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Modeling Landscape Performance: Evaluating the Performance Benefits of the Olmsted Brothers' Proposed Parkway Designs for Los Angeles

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Abstract : This research focuses on the visionary proposal made by the Olmsted Brothers Landscape Architecture firm in the 1920s for a network of interconnected parkways in Los Angeles. Their envisioned parkways aimed to address environmental and cultural strains by providing green space for recreation, wildlife habitat, and stormwater management while serving as multimodal transportation routes. Although the parkways were never constructed, through an evidence-based approach, this research presents a framework for evaluating the potential functionality and success of the parkways by modeling and visualizing their quantitative and qualitative landscape performance and benefits. Historical documents and innovative digital modeling tools produce detailed analysis, modeling, and visualization of the parkway designs. A set of 1928 construction documents are used to analyze and interpret the design intent of the parkways. Grading plans are digitized in CAD and modeled in Sketchup to produce 3D visualizations of the parkway. Drainage plans are digitized to model stormwater performance. Planting plans are analyzed to model urban forestry and biodiversity. The EPA's Storm Water Management Model (SWMM) predicts runoff quantity and quality. The USDA Forests Service tools evaluate carbon sequestration and air quality. Spatial and overlay analysis techniques are employed to assess urban connectivity and the spatial impacts of the parkway designs. The study reveals how the integration of blue infrastructure, green infrastructure, and transportation infrastructure within the parkway design creates a multifunctional landscape capable of offering alternative spatial and temporal uses. The analysis demonstrates the potential for multiple functional, ecological, aesthetic, and social benefits to be derived from the proposed parkways. The analysis of the Olmsted Brothers' proposed Los Angeles parkways, which predated contemporary ecological design and resiliency practices, demonstrates the potential for providing multiple functional, ecological, aesthetic, and social benefits within urban designs. The findings highlight the importance of integrated blue, green, and transportation infrastructure in creating a multifunctional landscape that simultaneously serves multiple purposes. The research contributes new methods for modeling and visualizing landscape performance benefits, providing insights and techniques for informing future designs and sustainable development strategies.

Keywords : landscape architecture, ecological urban design, greenway, landscape performance
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