Chapter Four: Jeu de Formes Assemblées dans la Lumière (Play of Forms in Light)

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## Monochromatic Tone Value Delineation

Grisaille is a painting technique that uses only one color, usually gray, in a range of shades or values. It often serves as an underpainting stage when using opaque paints. The most common way to describe paint is by color. How do we reconcile these two seemingly contradictory descriptions? Is it value or color? Yes!

<Insert Figure 4.1.1>

Figure 4.1.1: Medium Gray Reference Box

Figure 4.1.1 was drawn for illustration purposes here using a scalable vector program called Inkscape. Let’s describe it. It was originally drawn to be 1 inch square (25mm). It has no outline color, and the fill was selected as 50% gray. Let’s dig a little deeper into our simple square. Since Inkscape is a vector drawing program, then the code for the file is text readable. It shows the following attribute: fill:#808080;stroke:none;stroke-width:0

For reference, fill is the color inside the square, stroke is the line bounding the square and stroke-width is the thickness of that line. What is #808080? It turns out that this is a very specific color readable on web pages. It is known as a *color hex value* and does not have much value for our understanding. Let’s dig a little deeper and translate this description into terms more familiar to us. What are other ways of describing color?

In kindergarten you no doubt learned of the primary colors: red, blue and yellow. Later perhaps in high school physics you learned that the primary colors in light are red, blue and green. In kindergarten we mixed tempera paints of blue and red together to get purple…two primary colors make a secondary color. Theoretically if we mix the three primary colors in equal measure, then we should get a neutral gray like the square above in the figure. In real life it is much closer to brown. Incidentally, when mixing red light together with blue light you will get a very different color, magenta. Magenta is not purple!

Since we are working in both the world of physical pigments and digital light, we are going to need a more complex definition of color. This will eventually lead us back to the idea of our 50% gray square in the figure. Hex color #808080 can also be defined in at least four different ways: RGB, HSL, HSV and CYMK. Here is a table of these values for 50% gray.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| RGB | 128.0 | 128.0 | 128.0 |  |
| HSL | 0.0 | 0.0 | 0.5 |  |
| HSV | 0.0 | 0.0 | 50.0 |  |
| CMYK | 0.0 | 0.0 | 0.0 | 0.5 |

RGB stands for red, green and blue. These are known as channels. Each channel has a range from 0 to 255. By inference we can say that light in the amounts of half the range 128 of three channels when mixed is 50% gray. If a web page presented the square in the figure above on a computer monitor, then we could infer that it would consist of an area of 72 ppi or pixels per inch. A pixel with a value of 128 would be halfway between no light and all light. Could we use the metaphor of a rheostat or dimmer on a light switch? A rheostat controls the amount of current by varying the resistance. The more current that passes, then the brighter the light. Leaving the metaphor behind, we can say that while a computer bit has only two states, 0 or 1 (off or on,) our pixel above has 256 discrete states. This is a pretty good abstraction of continuous color shifts. Indeed, you may have seen that your computer monitor is capable of 16 million colors! Let’s do the math: the cube of 256 is 16.78 million.

HSL stands for hue, saturation and lightness. HSV represents hue, saturation and value. CMYK represent the printing primary colors of cyan, magenta, yellow and black. Since most of our work will be done digitally, then we will focus on the RGB system. The important take away from this deep dive is that mixing colors differs between pigments and light. Another idea that arises from this discussion is the importance of value. We can say that value is a product of mixing colors together. In the computer this means relative gray values in each of three channels. For a confirmation of this, check out the three channels of the color image from a colorful rendering in figure 4.1.2. The red channel is a monochromatic image. The blue channel is similar but “highlights” different parts of the image. The green channel is again slightly different.

