

Neuro-Urbanism: Exploring How the Form of Urban Public Spaces Shapes Social Interaction Through Neurological and Perceptual Analysis

Abstract

This paper investigates human spatial perception through three complementary perspectives: space as an objective physical reality, a subjective construct shaped by sensory experience, and a socio-cultural phenomenon rooted in shared knowledge. It emphasises the role of physiological and cognitive perceptual schemas—strongly influenced by emotion and cultural context—in shaping how individuals interpret and interact with their environments. The proposed research methodology examines how spatial form and organisation affect feelings of safety, belonging, and social engagement, thereby influencing community formation. Using an interdisciplinary approach that draws from architecture, neurobiology, and cognitive science, the methodology employs EEG, eye-tracking, and wearable physiological sensors to capture real-time psychophysiological responses to urban spaces. Comparative analysis across differing cultural and age groups will reveal how various spatial features are experienced and valued.

The findings aim to inform urban design strategies that promote social cohesion, public health, and environmental sustainability, aligning with the European Union's policy objectives.