Session 2

City Knowledge: an Emergent Information Infrastructure for Sustainable Urban Maintenance, Management and Planning.

Discussants: Fabio Carrera & Joe Ferreira

Introduction:

Recent advances in geo-spatial technologies, together with a steady decline in their cost, have inspired many spontaneous bottom-up municipal initiatives aimed at improving the flow and availability of information for the purpose of maintaining, managing, and planning urban spaces. Simultaneously, spatial data sets are more readily available and some cities have institutionalized top-down systems that allow planners and other professionals to make maps and perform basic analytical functions. In his dissertation, Fabio Carrera argues the need for a middle-out approach whereby we combine the virtues bottom-up specificity with top-down efficiency. The dissertation is based on Fabio's experience in designing, maintaining, and using municipal-level geographic information systems, especially in his hometown of Venice, Italy, to propose and promote the concept of City Knowledge. City Knowledge is a paradigm that aims at instilling in front-line municipal departments an *information aware modus operandi* that will emancipate town planners, managers and decision-makers from "hunter-gatherers" of plan-demanded data to "farmers" of plan-ready information so that city knowledge can be regarded as an infrastructure because it provides an essential and ongoing service to ordinary citizens, just like a city's transit system or its water and sewer network.

Questions:

In light of the materials you will be reading in preparation for this class (listed below), we suggest that you consider the following questions in the context of your own class project:

(a) How could the datasets that you foresee using in your project be made to become "plan-ready"? Which would be the "low-hanging fruit"? Are there specific standard data representations and geometries that could be used? Who should be in charge (jurisdictionally) of the "birth certificates" (and updates) associated with the datasets that you are using?

(b) What technological infrastructure would be best suited to support a full-fledged City Knowledge system? What 'middleware' applications may be required to make existing (and periodically updated) datasets re-usable in different circumstances by a variety of municipal departments? What could be the role of

mobile technologies to be able to "pull" location-specific urban information in the course of day-to-day maintenance or inspectional activities?

(c) How could an information infrastructure be "grown" through a skillful application of a combination of the 5 tools? How could this "data farming" be made as inexpensive and systematic as possible? What could be some strategies to "catch up with the backlog" of information already "out there" in the world (and in paper archives)? And what strategies and mechanisms could be put in place to "intercept future change" so that these datasets could be maintained up-to-date in perpetuity?

(d) How could a "middle-out" approach be adopted in the institutions that are connected to your project to foster the "emergence" of City Knowledge? Are the data-producing organizations and the end-user organizations predominantly top-down or bottom-up? Do the institutions related to your project exhibit obvious signs of inefficiency and redundancy in the collection and use of urban information that would justify an investment in an integrated comprehensive municipal information system based on City Knowledge principles?

Articles and Other Readings:

In preparation for this discussion, we suggest that you read or skim the following:

(1) For a full explanation of the concept of City Knowledge, you should skim Fabio Carrera's PhD dissertation especially Part I and Part V and you should ready more carefully Part IV.

(2) When it comes to implementing government policies, a school of thought that has been put forward by DUSP faculty, suggests that we focus on the so-called "Five tools of Government Action". A full description of these tools can be found in the book "Preserving the Built Heritage" edited by our own Mark Schuster and John DeMonchaux. There is a summary of the concepts in the introduction chapter. A shorter version is contained in Policy and Planning with Purpose.

(3) The concept of "Emergence" features prominently in the City Knowledge approach. If you are interested, we suggest that you read the popular book Emergence by Steven Johnson. You may find the book very stimulating. At the very least should familiarize yourself with the concept by googling "emergence" so you can look at shorter explanations such as the Wikipedia entry for the term.

(4) Prof. Ferreira describes middleware applications in his article entitled "Information Technologies that Change Relationships between Low-Income Communities and the Public and Non-profit Agencies that Serve Them" as well as in the MIT/MAPC proposal "Intelligent Middleware for Understanding Neighborhood Markets" a pilot project of the Brookings Institution Urban Markets Initiative.

(5) For recent accounts of the Planning Support Systems that are already in use around the world, you can take a look at Klosterman's recent (2005) guest editorial in Environment and Planning B, as well as to Maguire and Longley's paper on "The emergence of geoportals and their role in spatial data infrastructures." An older, but interesting paper predating City Knowledge is Rubenstein-Montano's <u>Survey of knowledge-based information systems for urban planning</u>.

Rubenstein-Montano, B. "A survey of knowledge-based information systems for urban planning: moving towards knowledge management." Computers, Environment and Urban Systems 24 (2000): 155-172.