Shadows are easier than they look - so much so that drawing one in perspective can be reduced down to drawing three sides of a triangle. In this chapter, we’ll discuss shadows in more detail – we’ll first go over how shadows work, then we’ll move on to the four lighting conditions used in perspective. From there, we’ll talk about how to cast a shadow from a floating object, how to handle cutouts, and what happens when you cast a shadow on a vertical surface. We’ll conclude the chapter by learning how to cast shadows from cylinders and spheres.
Shadows add drama and mystery to your work. They help describe form and they imply a specific light source. A well-planned shadow is a useful compositional tool. To understand how shadows work in perspective, we first need to go over how shadows are formed, and define the four different kinds of light.

**Shadow Setup Basics**

We get a shadow when an object blocks the path of light as it travels away from its source. The shape of a shadow is determined by the angle of light, the shape of the object in its path, and sometimes the surface upon which the shadow is cast. Let's examine these ideas in more detail:

**Light Source** – The location where light originates. In perspective, there are four ways of describing light: positive sun, negative sun, parallel sun, and radiating (artificial) light. We'll talk about these soon.

**Shadow Vanishing Point (SVP)** – A specific point directly below or above the light source. It acts as the vanishing point for our shadows. Its location is determined by the type of light source being used.

**Light Angle** – The angle or direction the light is moving in as it travels away from the source. The light angle determines the length of the shadow.

**Cast Shadow** – A shadow projected onto an adjacent surface by a form.

To understand how this works in perspective, let's examine a simple pole, its shadow, and a light source, shown below.

Shadows are created by how the light source, light angle, and subject matter interact. The light source will always intersect the top of your form.

The position of the shadow vanishing point (SVP) along with the position of the bottom of the object determine the path of the shadow’s direction. The light angle defines the length of the shadow.

The light source and the SVP will always align vertically.
The general setup for casting shadows is a simple one. While there are a few variables, you’re ultimately managing three different lines that together make up a triangle drawn in perspective. The one constant will be the need to keep your light source and the shadow vanishing point (SVP) aligned vertically. As we move forward, remember that you’ll always fundamentally be drawing a version of one of these three triangles:

Casting shadows can be reduced down to plotting out triangles in space. You’ll either be drawing a triangle coming towards you (left), parallel to you (center) or moving away from you (right). You’ll use this method even when casting shadows from elliptical forms.

With the shadow setup, where you place your light source and shadow vanishing point are key. The light source will always intersect the top of your form, creating the light angle. The steepness of that angle will define the length of the shadow. The shadow vanishing point, in tandem with the bottom of your form, dictates the path of your shadow’s direction.

**Thinking about Light**

In perspective, light is divided into two broad categories – natural and artificial light. These categories are a bit misleading. When a light source is anything but the sun, it’s considered to be artificial light. This is really all about distance – a candle’s light, while natural, is much closer to our subject matter. The sun, on the other hand, is almost 93 million miles away. When the faraway sun isn’t our light source, the rules for drawing shadows change.

The height of your light source strongly affects the mood your work will convey. When a light source is high above our subject matter, it creates short, abrupt shadows. As a light source gets closer to eye level, cast shadows become long and gradual. This holds true whether the light source is natural or artificial.

The placement of your light source determines a shadow’s orientation. For instance, when the light source is placed behind the viewer, shadows will move back toward the horizon. When the light source is in front of the viewer (and behind the subject matter) shadows will move toward the viewer.

The four lighting conventions used in perspective specify placement more fully. Let’s have a look.
The Four Shadow Types in Perspective

Positive Sun – when the sun is in front of the viewer.

This position creates cast shadows that are in front of the object, moving toward the viewer. In a drawing, the light source is placed above the horizon line and the shadow vanishing point is directly below it on the horizon line. Since shadows move toward the viewer, pay careful attention to how high you place the light source. If it’s too low, you’ll create unnaturally long shadows that could creep out of the cone of vision.

