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## The Impacts of Cost Determinism in Architectural Foundation Design Education: An analysis of foundation design studio

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### Abstract

This research concerns teaching cost as an integral design determinant during architectural foundation design education. Design studio course description, syllabi, and studio projects of selected architectural foundation design programs were analysed and the U.S.-based architecture educators and design professionals were surveyed to investigate the degree to which their perspectives and methods of teaching cost conscious and economic design concepts in foundation design education. The result suggests that both academics and design professionals value in learning cost conscious and economic design concepts during foundation design education, however, overall systematic studio courses which teach cost as an integral design determinant were absent.

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## 1. Introduction

In the context of architecture and construction, the terms affordable design, low-cost design, economic design, and value-engineered design are used as synonyms. Residential architectural projects often address affordable housing in ways closely associated with cost as it pertains to design and construction. General affordable design, when applied to housing, often results in inferior, ill-equipped, and aesthetically unappealing projects. Without design standards, the consequences of low-cost designs are often unpleasant and severe. People commonly misunderstand that aesthetic value often suffers when less money is put into the design and the architectural project is “designed with an eye on quantity, not quality” (Casselman, 2007, para #3). The terms listed above support this misconception, as they are all associated with material qualities and conditions that rely on economic value.

Every year, approximately 27,000 students graduate from accredited architecture schools (National Architectural Accredited Board [NAAB], 2013a). Despite this large number, many architects and designers eschew low-cost projects (Wright, 2014), and similarly only a small number of references are devoted to affordable design in many American architecture and urbanism books (Mallach, 2006). Architects and designers often frown on affordable design, but do not attempt to provide effective solutions to ensure better quality designs. The problem may be “rooted in an [architectural] educational system” (Gellner, 2011, para #2). Architectural educators encourage students to provide unique designs but often lead to costly solutions to hypothetical and real projects because students have an “absence in practical training” (Gellner, 2011, para #11).

What one commonly sees in architecture schools is the separation of academic minds from the world around them. Expensive houses or projects are often examples of the quality and quantity of distinguished architecture in today’s construction. This viewpoint leads to a lack of awareness in the inequality of the global economy (Fisher, 2012). The problem may be that current architectural foundation design education does not recognize cost as an integral design determinant. Current foundation design education does not inform students of the cost aspect of architecture in producing realistic designs. In addition, current foundation design education understates modest architectural projects that do not require wealth, yet demonstrate that aesthetically pleasing and affordable designs can be achieved. Designers’ ethical responsibility extends beyond wealth, and architectural education plays a key role in this transition. Despite its importance, this issue has not yet to be systematically investigated.

The purpose of this research is to investigate common focus of architectural foundation design studio education in the United States in its association to cost as an integral design determinant. This research also, ascertains attitude and perspective of both academics and design professionals toward teaching cost as an integral design determinant architectural design education. It is an assumption of this research that most design students are encouraged to provide unique but costly solutions without regard for the reality of financial limitations. This research seeks responses from both academic and practicing design professionals in pursuit to identify the need to improve foundation design education pertaining to cost as a fundamental design determinant.

### *1.1. Architectural Foundation Design Education*

Research conducted by Sunwoo (2012) at Princeton University identified the frameworks of vertical studio teaching, the unit system used as a pedagogical medium at the Architectural Association in London, England. Sunwoo’s research highlighted programmatic and generational improvements made at the Architectural Association from 1971 to 1990, and described course objectives in the design-studio year-system curriculum that still applies today. The introductory year separates architecture into “fundamentals.” The first-year students are introduced to three-dimensional design, representation, and visual arrangements of planes and forms, whereas second-year students advance to small-scale town planning and more complex construction techniques (Sunwoo, 2012). Similarly today,

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