<Insert Figure 4.1.2>

Figure 4.1.2: Three Monochromatic Channels Make RGB Color Image

Monochromatic values are a fundamental way of discerning pattern differences. Perhaps second only to the silhouette or outline of an object, values help us to understand how real-world objects reflect light. This information yields so much information to the viewer. Since it is easy to map values that we perceive onto the flat surface of paper or a viewing screen, then the illustrator can use a value scale to aid in this coding system. Whereas a computer uses 256 scale values across several channels, it is often adequate for us to think in only seven values from black to white. This approximation can be mapped in at least two different systems, a linear scale and what we’ll call here a Lambert scale. You are recommended to make both scales as rendering practice ahead of making your Exercise Six. Perspective Projection and Tone Value Render of a Small Guest House.

<Insert Figure 4.1.3>

Figure 4.1.3: Two Grayscale Value Reference Images

#### Photographic Arts as Rendering Paradigm

The development of photography was historically perceived by some as a threat to painting and even to fine art itself. Artists still paint and draw now more than ever. Photography has instead become a fine art itself. Just as electronic modeling and computer rendering is seen by some as supplanting our need to learn how to draw by hand, what if architectural illustration is similar to the arc of photography. It is argued here that photography has improved our capacity to see and record. It is prudent for the architectural student to develop skills in all aspects of contemporary practice. That practice can best be described as a hybrid of several systems.

A paradigm can also be thought of as a model and system. The components of any system are at least some discrete phenomena we’ll call objects and the interrelationships between these objects. For now, let’s keep it simple. The objects of a rendering are: the represented scene, transformations from three-dimensional space to two-dimensional representations, relationships of major and minor representations of objects as shapes on the *page*, relationships of light reflectance on the objects and material colors and textures. What is photography to the architect and illustrator? What does a photographic rendering paradigm look like? The answer to these questions will be shown as a good rule-of-thumb or heuristic for our contemporary practices in drawing that can translate across analog and digital domains.

We are transported back several decades. An architect and photographer using a single lens reflex (SLR) camera in 1988 visits a project site on a street corner of a small town. A three-story historical bank will be renovated into restaurant. In addition to taking photographs to document the existing conditions, the architect carries a sketchbook, felt-tip pens and a tape measure. In the camera bag are three *prime* lenses: a 28mm f/1.8, a 50mm f/1.4 and a 105mm f/2.8. Each roll of film is ISO 64 Kodachrome color positive (slide) 35mm film with 36 slides to be developed by a lab in about one week.

The 28mm lens is effective when taking photographs across the street. It captures the entire building, although there is a small amount of barrel distortion that slightly curves the edges of the frame and make the parallel vertical lines converge to a vanishing point in the sky. This can either be a useful dynamic view to consider for a rendering later, or conversely it could be distracting. The illustrator won’t know which until the design idea is considered. The overcast sky makes the light levels a slight challenge, but this lens is *bright*. Stopping down to f/4 in these conditions is no problem. Later, when taking photographs inside, the architect will likely need to use the f/1.8 aperture, and this will introduce a very shallow depth of field. Again, this *limitation* can be an attribute or a detraction depending on how the effect is used creatively.

The 50mm lens most closely resembles our natural field of view that we see walking around. This will be great for taking exterior shots as *eye-level* perspective vignettes. These vignettes are so effective at giving the viewer an experiential quality, so important for making the project come alive. Again, the even brighter f/1.4 lens will be helpful for the interior vignettes. All other things being equal the wider the angle of the lens, then the more light comes through it and is mirrored onto the film plane. The 28mm allows more light than the 50mm lens, and the architect is glad for the extra two-third stops available on this 50mm lens. It could mean the difference between getting a low light shot at 1/30s, which is too hard to hold steady, and 1/60s. Since the architect forgot the tripod today and must hand hold, that brighter 50mm will come in very handy!

The 105mm will allow the architect to take detail shots of the historical cornice. It will help to catalogue the areas where repairs will be required. No need for a ladder on this trip. These shots can be taken from the street. It may be useful for the presentation board to convert some of these images into renderings that demonstrate why the client should keep the existing cornice for the new design. By the end of the site visit, the architect has exposed four rolls of film to drop off at the developer and picked up later that week, hopefully before the weekend, so that the renderings can be prepared before the client meeting at the beginning of next week.

