not white

diversity in beginning design education

Shannon Chance, AIA, Editor

PROCEEDINGS of the
20th National Conference on
the Beginning Design Student

Hampton University Department of Architecture

Copyright 2006 Hampton University Urban Institute
/individual articles produced and edited by the authors

Printed proceedings produced by Shannon Chance, Assistant Professor of Architecture, Hampton University.

All rights reserved. No part of this book may be reproduced in any form or by any means without written permission of the publisher.

Published by:
Hampton University Urban Institute
Department of Architecture
Hampton University
Hampton, VA 23668
757-727-5440
fax 757-728-6680

Library of Congress Cataloging-in-Publication Data

Chance, Shannon
Not White: Diversity in Beginning Design Education
(Proceedings of the 20th National Conference on the Beginning Design Student)
complied by Shannon Chance
1. Architecture - Diversity 2. Teaching - Architecture 3. Teaching - Diversity 4. Teaching - Design
5. Diversity - Design

ISBN 0-9785172-0-2

Patterns of Progression: Diversity as a Matter of Course(s)

abstract
Kevin Mitchell

Associate Professor of Architecture and Director, Foundations Program
American University of Sharjah
email: kmitchell@aus.edu

False oppositions between Western and non-Western approaches to design pedagogy ultimately hinder constructive debate. The problem is compounded by the fact that many who advocate so-called "non-Western" approaches argue for an emphasis on "creativity" that can lead to a lack of rigor that is often necessary for coming to terms with the visual and verbal vocabulary of design.

This paper describes an approach developed within an American university located in the Middle East. The design studio described in the paper consisted of students from Iran, India, Pakistan, Syria, Ukraine, Germany, Lebanon, Saudi Arabia and the Gulf States. In this environment, teaching must address diversity as a fundamental concern that is not limited to distinctions between white/non-white or Western/non-Western.

The approach discussed here is based on an exploration of fundamentals can be made place- and/or region-specific. Contemporary architecture and design practice in the Middle East has suffered from abandoning the knowledge of geometry and the skills associated with its application. In an effort to explore the value of geometry as a design tool, the pedagogical approach described in the paper employs Islamic patterns to teach basic design two- and three-dimensional design principles. Students begin with re-drawing and analyzing the patterns to determine the ordering systems that governed their construction. The results inform investigations into the transformation from a two-dimensional drawing to a three-dimensional object; continuing investigations focus on transforming the three-dimensional object through an iterative process that introduces color. Primary concerns include the relationship between space and form and principles associated with transformation, repetition, negative/positive space, solid/void relationships, figure/ground relationships, order, pattern, structure and part/whole relationships.

The paper argues that basic design teaching should focus on teaching general design basics via context-specific approaches. It also argues that questions of diversity and issues related to identity are complex and should always be carefully considered in terms of their relation to the teaching of design fundamentals.

Kevin Mitchell is Director of the Design Foundations program at the American University of Sharjah (AUS). In addition to teaching in the areas of beginning design, architectural design studio and history/theory, Professor Mitchell's practice- and research-related activities focus on the mediation of architecture and culture. Recent research appears in the *Traditional Dwellings and Settlements Working Paper Series* and the *Encyclopedia of Twentieth Century Architecture*. A recently completed courtyard housing project is the subject of a chapter in the book entitled *Courtyard Housing: Past, Present and Future*. In 2003, Professor Mitchell was recognized with the American University of Sharjah's Excellence in Teaching Award.

Figure 1 and 2 - Patterns used on campus buildings at the American University of Sharjah.

Figure 3 and 4: Student drawings of original patterns.

Figure 5 and 6: Student analyses.

Introduction

False oppositions between Western and non-Western approaches to design pedagogy ultimately hinder constructive debate. The problem is compounded by the fact that many who advocate so-called "non-Western" approaches argue for an emphasis on "creativity" that can lead to a lack of rigor that is often necessary for coming to terms with the visual and verbal vocabulary of design. In the non-Western world, the debate is often reframed as the conflict between "traditional" and "modern."[1] This debate is especially relevant to beginning design education, which often relies on abstraction to challenge students' preconceptions and build a basic understanding of space and form.

