Chapter 13
A Planning Model for Cognitive Cities:
Spatial Cognition Through a Participatory Approach

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ABSTRACT

A city is a real-time function with constantly changing variables. Rapid urbanization of the cities and increase in a number of mega cities has made the entire urban management complex. With many parameters involved in it, urban data has started to resemble the characteristics of big data. The nexus between spatial cognition and the frequency of data collection of an urban system explains the role of big data analysis in performance monitoring of the urban systems. Urban data collection and analysis can be possible through participatory planning and participatory citizens. This chapter focuses on understanding the correlation between spatial cognition and participatory planning.

INTRODUCTION

A system has a definite task of doing a set of things, receiving an input, processing of inputs and generates both output and waste. These systems can be broadly classified into two types based on the pattern of output generated; bio-systems and machines. The major difference between bio-systems and machines is, bio-systems are dependent on nature (i.e. dependent on parameters like time and processes or cycles

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of nature). It has many subsystems which are why the result or output can never be same. Machines, on the other hand, are very less dependent on other systems and the result is always the same as designed. So when you look at a city as a system with many interdependent sub-systems, from a scale of individual human being to ever-growing megacities; an urban system is a complex web of different systems at different scales influencing each other.

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To regulate and manage the performance of these urban systems with their performance history, gives the basic understanding and nature of the system. The complex data has become a challenge but with the advanced technology and intelligent systems, big data analysis has become possible. The big data revolution has shown the possibility of cognitive cities, a step ahead of smart cities. In cognitive cities, the data from their past experiences predicts the needs of the city and its people based on pattern of resource consumption and performances of different systems of a city. Urban diagnosis in planning procedure, is a cognitive phase where the urban data is collected to cater the *urban needs* and to generate the relevant information. The objective of this chapter is to understand the importance of participatory planning in enabling quick data collection to read the systems' performance, the urban diagnosis in assessing the urban needs which enables spatial cognition.

Background

Every system has a set of cognitive skills which is not null. Any system, at some point or the other of its cycle, has to take a decision based on the loop framed. A simple 'if - else' loop does take a decision through which the attribute or the input has to pass. Similarly, the planning procedure or the methodology we are practicing today does have a cognitive stage and every urban system or sub-system does have a set of cognitive skills, though the decision-making tasks are taken by a human being, they are considered as a part of the system too. With advances in information technology, big data analysis has enabled to program a system with both historical data and continuously changing data; to compare systems behavior in similar situations and analyze system's past with current scenario for decision making. This study focuses on the components of urban cognition and understands the planning framework for an urban system a step closer towards cognitive cities.