Back to the present, you might be asking why did we go into so much detail about a historical artifact…the 1988 architect and a film camera? The digital camera mostly has the same physical limitations that are a function of the glass in the lenses. Further, while these lenses have been miniaturized to be placed in your phone, the principles remain the same. And, it turns out, that electronic modeling environments such as SketchUp, Blender and REVIT use the same terminology borrowed from photography in setting up the rendered perspective views. While Kodachrome is almost impossible to find, 35mm negative film stock and those who can develop it still exist. Used analog cameras are still available on used markets and lenses are adaptable for both analog and digital cameras. Does this seem like a good investment or hobby? You could do worse! It just may help your *eye* for making your renderings.

### Color Models

In the previous section, we discussed at length monochromatic rendering domains. As you may infer from above, any discussion of grayscale leads to a discussion of color models too. The physics of four color models were explored briefly for background. In this section, let’s apply this background to architectural illustration.

#### Tint, Tone and Shade

When you add white to a pure color the result is a **tint** of the original color. It can appear lighter in tone value. Try not to confuse this in the digital environment with *opacity*. The confusion arises, because in a multi-layered image with an underlayer of white, this can have a similar effect to adding white with pigments. Yes, it is possible to achieve the same effect this way. It may be better to be more deliberate in your *color design* by using opacity to blend layers and by using white color added to some other color to achieve an opaque tint.

**Tone** in the context of architectural illustration is the relative lightness or darkness of the pure color. The printing for this book is monochromatic, and this can make any discussion of color a challenge. When discussing tone, however, it is ideal for showing the effect in Figure 4.2. Three pure colors are preproduced in 1-inch (25mm) boxes and placed side by side. Red when desaturated to monochrome appears as a little less than 50% gray, or we might say *medium gray* tone. Green when desaturated is a little more than 10% gray, a *light gray* tone. Blue when desaturated is about 70% gray, a *medium-dark gray* tone. Each color has a *natural* or inherent tone in this context. Since we saw above how important tone-value is to the underlying reading of any illustration, then by implication we can say that color affects the tone-value mapping.

**Shade** is the inverse to tint, and black is added to a pure color. Just as with the discussion above about tint, it is possible to achieve a similar effect in a digital multilayer environment by changing what is called the layer blending mode. As you will learn, in *normal* blending mode, and opaque layer will completely cover up the layer below. If you change this to *multiply* mode as an example, then it will at once make the layer seem transparent and darken some shapes in your scene. Multiply mode is one of our best tools in digital illustration. It is important to consider this darkening attribute.

As a final consideration, mixing two or more pure colors will affect the relative tone value mapping as well. The color changes and so too does the percentage of perceptible tone value. As an example, try this *formula* in a digital program called GIMP: mix the pure color red on a top layer set to *LCh* blending mode and a second layer below of pure blue color also with the LCh blending mode and at the bottom of the layer stack. The LCh blending mode stands for Lightness, Chroma, and Hue. This demonstrates both the power of blending modes in a digital program and the not-so straightforward way colors blend in digital images. Remember that a red tone was about a 50% gray and a blue tone was 70% gray. Simple logic might imply that when mixing the two color tones, a grayscale value somewhere between 50% and 70% might result. When red is on top, this dark red color has a grayscale value of about 65%. Now, swap the order of the layers and place the blue layer on top. This new medium violet color has a grayscale value of around 50%! How did that happen? Layer order matters. Blending mode matters. All parameters are interactive and not as predictable as we might hope. Remember: tone value is the most important visual cue after strong shapes and the silhouette. This implies that when working digitally, it may be a good idea to periodically create a test layer that combines your layer structure onto one layer that you can desaturate. If it still reads effectively in monochrome, then you are on track.

#### Hue, Saturation and Lightness

Let’s seek just a little more precision in our language. Tone in different contexts can mean both a pure color and a color with a gray color added to it. This ambiguity can be confusing sometimes. Perhaps a better word is **hue**. Hue is the underlying base color. Looking at the table for 50% gray above, notice that the value for hue is 0.0. Gray has no hue. On the other hand, pure red has a value for hue of 0.0 also! In this context hue is measured in degrees of a color wheel circle. Red is at 0 degrees. Pure green has a hue value of 120 degrees. Pure blue has a hue of 240 degrees. Remember from geometry class that in this context Red could have a value of 0 and 360 degrees, because this circle is continuous. This implies that as we approach 360 degrees from below and clockwise or from above and counterclockwise, the hue is approaching the color red.