This paper is based on an approach developed for an introductory level design studio that is taught during the second semester of the design foundations program in the School of Architecture and Design at the American University of Sharjah (AUS). The foundations year is an autonomous one-year program developed to provide a basic design education for students wishing to pursue degrees in architecture, interior design, multimedia, visual communication and design management; the program relies on studio, history and digital courses to develop the skills and knowledge necessary for further study in the major programs.

Although AUS is American in name and curriculum structure, it is characterized by extreme diversity. While many North American institutions aspire to diversity and have many nationalities represented in the student body, AUS claims over 60 nationalities on a campus that has been designed to accommodate 4,000 students. The true significance of these figures lies in the fact that no particular nationality represents a significant majority in a given course within the School of Architecture and Design; for example, the largest group of students in a spring 2004 design course was Iranian (33%), followed by students from India, Pakistan, Lebanon, Syria, Egypt, Saudi Arabia, Sudan and the United Arab Emirates. Although the majority of students are Muslim and Islamic holidays are observed, other religions are represented on campus. Instruction at AUS is in English, although it is a second language for almost all students. While Arabic, Persian, Urdu and Hindi are the dominant first languages, others may have grown up speaking Italian, German, Malay, Swedish, Tagalog or Fulani.

In spite of the diversity of the student body, the majority of students have been educated in primary and secondary educational systems that favor learning by rote. The emphasis on memorization rather than the development of analytical approaches to material results in a difficult transition to university level coursework. This is compounded by the fact that it is rare for students to enter the School of Architecture and Design with the experience or exposure that high school art or design courses can offer. In short, students have neither drawn nor constructed anything.

Teaching beginning design in this context is extremely challenging (and equally rewarding); it requires continual reflection on how one mediates knowledge and fosters a process of design that is analytical in nature and synthetic in scope. The following describes a context-specific approach to teaching general design basics. In this case, the notion of context refers not only to the physical location but also the specific challenges that result from the diversity of the student body and their common educational background.

Patterns of progression

Geometric patterns are ubiquitous and occur in Islamic cultures throughout the world. The designation "Islamic pattern" is consciously avoided in this paper. While the patterns discussed here reached the highest degree of development and resolution in the Islamic world, and especially in religious buildings, the mathematical and geometrical principles necessary for construction of the patterns are pre-Islamic and can be traced to the ideas expressed by ancient Greek thinkers like Plato and Pythagoras. This does not imply that the "West" should be given credit for the extraordinary development of patterns that occur throughout the Islamic world, but rather points to the difficulty of establishing what is "Islamic" about an abstract pattern. In a positive sense, it provides an example of the richness that can result from a process of exchange and development of ideas. It should be noted that some have attempted to establish a definition of an "Islamic pattern"; however, these descriptions do little more than point out the difficulty associated with establishing a useful definition.[2]

The patterns continue to adorn a range of two- and three-dimensional works, from

carpets to buildings.[3] Whether calligraphy, arabesques, or the more regularized ornamental patterns, geometry forms the basis for construction. In Arabic, calligraphy is referred to as the geometry of the line and the proportions of the letters and the curved strokes are governed by a series of mathematical proportions. The flowing arabesques are also governed by basic grid structures that may or may not be readily visible in the foliated surfaces. The more regularized geometric patterns more commonly associated with Islamic art and architecture are the basis of the investigations of carried out by students. (See Figure 1 and 2.)

Contemporary architecture and design practice in the Middle East has suffered from abandoning the knowledge of geometry and the skills associated with its application. Although the students at AUS are surrounded by the patterns on buildings and everyday objects, they rarely look closely at them and have not reflected on their potential relevance to design. The pedagogical approach described here employs geometric patterns from across the Islamic world to teach and explore basic design two- and three-dimensional design principles. Primary concerns include the relationship between space and form and principles associated with transformation, repetition, negative/positive space, solid/void relationships, figure/ground relationships, order, pattern, structure and part/whole relationships.

The first step is to provide students with an existing pattern and to ask them to redraw it at double the original size. Scale changes begin to reveal a lesson that was extremely important in the development of ornamental patterns in the Islamic world, namely that the patterns are not dependent on scale and can be reduced to fit on a plate or enlarged to adorn a wall surface. A process of redrawing leads to a process of discovery and re-discovery: students discover what leads to the visual complexity inherent in the patterns and re-discover the methods and means employed in the original construction. (See Figure 3 and 4.) The re-discovery of the methods and means is an important learning and experience; it results in the development of analytical tools that are learned through doing.

