CHAPTER 6
Dynamic rendering strategies

This chapter looks at a number of different rendering techniques that enhance the dynamic qualities of representations.

Architectural drawings can evoke a sense of the mood, texture, and atmosphere of a space, transcending mere two-dimensional abstract representations.

Dynamism in architectural drawing can be achieved through variations in medium, vantage point, and composition. In addition, graphic elements and graphite rendering techniques can be layered onto a line drawing to enhance its evocative quality. These explorations can provide the viewer with a greater sense of the architect’s intentions by exaggerating certain aspects of the representations. Color, point of view, layout, or the addition of collage elements provide opportunities for you to present your ideas in a more compelling and lively manner. These methods enhance existing graphic constructions while creating opportunities for new representations. Dynamic presentations should support design intentions.

In addition, this chapter will explore the step-by-step process of design while examining space as both an additive and subtractive design tool. The way in which space can be used to describe and diagram existing conditions will be examined along with the methods of translating initial design ideas into spatial explorations. The distinction between additive and subtractive methodologies will be defined.
Line drawings alone cannot convey the textural qualities of a space: how a room reacts to light, what materials enrich the space, or the way light and materials interact. It is sometimes necessary to enrich line drawings with indications of material, shade, and shadow.

Material indications and rendering in a drawing help to convey the texture, rhythm, and scale of a space. Materials can be indicated through a variety of line techniques and are produced on floors, walls, and ceilings ranging from concrete, wood, metal, glass, plastic, and so forth. Material renderings provide tonal value to the drawing.

Metal and stone can be rendered with some sense of inherent reflection or shadow. In some cases, a tonal value is given to only one material to distinguish it from others. Concrete is a good example. It can be rendered using a variety of techniques but the main consideration is that it has a tonal value different than that of metal or wood. Adding shade and shadow can provide more depth to a rendering.

The two issues to consider when representing materials are scale and intention.

Scale
Consider at what scale the representation is drawn. For example, brick can be rendered in a number of different ways depending on the scale of the drawing. Start by indicating the horizontal nature of the material. Abstract the material so that in the representation it appears convincing. A drawing at 1/16 scale might require a more abstracted version of brick than a drawing at a larger scale, such as 1/2. Even at this large scale, you will need to consider if there are additional vertical breaks needed that identify individual bricks versus the more general horizontal nature of the brick. Depending on the level of detail desired, every joint of every brick can be drawn.

Intention
Consider what you want to emphasize with a material: horizontality, verticality, or a particular wall or surface? Some drawings are best presented when only certain hierarchical materials are rendered. This limitation on material rendering can reinforce design intentions.

Shape and texture
This pencil rendering by Douglas Darden reveals the shape and textures of the elements in this design. By rendering most of the object, the white of the page becomes compositionally important.

Material indications
This pencil-on-Arches elevation drawing endeavors to relate the materiality, construction, and light quality of the shipping containers that comprised the housing units in this project, located in downtown Los Angeles. Careful attention was paid to the details so that the physical reality of the containers was not compromised.
Connection to the ground

This sectional perspective makes the section legible through the application of poche. By depicting the cut in black poche and making it thicker, a stronger connection to the ground is implied. This is further emphasized by the pools that dig into the ground. The material renderings of wood and tile on the interior characterize the quality of the pool space.

Digital rendering

Computer programs have become extremely sophisticated in their ability to output images with rendered materials and entourage. Though the amount of time it takes to construct and render computer models has decreased significantly over the last few years, it still presents a high level of attention and time commitment to output detailed and beautiful digital images. Architects generally understand the abstract quality of rendering techniques developed during the design process, while clients may want a more “realistic” image to experience the space before committing the money to physically construct it.

Realistic rendering

Realistic digital renderings allow clients to compare their interpretations of the drawings with the intentions of the designer. This image emphasizes the spatial dynamics of a sculpture garden inside a newly designed museum.