**Saturation** in this domain refers to the intensity of a color relative to pure gray (i.e., 50% gray) in some contexts, and white in other contexts as we will see. Again, we can use GIMP as our color laboratory and test our understanding. Start with a pure red by dialing in the RGB sliders with the following values: Red 255, Green 0 and Blue 0. Select the tab for HSV and grab the “S” slider. It reads 100 and is pegged to the right side of the scale. While dragging the slider to the left watch how the color changes and how the values of all the parameters change. What is the color when dragged all the way to the left at value 0? It is pure white!

While we are still in GIMP, let’s check out what happens when we shift the **value** scale. Here you can intuit what is meant by value. It is what we think of as tone-value for our rendering. In the absence of saturation, we are working solely with value, no matter what our starting hue was. Continue to shift the sliders at will, and you will gain a greater understanding of the system and the interactions between the three parameters of hue, saturation, and value.

### Geometric Transformation Two: Perspective Projection

In chapter three we learned about geometric transformation one: **parallel projection**. In order to draw the upcoming *Exercise Six. Perspective Projection and Tone Value Render of a Small Guest House*, we will need to learn more about perspective projection. Two systems will be presented here, and one is analog, the other is digital. You will learn later in this book that these two methods can be combined for the sake of efficiency. Before we do that, let’s discuss the foundational principles that underly perspective projection.

It is unlikely that you will ever learn the mathematical formula that underpins perspective projection. For our purposes it is enough to know there are four inputs. The first input is the three-dimensional (3D) coordinate position of a point that is projected onto a flat planar surface. A second input is the 3D position of a “camera.” The third input is the orientation or viewing angle of the camera. Finally, there is the 3D location of the flat planar surface relative to the camera. Confused yet? We have learned before that a complex system can be drawn and diagrammed to provide clarity.

<Insert Figure 4.3.1>

Figure 4.3.1: Orthographic Diagram of Setup for Four Perspective Inputs

#### Thumbnail Perspective Method

What may surprise you is that you have a lot of experience working this complex system out in a more direct method in your head. You probably are already pretty good at thinking and ultimately drawing in three-dimensional perspective. What follows is an adaptation of William Kirby Lockard’s “Direct Perspective Method.”

The method put forward here is intended as a lightning-fast freehand study method. Rigid drawings are used only to show the method clearly. If you get into ticking off and ruling lines you would be better actually to project the perspective. It will be more accurate and take only a little longer.

Students often take this simple method as a great new all-purpose perspective method, and use it to attempt the construction of city-scapes, or complex interiors. This is like attempting to play Beethoven’s Ninth on the harmonica. It is meant to b e a simple, relatively accurate, study tool, not a precise technique. (Lockard 1977, 16)

The Thumbnail Perspective Method involves at least three drawings. The method is self-correcting and depends on iterative redrawn perspective images. Each drawing is progressively larger and builds on a concept of mapping an architectural space onto an imaginary framework. This is the kind of book where it is OK to skip around. Please, look ahead to chapter eight and *Sketch K. Formal Precedent Study. Thumbnail Sketch to Contour Drawing*. It is important before proceeding to the electronic modeling method to read through Sketch K, so that you understand the analog process.

The imaginary framework is very simply stated: you are viewing another person or persons in front of you who is/are standing in front of and next to the leading edge (i.e., measuring line) of a cubic volume that measures ten feet (3 meters) square on all three axes. You are viewing the cube at an oblique angle, such that one face is more predominant than the other. This is known as a two-point eye-level perspective.

