEMC. This room is connected to a data base that is linked to one of the governmental supercomputers at the Beijing National Environment Bureau. These data inputs are assembled and discussed at the forecaster's board, a deliberative process between the forecasters and the engineer in charge, measuring the mathematical models created by the modelization lab and the parameters delivered by other agencies, especially from neighbouring countries like Japan.

Sometimes the forecaster's board plays a crucial role when a potential pollution peak is predicted. Such a pollution peak triggers a decision making process in real-time. A team of members of the SEPB 'comes down' to hold a 'crisis' meeting and weigh the potential scenarios they have to address. Predicting an air pollution peak constitutes a source of pride for the forecasters, and this feeling could also be extended to the whole agency. Better accuracy is a priority demand by those international monitoring agencies and NGOs that constantly keep an eye on the smokestacks of China. During a crisis gathering at the monitoring room, the executive officers from the SEPB are briefed by the forecasters and engineers about the expectations of having a peak for the next week in a certain area of the city. As a command and control unit, this closed deliberative process among experts makes the strategic decisions required to avoid the expected peaks, including the suspension of activities at specific factories, the closing of building yards, or the banning of cars inside the affected area.

The communicative and techno-scientific process of air quality monitoring has real-time spatial consequences on the urban form, as it temporarily restricts activities across the city. Effectively a new form of socio-technological engineering, this 'particle control' is legitimized by way of recourse to (abstract) thresholds and the political agenda of guaranteeing a 'clean' Expo experience. The commitment to sustainability not only implies the establishment of a multi-level eco-governance regime, it also requires the city – and its inhabitants – to operate according to this regime's protocols.

The notion of a shift from a discipline to control society does not fully comprehend what is at stake in such regimes, as even participatory media is used to self-regulate activity. The city's environmental protection department issues timely reports on the environment and air quality near and inside the Expo site. According to Zhang Quan, director of the Shanghai Environmental Protection Bureau, the bureau cooperated with more than 30 cities in the Yangtze Delta to ensure timely reports about the environment and air quality. The Bureau issues forecasts of the environment and air quality 24 hours ahead and warns of potentially high pollution 48 hours in advance so that action to prevent it can be taken. In Beiijing, the US Embassy was monitoring the air quality of the city at their own facilities and delivered the data in real-time via Twitter. Instead of relying on government reports delivered the previous day, many citizens preferred to follow the constant flow of information delivered by the US Embassy. The participatory 'feeling' that creates this basic interaction with environmental information via web 2.0 tools may affect the way environmental information is produced and delivered by government agencies. But it also integrates the workings of new eco-governance regimes more intimately with individual communicative practice, linking users to the real-time management of a dynamic urban form. The city as such is shaped and reshaped as such eco-governance regimes emerge, not simply the model Expo enclave. This too is a message from the future of the urban form.

Following environmental assessments of the Beijing Olympics, the UN Environmental Program (UNEP) conducted similar assessments of the Shangai Expo and its claims to sustainability. Established in 1972 as the central UN node for global environmental cooperation and treaty making, UNEP has initiated a consultative process to redefine 'international environmental governance' and strengthen multi-level eco-governance regimes – governance is here used to indicate the integration of (commercial and non-profit) non-state actors above and beyond states and intergovernmental agencies. International, regional, and local case studies are part of this process of elaborating 'best practices' for eco-governance. The Expo study is remarkable not only because it documents the extensiveness of Shanghai's efforts, but also because it betrays the ambivalence of such assessments which – or so it seems – cannot but marvel at the speed with which such regimes have been put in place by a coalition local and translocal actors.

Invoking Peter Sloterdijk's genealogy of terrorism, Bruno Latour recalls that the chemical warfare in the trenches of World War One prompted the rise of air pollution as a matter of public concern. All of a sudden, an element that had always been taken for granted as an endless resource available for all living creatures became a matter of scarcity, pollution and death – and air turned into an object of management. Today, such management has become an integral element in eco-governace regimes that monitor the mobility of particles and populations.

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