The analytical approach that is necessary for redrawing the patterns becomes the focus of the second stage of the project: a series of in-depth analyses carried out to determine the ordering systems and their geometrical and mathematical relationships. Patterns are most often based on a recurring simple shape known as a 'repeat', which may or may not be evident in the final product; the sequence of the 'repeats' follows radial or bi-lateral symmetry. Earlier the relationship between ancient Greek thought and patterns in Islamic art was mentioned. Three proportional systems were adopted from the ancient Greeks: the root 2 rectangle, the root 3 rectangle and the Golden Mean.[4] Addressing proportion through the process of re-discovering ordering systems means that the application of proportional systems is made relevant and immediately visible. It is also a clear demonstration of how mathematical relationships are made manifest in the visual. (See Figure 5 and 6.) Conversations in the studio focus on the principles that are evident in the patterns. Primary concerns include the relationship between space and form and principles associated with transformation, repetition, negative/positive space, figure/ground relationships, order, pattern, structure and part/whole relationships.

A second level of investigation occurs when students explore the potential for transformation that occurs when moving from a two-dimensional pattern to a three-dimensional object. Of particular concern is the way in which negative/positive space can inform solid/void relationships. Students engage in a process of interpretation that is based on the particular proportional and spatial relationships that were discovered through the process of analysis. (See Figure 7 and 8.)

The investigations continue as students begin to look at the potential of taking one of the 'repeats' and adapting it to create a modular unit that can be transformed and adapted to create larger units. These larger units are tested and adapted into a larger whole. (See Figure 9 and 10.) Students quickly realize that the process of development requires testing via models (an invaluable lesson for beginning design students). Questions related to what constitutes three-dimensional ordering systems become critical as students investigate various options for joining the individual 'repeat' or the smaller units into a greater whole. Issues of radial or bi-lateral symmetry that are evident in the two-dimensional patterns are explored in three-dimensional form; students also investigate relationships between space and form in the constructed objects. After initial investigations in white, students begin to look at the implications of contrast with the addition of black.

The final stage of the process moves back to a flat plane, although instead of a two-dimensional surface the project considers how a shallow space (1") can be manipulated to

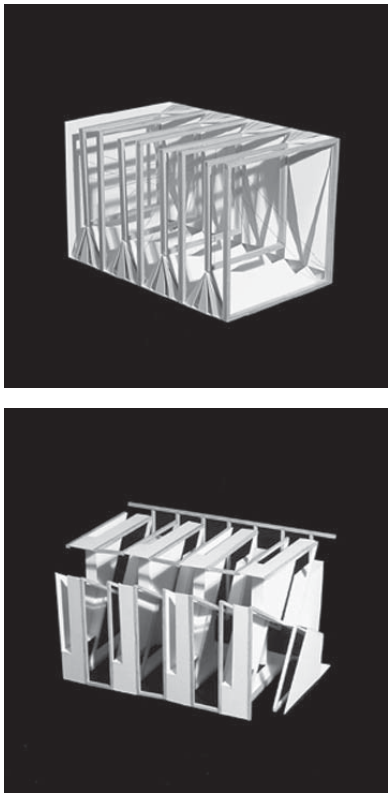


Figure 7 and 8: Initial investigations in the transformation from two-dimensional patterns to three-dimensional form.

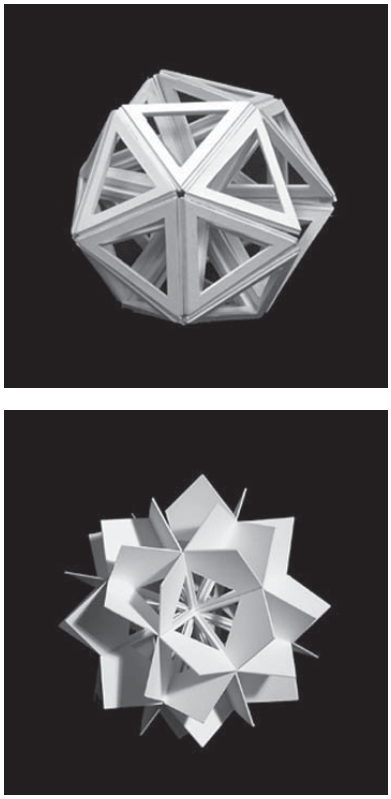


Figure 9 and 10: Three-dimensional investigations in white.