On a small piece of paper or in the center of your sketchbook draw a two-inch (50mm) square to mark the bounds of this small thumbnail sketch drawing. Somewhere near one third from the bottom edge and near one third of either the right or left side draw a silhouette of a small human figure, perhaps only ¼” (6mm) high. Draw a horizontal line through the eyes of your scaled figures and across the page at zero degrees and label this the horizon line. Assume this is five feet (1.5 m) above the ground. Double this height using your pencil or pen as a measuring device, and it yields the height of your cube at the measuring line. The predominant face of the cube will have a top line and bottom line with shallow angles that converge probably off the page. The subdominant face has top and bottom lines with slightly steeper angles that converge. In the dominant face, estimate that back edge line that *looks* like it would complete a square. Repeat this process for the subdominant face and understand that the subdominant back edge will be closer to the measuring line than the back edge of the predominant face due to different rates of convergence. If this is confusing, then let’s diagram this together in our sketchbooks.

<Insert Figure 4.3.2>

Figure 4.3.2: Thumbnail Perspective Method Setup: Drawing One of Three

Let’s call this first drawing a thumbnail. When completed, the cubic volume will be lightly drawn. As a reference measuring tool, an estimate of the scene of interest should be drawn to a resolution that clearly identifies the overall silhouette and additionally the major inner shapes of the architectural subject. Do not be too concerned if the proportions of shapes do not match perfectly what you see. We will build confidence and correction in the second drawing of the trio. The last step of the first thumbnail drawing is to identify the preferred compositional framing, presuming that you do not settle on the beginning square. With a red pen or pencil, lightly divide this compositional frame rectangle into three horizontal rows and three vertical columns. Like a muralist, we will use this nine-rectangle grid framework to transfer our shapes to the larger doubled size of 4”x4” (50mm x 50mm.)

In the second drawing we will redraw with any needed corrections and seek to resolve the proportioning of the major shapes, add the interior minor shapes and work on a tone-value shading of the scene in light. It is your choice to whether to repeat the cubic framework. I would continue to place human-scaled figures or silhouettes in this second drawing. The light and shadow study we do here will be intuitive. We will pick a direction of the light source, the sun, and identify planes that face toward the light (highlights) away from the light (shades) and planes that have a cast shadow onto them. This is still a relatively small drawing and won’t allow much detail or texture.

<Insert Figure 4.3.3>

Figure 4.3.3: Thumbnail Perspective Method Setup: Drawing Two of Three

The third drawing is in principle very similar to the second. Once again, we will redraw at a larger size. This time at roughly a 6”x6” (75mm x 75mm) bounding area. In the preceding drawings we settled on a composition, and so this bounding area will match the larger of the two rectangle dimensions. The final drawing should be considered a rendering. While it is desirable to have very light “lines” to layout the silhouette, major and minor proportional shapes, our rendering will make these lines disappear as we solely render the tone-value shapes. Select either the linear or Lambert tone value scale that we discussed. Map no more than seven different tone values from black for cast shadows through middle grays for planes in varying orientations away from the light source and to a highlight of white. Concentrate on your best rendering technique that minimizes texture in favor of flat soft washes of colored pencil.

The preceding three steps are specific to the tone value rendering method. It is no doubt easy to see how this three-step process would work for all perspective drawings including a contour line rendering. The only step that varies for this method is the third rendering step, which is dependent on your desired result. A color wash as the final rendering also can apply this direct perspective method.

<Insert Figure 4.3.4>

Figure 4.3.4: Thumbnail Perspective Method Setup: Drawing Three of Three

#### Electronic Modeling Method

One of the best tools for three-dimensional visualization is an electronic digital model. Some of these models can be created very intuitively and quickly. Others require painstaking and arduously long hours at the computer. The requirements for selecting one over the other are often a function of both the stage of the architectural design and client requirements for a presentation of the design. It is important for guarding your precious time that you do not fall in the trap of building a detailed computer model too soon. A much better use of your time on the computer is to build the very basics of a three-dimensional framework that allows you to do some previsioning and manipulation of the model to generate your preferred view. After this very quick modeling session it can be beneficial to “print” the framework to a reasonable size on paper and use an overlay technique of tracing paper refinements like the thumbnail perspective method. While it can be immensely enjoyable to create new virtual worlds like in a Minecraft (2021) game, you are well advised to avoid the indulgence of modeling too much detail and progress quickly to the rendering and visioning stages of architectural design.