Material rendering techniques:

The positive shape of a stopwatch is rendered in different ways in graphite. The vertical hatching (top) creates a neutral textured surface, useful for describing wall surfaces. The stippled texture (middle) creates an impression of concrete, but can be time consuming. The darker vertical hatching could be used to depict dark wood surfaces. In three dimensions, hatching is used to define tonal areas (below). Rather than drawing a line where two surfaces intersect, the two planes were rendered with hatching to imply a line.
Charcoal drawing

One method of drawing that captures the quality of light in a space is charcoal drawing, mentioned briefly in Unit 11 as a sketching technique. This unit will describe in more detail the construction of a charcoal drawing using compressed charcoal.

Louis I. Kahn was one of many architects who understood the importance of considering natural light when designing. He knew how natural light animated a room and brought it to life.

“The making of spaces is the making of light at the same time.”
Louis I. Kahn, talk at the Otterlo Congress

The medium of charcoal combined with perspective drawings provides a method to render mood, light, and textural qualities in an evocative manner that transcends the line drawing. Charcoal drawing utilizes contrasting lights and darks to demonstrate how light affects and influences space, materials, and movement. In this method, tone and shade are used to create volumes or planes of solids and surfaces. This drawing type enables you to reveal the experiential nature of a space in a very evocative manner, as well as to design spaces influenced by light.

There are several charcoal options:
• vine stick
• soft compressed (preferred—provides a variety of line types but is a little messy)
• pencil

The soft compressed charcoal stick is ideal for the beginning student. It offers a myriad of possible marks on the page depending on the length of the charcoal stick, pressure applied by the artist and the positioning of the stick, whether vertical, horizontal, or angled. The soft compressed charcoal is similar in shape and size to pastel crayons. You can hold the charcoal stick in a variety of ways to achieve different line types. You can also smear it with your fingers, reducing the marks of any individual stroke on the page.

Monumentality
Hugh Ferris used charcoal to evoke a sense of monumentality in his building representations. Note the surface quality of the marks on the page.

Methodology
One technique among many to lessen the tension of drawing with such a dark material on a white surface is to use the charcoal to lightly tone the entire drawing surface. Your blank sheet of white paper is shaded to a gray tone with the long edge of your charcoal applied with light pressure. By reversing the page from stark white to a tonal gray, the pressure, both literal and figurative, of making the first mark on the page is lessened. By toning the paper you can now either add black marks with the

Read this!
Johnson, Nell
Light is the Theme: Louis I. Kahn and the Kimbell Art Museum
Kimbell Art Foundation, Fort Worth, 1975

Brooks, Turner
Turner Brooks: Works

Precedents
Drawings from Hugh Ferris and Turner Brooks offer examples of evocative high-contrast black and white images. These images explore the possibilities of design as opposed to being purely representational.
Charcoal is a dynamic medium that enables dark shadow areas and delicate veils of light to describe the play of light on surfaces. These three charcoal perspectives depict a spatial design narrative through a series of single views. They reveal a strong division of space with vertical elements. Light is used to wash wall surfaces, provide views or direct movement.

Charcoal or erase for light or white marks. Tones of gray are possible through rubbing. You can smear the page with the heel of your hand, your finger, or a rag. Concentrate on making marks that are less like lines and more like planes of dark or light. No lines exist in nature, so the marks on the page should be considered spatial delineators—not edges.

There is a “messy” quality to charcoal that liberates you from the need to be precise. Any mistake can be easily fixed by rubbing, smearing, erasing, or adding more charcoal. There is a massaging of the paper to work the image into place. Start light and work toward dark. It is easier to darken the page than it is to lighten or completely erase the black.

Similar art forms, such as black and white photography, rely on tonal differences in the image to enhance and reveal the depth of the space. Walker Evans, well known for his black-and-white documentary photography during the Depression, only started using color photography much later in his career. He has suggested that until one has mastered black-and-white photography, emphasizing tone, shade, and quality of light, one should not try using color film. His suggestion can be heeded by those thinking of shifting from black-and-white drawing to color prematurely. The complexity of color should be tackled after you master black and white.
Shade and shadow added onto orthographic drawings gives a three-dimensional characteristic to a drawing by emphasizing the depth and space through light and how it interacts with surfaces. Shadows expose the physical relationship between the elements in the space that are receiving the light and the elements that are creating the shadow, the wall, window cutout, and so forth.

