

Developing Visual Skills for Perspective Viewing and Rendering

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In our Interior Design program at Drexel University, we introduce modeling with **form•Z** during our sophomore design foundation courses. We feel it is important to encourage students to use the 3D technology as a visualization tool to explore their designs. This article describes one of the projects created to technically advance a student's perspective viewing and rendering skills, while allowing the instructor to introduce topics that focus on developing the visual skills of a young designer.

EXPLORING SCALE AND PROPORTION IN A PHOTOGRAPH:

The students quickly become concerned about the fact that they have few, if any, dimensioned drawings for constructing their selected interior design. However, this begins the topic for explaining how they can use their knowledge of scale and proportion to extract dimensional information from a photograph.

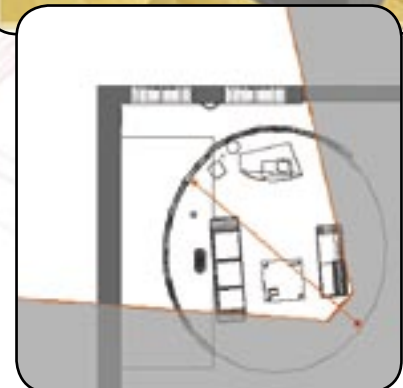
The first objects constructed with primitive shapes in the 3D model are interior elements that can be given estimated dimensions; for example: furniture, cabinetry, and modular systems. Then the placement of additional elements, including the surrounding walls, is determined through proportional relationships to those first scaled objects.



AMY MODLIN

The project begins with the student searching for a photographic image of an Interior Design that they find inspiring in spatial volume and in material selections. The technical aspects of the project involve re-creating the selected design in a virtual 3D model with a matching perspective view and simulated materials.

It is through the technical development of this project that the instructor introduces the following visualization topics:





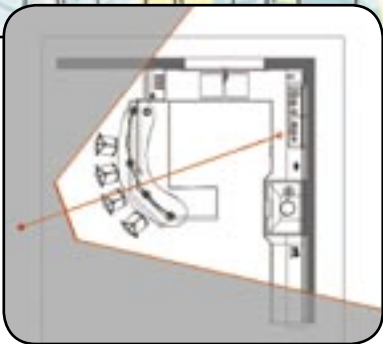
COMPOSING AN EXPERIENTIAL PERSPECTIVE VIEW:

The next topic involves analyzing the perspective lines of the Interior’s photograph. Basic composition techniques, used by photographers, are discussed: focus (or center) of view, edges (or frame) of the view, and view angle (or camera lens).

Technically, the students are then re-introduced to **form-Z**’s perspective making tools. The students quickly understand the “Eye Point” and “Center of Interest” settings since most have had experience with a 35mm lens camera. But the idea of choosing the appropriate camera lens or “View Angle” evokes a more advanced discussion. An angle that is too small (less than 50 degrees) creates a narrow view that minimizes depth differences. While an angle that is too large (more than 80 degrees) creates a wide view that exaggerates visual depth.



It then becomes apparent that, to generate perspectives that feel experiential, similar to a photograph, one must first set up the view angle accordingly. The range of view angles that work well for this project are between 50 to 80 degrees. This range of angles is directly related to the wide-angle lenses typically used by photographers to document building interiors.



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ENHANCING VISUAL DEPTH WITH SHADOWS:

The topic of light and shadow in a computer model can be quite extensive; therefore we start by introducing the creation of a single “point” light source to provide general illumination, but to more specifically generate shadows.

Graphically, shadows add visual depth to a perspective view by relating the elements to their surrounding surfaces, for example: a chair’s placement on the floor. It sounds simple but, without shadows, many computer rendered perspectives will appear flattened due to lack of depth perception.

In addition, some students explore the use of additional light sources to accent interior elements. This enables them to lighten areas in their view or use the “glow” feature to simulate the effects of a light bulb or candle.



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SIMULATING INTERIOR MATERIALS:

Due to the ease of **form•Z**'s Surface Styles palette, the students are quickly applying color and materials to surfaces. This becomes challenging in our foundation design courses because the student's technical knowledge of materials is not as advanced as their virtual skills. Therefore the exercise of replicating an existing image encourages the students to analyze real-life application of materials and explore options beyond the "default" settings.

Techniques are also explored for using applied surface styles to simulate depth on a flat surface. This involves advanced exploration into the various options available for changing color, transparency, reflection and bump.

In addition to rendering in **form•Z**, the students use Adobe Photoshop to enhance their final renderings. They explore copying elements, such as plants, from the original interior image into the virtual rendered perspective view. This enables students to soften their computer renderings with some realistic elements.



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