One of the best pieces of advice about electronic modeling you can follow is the idea to work as “flat” as possible for as long as possible. What does this mean? Often the designer proceeds from a two-dimensional multi-view orthographic drawing such as a plan, section, or elevation. Working flat is the process of drawing rectangles, lines, and shapes without a “Z” dimension. This process is useful because most electronic modeling programs are *sticky* and ambiguous in the representation of depth! What does that mean? Geometries are welded together at vertices. When you try to move a line segment to a new position, it can have many unintended stretching consequences. Additionally, when we view space from a non-orthographic *perspective* our relationship to the depth that we see may be intuitively obvious to us, and the computer does not share our intuition. The software developers have embedded inferences about intersecting geometries that can sometimes be helpful. On the other hand, it can be exceptionally frustrating when the computer gets it *wrong*! Therefore, work for as long as possible while managing only two dimensions. When it is time to push and pull your geometries into the z-axis, then it will be an exceptionally satisfying experience. But wait…there’s another thing to do before that.

Since geometries tend to be joined at vertices resulting in unintended stretching, each program you will encounter has some method of grouping elements together into systems. You are well advised to be profligate in your use of these groups. This is powerful modeling, and the pros make excellent use of this kind of *templating* of components. The following table is a guide to some common terminology for you to research and learn the basics of making groups or components:

|  |  |
| --- | --- |
| Program Name | Element Name |
| AutoCad | Block |
| REVIT | Family |
| SketchUp | Group, Component |
| Blender | Group |
| Maya | Group |

Here are some final thoughts about the electronic modeling method. It is much easier to create any view that you desire, and this can have some unintended consequences. Extreme perspective distortion can be very exciting, and when it is not a deliberate choice of the designer, it can also be very distracting to your focus on the design. Here are a few reminders from an earlier discussion about photography. Our most frequent view of an object is from a standing eye-level perspective, usually about five feet (1.5 meters) above the ground and with a 50mm lens. This view will challenge you, because it often does not allow you to include *everything* that you have modeled. Maintaining this view is a good discipline, and if you are wanting to show more distortion, then have a very good reason for that view and be deliberate in your purpose (e.g., contrast, tension, dynamics, juxtaposition, etc.) Additionally, use the computer as a tool. Model only the bare basics of what you need for the purpose. As an example, in the next assignment you will be asked to model a guest house electronically. Our main purpose here is to use the computer as a tool to define and *design* the sun and shade patterns. You only need the basic cubic volumes. No materials are needed. No textures are needed. This is often referred to as a clay model rendering, which owes its namesake to the physical modeling material clay. Two main advantages come from this decision to be minimalistic in your approach: it takes far less time for you to model, and it takes far fewer resources for the computer to render the desired image. Always remember that the goal is a tone value rendering. The software can make this task both harder and easier. The choice is yours!

## Exercise Six. Perspective Projection and Tone Value Render of a Small Guest House

### Introduction

A “perspective” is a non-orthographic three-dimensional drawing, and the view often resembles what we observe and can photograph. The perspective view we are going to draw uses an electronic model method, which can be contrasted to a mathematical analog method we will learn later. In a perspective, parallel lines converge to vanishing points. These drawings are useful throughout all phases of the visualization process of design and are easily constructed using varying methods.

<Insert Figure 4.4>

Figure 4.4: Exercise Six. Perspective Projection and Tone Value Render of a Small Guest House

### Learning

This assignment module contributes to the following design learning outcomes, which finish the sentence “As a successful student in this course, I am now able…”

* … to analyze a field sketch of a built environment condition and synthesize that information by modeling the conditions in a three-dimensional visioning program.
* … to transform parameters within an electronic computer model and simulate the influence of highlight, shade, and shadow.
* … to visualize the built environment in a tone-value rendering using dry media techniques.