Two key elements to consider when constructing shadow drawings:
• Shadows are cast onto a surface (no surface = no shadow).
• A consistent dimensional relationship exists between the element casting the shadow and the surface accepting it.

**Interaction of light**
Shade and shadow rendering in this perspective provide a sense of how the light filters into the space and interacts with the shelving system.

**Compositional balance**
Long shadows provide compositional balance and change the emphasis from the object to the space between the shadow and the object.

**Indication of depth in plan**
Shadow plans indicate the changing floor depths. They reveal the relative heights of individual elements and the relationship between solid and transparent surfaces.

**Light and intention**
Become a keen observer of light and how it acts and reacts to surfaces. Place a complex object under a desk lamp and draw it under several different light conditions. Think about when the light can create both short and long shadows. Think about the orientation of the light—will that enhance or obscure part of the design? Be aware of how graphic representations can reinforce intentions.
Relative influence of light
In section drawings, shadows show the relative influence of light in a space. The farther away the surface is from the light the darker the rendering.

Lighting terminology
As a designer, it is important to note the sun orientation relative to any site that you are building.

In the northern hemisphere:
- **Summer Solstice**: June 21 at noon
- **Winter Solstice**: December 22 at noon

Solar charts are available that provide the correlating height and angle of the sun in the sky relative to a specific location. Note on these charts that the summer sun and winter sun move along very different paths in the sky. Closest to the June 21st date, the summer sun rises north of east and sets north of west while on dates closest to December 22nd, the winter sun rises south of east and sets south of west.

The sun can only be cast onto surfaces.

**Light source**: sun or artificial lighting that acts upon an object. The rays of the sun are considered parallel for constructing shadows. This is due to the distance light travels between the sun and the Earth—around 93 million miles. In reality, the sun’s rays diverge as they reach the Earth’s surface, but this divergence is insignificant relative to shadow casting. In contrast, artificial lights typically emit a radial light due to their proximity to the object casting the shadow.

**Shade**: an unlit surface of an object.

**Shadow**: the shape of one object cast onto another surface.

Scale in context
In a site plan/roof plan shadows show the scale and form of a building relative to the topography of the site. They also provide a method of distinguishing your building from the adjacent context.

North light
North-facing windows get diffuse natural light. Many artists’ studios face north for the evenness of the light quality over the course of the entire day. On rare occasions, light can even get reflected from adjacent buildings, creating some cast shadows into a space. Always find the local sun conditions for your building site.

Indication of depth in elevation
In elevation drawings, shadows demonstrate the relative relationship between elements, indicating the depth of recesses or projections.

North light
Several other media types can be used to enhance representations. Both collage and colored pencils can be introduced to drawings in an effort to make them more dynamic. Compositional issues also play a key role in emphasizing elements in a representation.

**Abstract overlay**
This arresting collage shows ways to overlay abstract information while highlighting important aspects of human scale and usage of the space. This image marries collaged elements, photos, and color with a perspective drawing. It depicts the “potential” as opposed to the reality of the space. For instance, there is a roof on this school building, but the ceiling is depicted as sky to imply a connection to the world beyond.

**Depicting multiple experiences**
The drawings depict the multiple experiences of walking through the gentrified Chelsea Meatpacking district in New York City. The one below and to the right shows a section through a collage that juxtaposes views of the seemingly incompatible industrial High Line and the meatpacking warehouses against trendy galleries, nightclubs, and pastry shops.

**Collage**
In the early 20th century, the cubist artists Braque and Picasso introduced the technique of collage. Collage is an abstract method of representation that combines existing images with contrasting materials to create a new image. Typically, materials are applied to new two-dimensional painted or graphic work. Collage artist Ben Nicholson describes collage as “an aggregation of various pieces which create an irresistible spectacle in the eye of the maker.”

