# Describing Landscape Spaces:

# A Review of Quantitative Mapping Methods and Tools

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## Abstract

Mapping spatial and visual characteristics is important for understanding landscape spaces and landscape design. However, the conventional mapping methods and tools (i.e. hand drawings, photomontages, models) used by spatial designers are always lack of precision. Meanwhile, the current data-based techniques (i.e. ArcGISc, isovists, Fragstats) are not mapping the relevant indicators in the design context. Therefore, developing design vocabulary and mapping methods, exploiting the capabilities of modern technology, to describe spatial and visual properties helps designers to achieve a better interpretation of landscape compositions and enhance effective communication. To achieve this, first I review and categorize the literatures of the existing quantitative mapping methods and tools of landscape spaces. Then, case studies are used to show the application of these methods, and the translation of corresponding quantitative indicators into spatial and visual landscape characteristics. As the result, there are six main groups of quantitative landscape mapping methods and tools with different advantages and benefits, which are gird cell analysis, landscape metrics, viewsheds, isovists, virtual 3D-landscapes, and eye-tracking analysis. The spatial and visual landscape characteristics of landscape are all mapped from the horizontal (eye-level) and the vertical (map view) perspectives. Besides, after mapping the spatial and visual aspects, expert panel and public preference approach are valuable to quantify qualitative landscape aspects. In conclusion, this research provides an systematic overview showing the possibilities of combining quantitative and qualitative methods to describe landscape spaces, which also can be anticipated as a starting point in the future research for comprehending design intentions in an inter-subjective way.

**Keywords**

*Spatial and visual characteristics, mapping methods and tools, landscape indicators, quantitative and qualitative description of landscape*