As mentioned in Exercise Five Axonometric Projection Contour Model of a Small Guest House, electronic modeling is an attractive and fun drawing to make. It may take a significant amount of time to model every screw. Thankfully, we only need to model the major forms of our guest house.

Modeling with exact dimensions…is the best method…. You need to determine the level of detail that should be included in your models…. Excessive detail is usually unnecessary, and it will slow you down. (Brightman 2013, 332–33)

A tone-value rendering maps shapes to at least three types: highlights, shades, and shadows. Since tone-value is an important visual cue that allows us to understand the representation of a three-dimensional object on a two-dimensional surface, then it is a valuable image to describe the form of an object. The relationships between light and dark are well understood by the viewer because one encounters the interplay of light and dark shapes on objects due to the influence of a light source, such as the sun. This illusion works well unless the tone-values are ambiguously mapped and show too little clear distinctions between the implied planes. Therefore, when translating from observed three-dimensional phenomena onto a two-dimensional surface, artists and illustrators can confidently convey the shared experience we have moving around in space and interacting with visual objects.

The value key or tonality…is the first impression received and immediately engenders an emotional reaction irrespective of the subject matter or composition. It must be remembered that we react to light in a very primitive manner…the intensity of light reflected to the eye determines the primary emotional response. White, gray, or black surfaces reflect varying amounts of light, each creating a distinctly different mood in the observer. (Graves 1941, 129)

### Materials

* Colored pencil (i.e., black.)
* Trimble SketchUp
* 12x18 (305mm x 457mm) sheet

### Steps

1. Begin by creating a simple model in SketchUp.
2. Construct the model from the sketch provided and position the final point of view looking at the same corner as the sketch.
3. Setup the shadow positions within the model to provide the most aesthetically pleasing interplay of sun-shade-shadow composition.
4. After completing the model, print to letter-sized paper at a size roughly equivalent to your other drawing.
5. Lay the 12“x18” (305mm x 457mm) vellum sheet over the printed model and render with a black colored pencil, using a tone-value method (i.e., no line work allowed!)

### Criteria

| DLO | Advanced (4 pts) | Proficient (3 pts) | Developing (2 pts) | Beginner (1 pt) |  |
| --- | --- | --- | --- | --- | --- |
| Craft | Illustrator demonstrates exemplary attention to work product and excellence. | Illustrator demonstrates good attention and care towards work product. | Illustrator completes work, but the product seems rushed to completion. | Illustrator demonstrates attention towards work product, but work quality is |  |
| Rendering | Illustrator uses tone value to represent the interplay of light on volumetric forms. Image is controlled and evokes both power and subtlety. Image is descriptive and/or symbolic and supports compositional goals. | Illustrator's tone value work demonstrates several professional attributes. Rendering style does not distract the viewer and generally supports compositional objectives. | Illustrator's use of tone value is somewhat effective. Rendering style is consistent and competent. There are some non-contributing attributes. | Illustrator attempts to use tone value descriptively. Rendering is inconsistent and lacks attention to craft. |  |
| Technical | Modeler observes and analyzes object data and translates it to a meaningful electronic model representation. Professional conventions are followed, inclusive of view selection, accurate translation of field notes and light source selection | Modeler observes and analyzes object data and translates it to a meaningful electronic model. Most professional conventions are followed, and some information is missing. | Modeler is challenged to observe and analyze field sketch correctly in the electronic model. Few professional conventions are followed, and some information is missing. | Modeler attempts to observe and analyze field sketch and representation is inconsistent. Professional drawing conventions are not followed. |  |
| Professionalism | Student completes the work on time. Work demonstrates exemplary attention to learning objectives. | Student completes the work on time and demonstrates a good work ethic. | Student generally completes the work at a minimum level of expectation. | Student is missing parts of the work and makes a plan for completion of the remaining assignment. |  |

### Related Assignments

* Sketch D. Field Sketches of Two Exterior Elevations of Large Buildings
* Exercise Five. Axonometric Projection Contour Model of a Small Guest House
* Exercise Seven. Interior Construction Drawing. Floor Plan and Interior Elevations

### References

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