Collage provides opportunities to rethink the existing. The act of making a collage or remaking an image records thoughts that cannot be articulated in drawing alone. Collage provides a starting point for generating new ideas and evaluating existing conditions.

**Colored pencils**
Colored pencils can be added cautiously to emphasize a dynamic moment in a representation or to further represent an idea. Color is not to be used as a method of applying “realism” to a project. It should still be considered an abstract medium that can emphasize specific elements in a representation or tie them together.
Preservation of hand drawing

Advances in digital programs have not completely replaced hand drawings in the profession. Architecture firms such as Lewis.Tsuramaki.Lewis, Tod Williams Billie Tsien, and others utilize a combination of hand-constructed perspectives and digital textures, colors, and entourage to create beautiful composite drawings. Hand drawings are often scanned into Photoshop and manipulated using a variety of techniques. The quality of the hand drawing is appreciated and thus retained.

Many firms use the following processes:

Color and page composition

The page composition of a single image can reflect the design intentions while engaging dynamic color elements. The page is elongated to emphasize the verticality of the architectural design. The red rendered sky is an abstraction. The marks of the pencil are visually apparent and give texture to the sky. The building surfaces are rendered to evoke the quality of materials.

Black and white duality

This composition, a stark black and white image, powerfully conveys the cut in the earth and the horizontality of this idea. The project, for a political prisoner, uses a clear duality of the page to convey the strong single move in the project, a long platform.

Entourage

Entourage establishes scale. It is common in section and perspective drawings to populate the image with people, while furniture is often added in plan. Depict people interacting with and using the architecture.
▲ Evocative graphics
Graphic images can also be added to imply a relationship to other drawings or time periods. Graphic lettering, a turquoise sky, and a flying dirigible are all used to enhance the quality of this perspective. Note that the color of the sky is not meant to replicate a real “blue” sky but to indicate that the sky is different than the rest of the image. The CHC and corresponding numbers indicate the name of the competition, “Capital Hill Climb,” and entry number K017. The scale, location, and color of these graphics recalls the Russian Constructivist era. The dirigible as collage functions to evoke a sense of the future.

▲ Head shot studio, LA
The drawing was executed from a low angle as a way of emphasizing the height and structure of the design. Both the ground and the sky are left as abstract representations as a way of talking about the placelessness of the site that was the leftover space behind a billboard on Sunset Boulevard. The drawing is ink, gold leaf, and film on linen.

▲ Selective color
Color is selectively added in this pencil composition to both the sky of an exterior perspective and the background of the series of interior perspectives. In this case, a dynamic color is used to tie the elements on the page together. Too much color could detract from the overall clarity of the board. More color does not equal more dynamism. There is a clear hierarchy of images within the composition. The section model replaces the section drawing.

▲ Hybrid drawing
This drawing demonstrates the combination of a perspective and site plan. The inverted perspective (white lines on black background) provides a large dark sky to establish a more dynamic image.
Dynamic rendering

**Firm**
Bauen Studio

Renderings have the power to change a well-drawn hardlined pencil drawing into something dramatic and dynamic. Rendering techniques range from material application to shade and shadow to realism. Rendered drawings are useful in presentations to clients. Materials, textures, and quality of light can be clearly communicated in these types of drawings.

**Project**
The addition to a 1950s suburban house consisted of a dining room, mother-in-law suite, and master bedroom suite. This project is located in the Providence District of Fairfax County outside of Washington, D.C. The neighborhood is representative of typical 1950s development patterns, with single family homes situated on small lots. Like many transforming neighborhoods, this one is also experiencing the real estate phenomenon of the “tear-down,” where the original house is purchased for its land value, the house is demolished, and replaced with a starter mansion. This not only has a socio-economic effect on the characteristic of the neighborhood, but also compromises its native architectural structures and spatial quality. Generally speaking, most new homeowners respect these existing structures and are creating additions that are appropriate to the scale of the neighborhood. Unfortunately, these additions do not necessarily reinforce the potential “communal” aspect in the neighborhood.

