

Applying the notion of complex system to cities and territories has the unwarranted advantage to make it possible to establish several conceptual links between the many facets of urban systems, like openness, self-organization, pro-activity and awareness. While the features concerning openness and self-organization have been extensively scrutinized as constitutive determinants of urban complex systems, those concerning pro-activity and awareness have been generally viewed as external. At most, they have been considered as desirable features of a group of agents, i.e. experts, planners and educated people, entitled to steer the evolution of the urban system towards more desirable and sustainable paths of change.

Pro-activity and awareness mean that there exists a reflexive property, which is intrinsically constitutive of an urban system, i.e. a collective agent constituted by an interacting group of social cognizant agents supported by a physical, social, technological environment. In this regard, Maturana's arguments about the drive of the explanatory search for understanding which characterizes a living being can be understood as an internal drive of the urban system.

A Reflexive Urban System (RUS), therefore, is one which:

- is able to think about of its knowledge own generative determinants (i.e., the agents involved, the process through which knowledge is yielded, and how it is encoded and decoded in the urban system);
- permanently seeks to adapt (improve) those determinants in the course of its evolution.

A major challenge for a complexity approach to urban systems, therefore, is that a methodology for a RUS should be viewed as an embedded dimension of the system itself, i.e. it should be an internal endeavour steering the system's own evolution.

In order to fully account for the pro-active feature characterizing a RUS, therefore, one cannot be satisfied with an evaluation of the system behavioural performances but has to constructively engage in the knowledge process of building the RUS's own methodology. In addition, as a RUS is a collective entity, the methodological framework cannot help resulting from a collectively determined process.

According to this line of reasoning, a claim is made that one major function of applying a complexity approach would be to sustain the systemic coherence necessary to the RUS line of enquiry, i.e. to stir its drives in the explanatory search for understanding and help avoiding the constraints and prejudices.

Finally it is suggested that underlying a complexity approach for a RUS three major dimensions might be regarded as principal leverages:

- recognition, the identification of knowledge needs in order to sustain a pro-active endeavour;

- guidance, how to make effective the recognized knowledge needs, in order to get involved in a purposeful line of enquiry ;
- capability, the achievements of social valued outcome for somebody who cares.