“In the most general sense, computation is the process of storing, transmitting, and transforming information from one form to another” (Santa Fe Institute).

ARCH 4050/6050, Fridays 8:00am-10:45am (location TBD)
School of Architecture, UNC Charlotte
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Objectives
The seminar will critically review the evolution of designing and constructing systems of urban and territorial intelligence, from the ancient networks of optical telegraphy to today’s internet of things. Through discussions, we will examine technologies, systems, and mechanisms for turning information into decision and action in large scales, we will discuss the role of physical environment, resource scarcity, and human behavior in equilibrium conditions, we will investigate the role of data, modeling, and simulation in exploring dynamics of urban systems, and we will critically speculate where the design field of urban computing might be heading in the future. By the end of the course, students will develop a broad yet critical understanding of what urban intelligence is, how it can be constructed, and what limits it may reach, from a sociotechnical and a systemic perspective. Topics include: Theory and technologies of computation, information, communication, and human factors in relation to the built environment; systems theory; cybernetics; urban dynamics; ecology; social cooperation; collective intelligence; game theory; mechanism design; as well as applications in mobility, resource allocation, sustainability, and energy.

Method
The course combines discussions and lectures. Each class covers a separate topic organized as a discussion lead by a group of students and consists of selected readings. To complete the course, students will write short weekly reaction papers (1-page max) and a final paper.

Readings
There are no required textbooks. A detailed reading list will be posted on the course website. Additional readings will be available during each week. The following readings provide a starting point:


Course Requirements and Grading
Students are expected to participate in class discussions, present/lead weekly topics, and write a final paper. Grading: class participation (1/3); presentations and reaction papers (1/3); final paper (1/3).