Traditionally, residential additions are realized as additive elements attached to an existing structure. But when an “addition” is larger than its host, how should it be referred to? The architects addressed this issue by conceptualizing the addition as an element that is not merely attached to its host, but rather as one that is integrated. They have blurred what is typically referred to as “new” and “old.” This binomial nomenclature (of black and white) lacks the possibility of the new blending with the old. When a space has characteristics of both, rich ambiguity follows. Spaces which exhibit elements of old and new develop into various shades of gray. For example, a new bookshelf/storage unit defines the boundary of an existing space, becomes a new wood floor which flows into the dining room addition and leads outside the house to become a terrace, ultimately terminating as a planter. Furthermore, this re-orientation to the front of the house onto the street coincides with how the neighborhood is reinventing itself by inverting the 1950s privatized realm, which traditionally opened the house to the rear.

**Fluid diagrams**
These diagrams indicate the fluid nature of the addition with the existing house. Rooms that are new have more detail, including floor patterns and furniture.
Addition and subtraction

For the last few decades, there has been a trend in urban design that emphasizes rethinking the city street as a spatial container and not just the result of the buildings or objects that line it. This conceptualization of space can be applied at a variety of scales including the city, the street, a building, a room, or an object.

To facilitate this conceptualization process, space must be considered a physical entity; a shapeable thing that is concisely defined rather than residual. It is a medium to work with and within rather than the resultant of walls, floors, and ceilings. Space can be visualized when carved out of a solid element whether in a physical model or three-dimensional computer modeling and when thought of as a cast of an interior space. The process of carving, ultimately a process of reduction, is very different from the more typical additive process of joining materials together to represent space.

This type of conceptualization of space contrasts with the additive conceptualization of the earlier kit of parts assignment (see page 104).

Subtractive quality

Foam provides a material that can be carved and manipulated to expose the spatial desires of a design. The subtractive quality of this material is reminiscent of figure-ground maps (see page 55), where contained and well-defined spaces are juxtaposed against well-defined solids.

Design tips

Train yourself to think about the following when you are designing:

Research/history: this could include but is not limited to typology studies: see what others have done before you and learn from the past;

Existing conditions: you always have a context to work within; know everything you can about the site and the context—what is the history of the site? This is not just about the physical aspect, but the social and cultural context as well.
3D figure-ground maps
Figure-ground maps of urban environments can be recreated as physical three-dimensional models. The methodology of making these models with a laser cutter enables the simultaneous construction of a positive model (left), in which buildings are solid additions, and a negative model (right), where the spaces between buildings are solid and the buildings themselves are subtracted. These models of the Pompidou Center in Paris demonstrate the space as a three-dimensional entity.

Spatial analysis
This sequence of studies created in SketchUp depicts a variety of spatial volumes defined by the design of an outdoor classroom. The outdoor classroom in the center, the rectangular form, implies a series of intersecting spatial volumes at a variety of scales. Some volumes of space are defined by the cornice line of the perimeter buildings (see image 2), while other spaces are defined by the landscape elements of the outdoor classroom at the scale of a person (see image 4). Images 3 and 4 indicate a spatial connection between the site and adjacent circulation spaces.
Rem Koolhaas

Rem Koolhaas (Dutch b. 1944) is a writer turned architect, theorist, and urban planner. In 1978 he wrote his seminal treaty, Delirious New York. In this manifesto, Koolhaas explores the history of New York City and the consequences of the 1807 matrix that divides the city into 2,028 blocks. His office, OMA, The Office for Metropolitan Architecture, established in 1975, has built critically acclaimed structures around the world. Koolhaas’ work can best be typified for his interest in programming and diagramming and analyzing how these inform the organization of the building. For his design of the Seattle Public Library, Koolhaas analyzed historical precedents coupled with speculations of future uses of the library based on computer advances in the storage and displaying of information and potential adaptations to how future generations will socialize and interact.

Analysis diagram
A typical, analytical design diagram by Rem Koolhaas taken from the Seattle Public Library competition design process integrates text, data, and architectural form.

