Utilizing Architectural Diagrams to Create Geometric Forms that Anticipate User Responses

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I. EXTENDED ABSTRACT

1.1. INTRODUCTION

The Diagram is an architectural design tool that operates between conceptual ideas and resultant geometry, between design intent and a building’s shape. What if we could harness the power of diagramming to make a building appeal directly to human neurological processing? By inserting an honest exploration of diagram to control geometric forms via analysis of program, circulation, context, and environment, we can potentially organize architectural geometry to more effectively coordinate with expected human responses, our collective visual memories, and cognitive mapping. By the agency of contextual learning, a building’s users should be able to determine their route and occupation of a space without the need to have a floorplan or view copious signage. Many architects have been experimenting with this technique without specifically identifying the neurological research implications.

In Peter Eisenman’s book Diagram Diaries, theorist Robert Somol explains the unique character of what defines a diagram “it appears in the first instance to operate precisely between form and word,” and it is primarily “a performative rather than a representational device.” To understand the potential of utilizing diagrams to create responsive forms, we can assess the classification, characteristics, and the evaluation criteria of their application. We can also evaluate both the historical utilization of this architectural technique and its implementation in more recent examples.

1.2. CLASSIFICATION

1. Analysis: Analytical diagrams are frequently created post-construction or post-concept, to either compare or explain the spatial qualities of a particular piece of architecture. Typically, these types of diagrams are in search of patterns to reveal spatial divisions or some other spatial device such as phenomenal transparency. This is primarily a mathematical exercise, evaluating standard architectural elements: column, floor, wall, and roof. Colin Rowe was a frequent user of this type of diagram, and Peter Eisenman employed a series of analytical diagrams when generating his house plans during the earlier part of his career.

2. Performance. Of greater concern to neurological research, diagrams should indicate building performance. Typically, a building’s users should be able to determine their route and occupation of a space without the need to have a floorplan or view copious signage. Many architects have been experimenting with this technique without specifically identifying the neurological research implications.

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1.6. CONTEMPORARY EXAMPLES

The Spiral at Hudson Yards. Extending the adjoined High Line Park into the construction of the tower, every floor has an outdoor terrace with park-like qualities. An office tenant may intuitively feel connected to the adjacent office floors and the High Line below. The Couch. Compiling programmatic needs can create legible forms for user groups. This project elucidates how buildings can be more acrobatic, simultaneously responding to multiple influences at one moment via versatile geometry.

1.7. AUTHOR’S RESEARCH PROJECTS

Frogtown Riverside Center. An investigation into a site’s most prominent feature, a recreation path, yields a curvilinear multi-story geometry accommodating multiple user groups. ONE Archives at USC Libraries. A programmatic investigation yields distinct interpretable geometries: the archives (solid and closed), an exhibition loop, and modular research and operations spaces.

1.8. FURTHER RESEARCH

Testing may determine if average people can passively commit geometric diagrams into their spatial memories for using a building. There are parallel investigations into cognitive mapping and the cortical mechanisms of visual processing that could be mutually beneficial. How can we identify evaluation criteria to determine the success of this architectural technique? Possible studies could include evaluating the experiences of two groups within a building, one of which has been given the circulation or programmatic diagram. Another possibility is to test cognitive mapping by exploring the utility of color and edges to delineate clear zones and circulation paths in existing diagrammatic buildings.

2. REFERENCES


3. AUTHOR BIO

Michael Wacht
B.Arch. Cornell University, M.Arch. University of Pennsylvania. Michael is the President of Intihalch, a Los Angeles based architecture firm which focuses on developing innovative geometries in response to research in programmatic, environmental, circulatory, and contextual analyses. Previously, as Director of the Los Angeles Studio of MGA’s p.a.m., Michael acquired his focus on creating effective design strategies while working for the Dean of the USC School of Architecture. Qingguo Ma. Michael is now a jury critic at USC.

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