Proposal for the:
INTERNATIONAL CONFERENCE
ARQUITECTONICS NETWORK: MIND, LAND AND SOCIETY
Innovative and Interdisciplinary Research by Design: Education, Architecture and Social
Planning Participation

Author:
Carmela Cucuzzella, PhD, Assistant Professor
Design and Computation Arts, Concordia University, Montreal, Canada
Research Chair in **I**ntegrated **De**sign **A**nd **S**ustainability for the **B**uilt **E**nvironment
LEAP lab (www.leap.umontreal.ca)

Main Topic of Presentation:
5. From Design to Construction. Sustainability (Environmental Design Issues)

Title of Proposed Presentation:
Modeling the relationship between architectural expectations and environmental strategies

Abstract:
   Architecture today has taken on increasingly prescriptive viewpoints, from environmental evaluation to socially responsible indicators for judging architectural quality (Preiser et al, 2015; Wines, 2000). This paper presents a method that can contribute in bridging the divide between qualitative architectural critique and environmental evaluations.
   In this paper, we define sustainable architecture as design that is vibrant and culturally significant such that it enriches the city fabric and helps its people flourish, on the condition that environmental health is supported (Williamson et all, 2003; Farmer, 1996). Based on this definition, how can we better understand how deeply environmental strategic interventions integrate with the overall architectural expectations of any project? This paper will present an analytical design matrix that seeks to integrate the complex and at times contradictory environmental interventions with the architectural disciplinary expectations.
   The challenging requirements of sustainability today require a variety of experts throughout the design process. While these experts, may be architects or engineers, they each have very different knowledge and areas of expertise, which may represent a complementary set of conceptual and pragmatic expertise (Cucuzzella & Chupin, 2014). We know that architects use the qualitative assessment, often referred to as the critique, as a way to judge the qualities of the architecture project. On the other, engineers prefer to quantitatively *evaluate* the efficiency of their strategies in order to optimize these as much as possible (Guy & Moore, 2007; Guy & Farmer, 2000). Where can these two forms of assessment intersect in the architectural project? We know that if each of these designers work within their own silos without deep collaborations, we observe at least two drawbacks: (1) the design synergies are not taken advantage of and (2) the project is disjointed as a whole from the point of view of a coherent ecological vibrant space.
   An important finding from a three-year long Canada-wide research project, of which I was part of, entitled "*Greening the Architecture Curriculum*", was that it is important to

provide tools for environmental guidance, without being prescriptive (Cucuzzella et al, 2010).

In this paper I present a *design matrix* that is comprised of the environmental strategies on one side and the architectural expectations on the other - a matrix that comprises approximately 12 row vectors by 12 column vectors. This matrix is intended to articulate how deeply across the overall architectural project the environmental design strategies are interconnected. The aim of this analytical matrix is to avoid the situation that a series of technical solutions are simply juxtaposed onto an architectural project by encouraging a holistic and integrated approach during project conception.

References:
Cucuzzella, Carmela. 2015. "Is Sustainability Reorienting the Visual Expression of Architecture?", *Revue d'art canadienne / Canadian Art Review (RACAR): Design Studies in Canada (and beyond), (*eds) K. Bresnahan, B. Donnelly, M.Racine, Vol 40, No.2

Cucuzzella, Carmela, Chupin, Jean-Pierre. 2014. "Experts, Expertise and Qualitative Judgment in Canadian Architectural Competitions", *5th STS Italia conference, A Matter of Design: Making Society through Science and Technology*, Milan, pp. 781-796,
http://www.stsitalia.org/conferences/STSITALIA_2014/STS_Italia_AMoD_Proceedings_2014.pdf

Cucuzzella, Carmela, Pearl, Daniel and Mertenat, Céline-Coralie, (2010), "Greening the Curriculum: A Canadian Academic National Forum", proceedings from *Engineering Education in Sustainable Development (EESD) conference*, Gothenburg, Sweden, Sept. 19-22, URL: http://eesd10.org/wp-content/uploads/2010/10/2A-Mertenat.pdf

Farmer, John. 1996. Green Shift: *Towards a green sensibility in architecture.* Oxford: Butterworth Architecture in association with WWF-UK.

Guy, Simon, and Graham Farmer. 2000. "Contested Constructions: The Competing Logics of Green Buildings and Ethics." In *Ethics and the Built Environment*, edited by W. Fox, 73-87. London: Routledge.

Guy, Simon, and Steven A. Moore. 2007. "Sustainable Architecture and the Pluralist Imagination." *Journal of Architectural Education* 60 (4 (May)):pp. 15-23. doi: 10.1111/j.1531-314X.2007.00104.x.

Preiser, Wolfgang F. E., Aaron T. Davis, Ashraf M. Salama, and Andrea Hardy, eds. 2015. Architecture Beyond Criticism: Expert Judgment and Performance Evaluation. London and New York: Routledge.

Williamson, Terry, Antony Radford, and Helen Bennette. 2003. *Understanding Sustainable Architecture*. London and New York: Spon Press, Taylor & Francis Group.

Wines, James. 2000. Green Architecture: Taschen.