

**First Name:** Manal  
**Last Name:** Ginzarly  
Ph.D. Student  
Université de Liège, Belgium  
Local Environment Management and Analysis (LEMA)  
**e-mail:** [manal.ginzarly@student.ulg.ac.be](mailto:manal.ginzarly@student.ulg.ac.be)  
**Telephone Number:** 0032(0)4 95 77 73 25

## **A Network Theory Framework for Urban Cultural Heritage Conservation**

The aim of this study is to propose the application of a network approach to historic urban landscape conservation. Network approaches in landscape ecology and urban studies have been applied in various ways. Within the framework of ecosystems conservation, the landscape ecological network model has developed significantly over the past 40 years and has become increasingly important for insuring overall ecological integrity. Connectivity and flow are thought to be the most important parameters in a habitat network. Ecologists developed a vast amount of network connectivity measures to assess habitat networks (Rayfield et al., 2011). The main hypothesis within this framework is that the landscape pattern influences and is influenced by landscape processes. Therefore methods applied to the analysis of the landscape are structural and functional. The landscape pattern is studied based on the matrix, patch, and corridor model, and the graph theory is applied to characterize multiple aspects of connectivity in a network. There is a common agreement on the composition of ecological Networks. They contain: (i) core areas, existing species and ecosystem areas; (ii) corridors, physical linkages between core areas; (iii) buffer zones, surrounding area which protect the network from external negative impacts (Cook & van Lier, 1994; Jongman, 2004).

In urban studies, the network metaphor has a long tradition especially in transportation planning. More recently, urban design has brought its contribution by different means. Three of these means are: (i) the space syntax method that studies urban flows in relation to the geometrical and topological properties of streets networks. In this method the street system is represented as a network in which lines are nodes and intersections are links; (ii) the urban ecological network planning also known as greenway planning that apply principles and concepts from landscape ecology to conserve and manage the ecological and socio-economic values of urban open spaces; and (iii) the development of cultural routes/ heritage corridors for cultural heritage conservation. As urban landscapes are complex and dynamics, there have been a multiplicity of methods, metrics, and graphical representations to the analysis and design of networks. In this context, the application of a network approach to urban cultural heritage conservation poses several questions: what method to use to identify the nodes and links? What kind of attributes to investigate? How to correlate different attributes dynamics? And what kind of graph representation to use?

To answer these questions this article investigates the different types of corridors existing in an urban context: cultural, historic, functional, visual, and physical. Afterwards, it explores three network approaches in urban studies: space syntax, urban ecological network, and heritage corridors. It looks at different methods and metrics used in the identification and assessment of network components, and in the design and planning of networks. Finally, it comes up with a set of criteria for the development of urban cultural heritage network for the conservation and management of heritage values embedded in an urban context.