Designing for Complex, Interactive Architectural Ecosystems
Developing the Ecological Niche Construction Design Checklist

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1. EXTENDED ABSTRACT

This paper presents the rationale for and ongoing development of The Ecological Niche Construction Design Checklist, a designer’s/
researcher’s checklist for assessing the usefulness of potential environmental design features on cognitive and task performance
during the conceptual phase of environmental design. The rationale for developing such a tool stems from a comparative integration
of concepts from ecological niche construction, systems science, embodied cognition theories of mind, and Kirsh’s writings
on pragmatic action, activity space, and performance design. The checklist is developed and tested via three case studies that
test design interactive building environments. This mixed methods case study research is organized and evaluated using the
Design Science Research Methodology and the Validation Square research method.

This research contributes to the fields of architecture and neuroscience by: (a) developing a designer’s method and tool that
represents possible impacts on cognition of environmental features during early conceptual design; (b) demonstrating a research
framework for specifying, developing, and evaluating a cognitive method and tool; (c) and addressing a significant, emerging set of
design challenges. These emerging design challenges entail degrees of complexity and interactivity that make them orders of
magnitude more difficult to represent during design than traditional static environmental design challenges.

REFERENCES

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