Exploring relationships
This collage diagram explores the link between the acts of cleansing and viewing. The view is obstructed by the moving water during this act.

Hierarchical connection
Service elements are pushed to the edge of this “room for repose” space. All are kept to a low height to maintain a visual connection with the raised element at the end of the space—the bath.

Assignment: 18

Space for a traveler

Brief
Design a temporary place of occupation for one person pausing after an overnight flight. The room is to be located inside the airline’s arrival lounge at Heathrow Airport in London with a view of the tarmac and can represent either:

- a middle room with only one exterior wall condition, or
- a corner room with two exterior wall conditions.

The traveler may use the room for bathing, changing clothes, work, or relaxation. It should include a dressing area with space for a suitcase and hanging clothes, a place to wash, a place for bathing, a steam room or sauna, a toilet, a TV, a radio, a coffee maker, a place for magazines, a space for writing, and a place of rest such as a chaise-longue.

Process
Your task is to design an innovative, thoughtful space for the traveler. You are asked to suspend any preconceived notions of familiar objects. Words like bed, closet, bathroom, and shower have not been used to dissuade you from
Starting the design process

Prepare yourself
Research includes conceptual analysis of activities associated with the program, diagramming movement, defining terms, historical research, and site documentation and analysis.

- Make a series of at least five sketches that represent the action of showering from the point of view of the person taking the shower. Think about movement, action, and especially the space required for the activities and rituals associated with the bathroom. Is there a particular sequence of action that can be conveyed in drawings?

- Define “ritual,” “repose,” “procession,” “threshold,” and “routine.”

- Research body proportions and dimensions associated with bathing, relaxing, and minimal sleeping spaces.

- Ask yourself: what is a good height for sitting, leaning, or standing under things?

- Measure and document the space your body occupies while performing activities such as sitting, lying down, and reading.

Find historical precedents
Research bathrooms and hotel rooms. Consider other examples that deal with the challenge of a small space such as submarines, train cars, ships, or RVs.

Come up with ideas
Assess and analyze the research that you have accumulated. Compare it to elements in the brief. Try to articulate your own ideas from this research and analysis.

Explore your ideas
Consider how to separate or combine wet and dry spaces. How can a ritual be conveyed? Think about body movement through the space. Consider each element. For example: Sink—what is a sink? How tall? Where does the water come out? Where does it drain? What material? Why there? Is it also used for a shower? What is the difference? Is it a fixture or just a stream of water and a drain? Do you need a basin? If so, why? When do you use it? Upon entry? Apply these types of questions to every element in the room.

Focus on the relationship between fixtures, walls, and occupied space at the scale of the individual, while recognizing the significance of the body, its measurements, and its manner of movement.

Make three study models at ¼ or ½ scale, exploring different ideas. Create a series of sketch perspectives of views inside the spaces. Diagram your ideas. Keep them simple. Repeat these exercises throughout the process.

Sketch your ideas on trace or in your workbook. As you become more confident with your designs you can finalize it on vellum or Arches. The final set of drawings should be done at ⅛ scale and should include several sections, a plan, and various three-dimensional representations including a model.
Veterans Memorial competition

Architecture design competitions are a means for architecture firms to acquire work and to achieve recognition. Competitions test both theoretical and practical design ideas. Young firms have the opportunity to compete for projects against more established firms. Unfortunately, competitions do not always provide the winners with the opportunity to build the winning project. Many competition hosts promote “ideas competitions” where a search for potential solutions is sought, but a confirmed interest in hiring or building the winning design is not clear.

What to expect
If you win a competition you may not win the design commission. The competition committee may select to build the second-place design. This may be due to expense, or an inability to build the winning project.

Competition brief
Design a Veterans Memorial for a University on its urban campus for up to 400 veterans.

Designers
Bauen Studio, winning entry and building commission.

Memorial design requires an understanding of the problem at hand and a thorough knowledge of the existing site conditions.