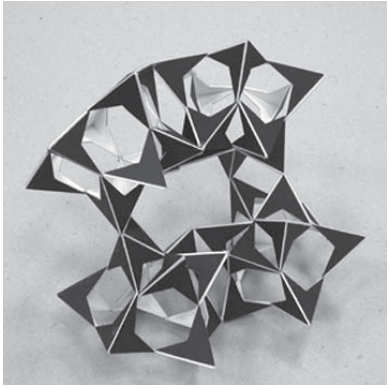


Figure 11 and 12: Three-dimensional investigations in black and white.

create the appearance of depth. Students rely on lessons from previous steps and develop one particular unit that has been subject to three variations (e.g. scale, open vs. closed, etc.) (See Figure 13 and 14.)

Conclusion

The process described in this paper seeks to challenge students' preconceptions and build a basic understanding of space and form by exploring design principles through familiar forms of ornamentation. The process fosters the development of analytical skills that are necessary for understanding visual design. Understanding gained via analyses becomes the basis for developing a synthetic design process that considers basic issues related to space, form and construction.

An understanding of geometry is fundamental to understanding architecture and design in the Islamic world (or elsewhere). Although contemporary architecture and design practice in the Middle East has suffered from abandoning the knowledge of geometry and the skills associated with its application, patterns are still used in a manner that borders on the superficial. Beginning design students have rarely looked closely at the patterns that surround them and have not reflected on their potential relevance to design. The pedagogical approach described here employs geometric patterns from across the Islamic world to teach and explore basic design two- and three-dimensional design principles.

The method advocates a context-specific approach to teaching general design basics. In this case, the notion of context refers not only to the physical location but also the specific challenges that result from the diversity of the student body and their common educational background. When adapted to specific circumstances, a rigorous approach to design principles and their use can benefit from the richness that can result from a process of exchange and development of ideas across ethnicities and across cultures.

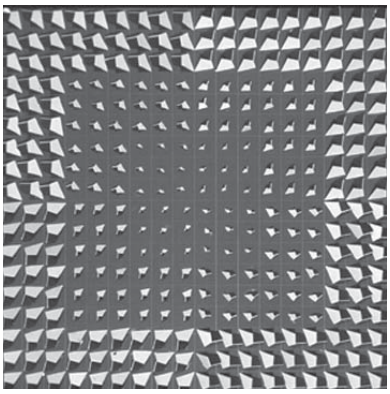
Notes:

[1] Dogan Kuban. "Modern versus Traditional: A False Conflict?". *Mimar 9: Architecture in Development* 1983, 56-58.

[2] See Syed Jan Abbas and Amer Shaker Salman. *Symmetries of Geometrical Patterns*. Singapore: World Scientific, 1995.

[3] There are complex issues related to the relation between the "ban" on figural representation and the development of abstract patterns as a form of ornament. While the *Koran* does not specifically prohibit the representation of living forms, the *hadiths* (reported sayings of the Prophet Mohammed) threaten hell fire to those who would paint of sculpt animate creatures. In spite of this, figural art did indeed exist in miniatures and in the decoration of secular buildings. For a discussion on figural art in Islam, see Dalu Jones. "The Elements of Decoration: Surface, Pattern and Light". In: George Michell. *Architecture of the Islamic World: Its History and Social Meaning*. London, Thames and Hudson, 1978. pp. 172-173.

[4] For discussions of the role of geometry in the formation of patterns, see Keith Critchlow. *Islamic Patterns: An Analytical and Cosmological Approach*. London: Thames and Hudson, 1983 and David Wade. *Pattern in Islamic Art*. Woodstock, NY: Overlook Press, 1976.



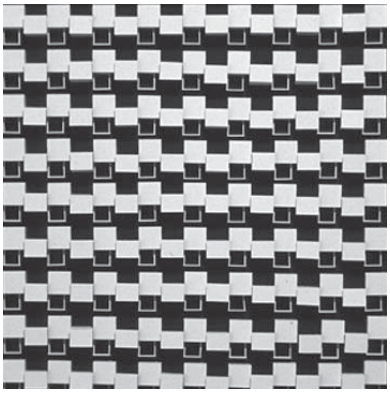


Figure 13 and 14 - Investigations of shallow space.