The design for the Veterans Memorial looks to reclaim residual space on an urban campus using two strategies:
• to create a more formalized space, and
• to orchestrate a visual sequence within the campus environment to create connections between circulation and place.

By reclaiming this space from purely path and landscape elements, the memorial establishes clearly defined public spaces for the campus community and the general public to occupy.

Concepts
Three parallel elements organize the site; two spatial, one vertical. A black granite wall, contemplative garden, and public plaza are situated in a manner that allows for multiple readings of the space (see spatial diagrams on age 76). Interwoven within the garden is a paved ground plane abstracting the American flag with 13 strips and 50 lights. Birch trees to the north and east act as framing devices and help contain the space. Orchestrated views ensure a balance between the spaces being visually protected and appropriately open for ceremonial activities.

The black granite wall is double-sided. Its southern elevation faces the campus and serves as a backdrop to campus life, and the northern, contemplative side reflects the intimate nature of war and loss. The public side features a laser-etched mural depicting iconic images of conflicts. The private side, however, is the focal point of the memorial, with each soldier represented by a single stainless steel plate. The 278 plates, which reflect the faces of the visitors, unite the dead with the living. They are designed to be touched and lifted; singly reflecting the individuality of each soldier, and collectively representing the bond soldiers form in times of war. The plates are organized randomly; however, the physical search for names on the wall allows the visitor potentially to engage intimately with the memorial and discover the common threads that tie fallen soldiers together.

Conceptual inspiration
The conceptual inspiration came from tree specimen identification tags (below left) and the tags worn by military personnel (left). The modified version (below right), congregated onto a black granite wall, can be touched and held by memorial visitors.

Range of representations
A basswood model (top) was used to test the spatial clarity of the project. Continuity was emphasized by the limited number of model materials. Perspective representations (center) were used for fundraising efforts to present a realistic image of what was to be built. The bottom photograph shows the finished wall in context.
Architectural mock-ups

Representations of architectural ideas through scale models and drawings have limitations. The reality is that they are just that: representations.

The study of architecture is most often limited to the making of representations. Students often graduate without ever having constructed elements at full scale. The construction of full-scale objects and buildings in an academic setting can provide students with a unique opportunity to allow the representation of an idea, its size, scale, and spatial effects, to become reality.

Phase 1: Temporary plan installations
Beginning architecture students placed plan installations of their 240-sq. ft (23-sq. m) room for a traveler (see page 120) using temporary materials like tape, chalk, string, cans, light, and people. Leaving the environment of architectural representation meant that they could begin to understand, at full scale, the impact of their design. They tested the real dimensions of their projects, as a plan convention (there were no implied vertical walls in most of the interventions) and how people interacted in and reacted to them. Once the installations were in place, people could walk through the full-scale designs to experience the relationship of the spaces in plan and begin to get a sense of the spaces they created.

Phase 2: Full-scale mock-up
Next, students constructed a full-scale mock-up of the “room for a traveler” project. The mock-up helped facilitate the students’ spatial understanding of a design. The project was constructed using string and paper. This completed the students’ translation of architecture as representation to architecture as real space. Structural, spatial, and material considerations became apparent in the full-scale mock-up. For many this was the first time they truly understood the spatial implications of their design.

Making space
Students begin to construct the room for a traveler using rope and paper. This temporary space provides students a look at the processes associated with construction, teamwork, and space-making.

Schools
If you are interested in this type of investigation, from representation to construction, many architecture schools are now embracing a design/build component in their curricula. As schools continue to diversify their course offerings, you should verify your options for this design/build component with each school’s stated curriculum.

Places to consider:
- Vermont School
- Rural Studio at Auburn University
- UNC Charlotte
- University of Washington
- Yale University—Building Project

Translating design skills to larger-scale projects
Even though this book is intended as an introduction to architecture representation and design, it also provides you with a foundation for designing responses to larger and more complex problems. Everything is applicable regardless of scope and scale. The myriad issues that you discover when thinking about seemingly simple elements such as the opening (see page 101) can be adapted to each element in architecture. When multiple elements come together you will be prepared for the resulting complexity.