Positive Sun

- The light source is in front of the viewer but behind the object
- The light source is above the horizon
- The SVP is directly below the light source on the horizon line
- All shadows move toward the viewer

More Examples of Positive Sun
Parallel Sun – when the sun's rays are parallel to the picture plane.

This creates perfectly horizontal shadows. Since light is traveling parallel to the picture plane, there's no shadow vanishing point or light source indicated on the page. Shadows always run parallel to the horizon line. Once the angle of light is defined, it's used consistently throughout the image – all light angles are parallel to each other.

- The light source and SVP are not indicated
- All light angles are parallel to each other and the picture plane
- Shadows move parallel to the horizon line

More Examples of Parallel Sun
**Negative Sun** – when the sun is behind the viewer.

Here, cast shadows move away from the viewer toward the horizon. While it's counterintuitive, when constructing shadows from a negative sun we place the light source below the horizon and the shadow vanishing point directly above it on the horizon line, as shown. After that it's business as usual – the SVP still goes through the base of the form, and the light source still intersects the top.

- The light source is behind the viewer
- The light source is placed below the horizon
- The SVP is located on the horizon line, directly above the light source
- Shadows move back, toward the horizon

**More Examples of Negative Sun**
Artificial (Radiating) Light – when the light source is closer than the sun, it’s treated as artificial light.

Shadows will radiate around the shadow vanishing point. The difference here is that the SVP is placed on the ground plane directly below the light source, not on the horizon line.

- The light source is physically close to your subject matter
- The SVP is directly below the light source on the ground plane
- All shadows converge towards the SVP

Where you place the shadow vanishing point dictates the length and direction of each shadow. The closer the SVP is to the horizon line, the further away the light source is. The only difference between these two pictures is the placement of the shadow vanishing point.
Because our light source is close to us, we can have objects that are behind it. That’s not the case with the sun. With artificial light, the shadow vanishing point is our way of establishing how close the light source is to our subject matter. Where you place the SVP affects what your shadows end up looking like.

**Drawing the Four Shadow Types**

Now that we’ve discussed the basic shadow setup and explained the four lighting conventions, it’s time for action. The trick to drawing an accurate shadow is to treat the process as a collection of vertical poles. If you can accurately cast a pole’s shadow in each of the four lighting conditions, you’re ready.

Whatever kind of shadow you’re drawing, the process will be the same. Lines from the SVP run through the bottom corners of your form. Lines from the light source run through the top corners of your form, continuing until they intersect the lines from the shadow vanishing point. These intersections, taken together, create the shape of the cast shadow. It’s that easy.

No matter what kind of shadow you’re drawing, the method is always the same.

It’s important to know that when drawing a box, you don’t need to plot out each corner. Remember that parallel lines all converge to the same vanishing point. As you draw your shadows, use the regular vanishing points as the VPs for the horizontal edges of your form. Use the SVP as the vanishing point for your vertical edges. If this is confusing, the following diagrams should clear things up.
Here’s how to draw a cast shadow in positive sun. This places the light source behind the object and in front of the viewer.

Start by drawing the form. Place the shadow vanishing point on the horizon line. From the SVP, draw lines through the outside bottom corners of the box. We’ll use the box’s vanishing points to define the rest of the shadow.

Next, establish the light source. Remember, it’s always somewhere directly above the shadow vanishing point. From the light source, draw lines through the top outside corners of the box, continuing until they intersect the lines drawn from the SVP. Next, draw lines from the box’s VPs through these intersections as shown. To finish, connect the intersections to the outside corners of the box.
Next, we'll draw a cast shadow from parallel light. Here, the light source runs parallel to the picture plane.

Because shadows from parallel light don't move back in space, there's no need to indicate the light source or SVP. Start by drawing the form, then draw horizontal lines from the near and far bottom corners as shown.

With parallel light, the light angles are drawn parallel to each other. From the light source, go through the top near and far corners of your box, stopping when they intersect the two lines from the SVP. Draw lines from the VPs through the points created by the intersections between the light source and lines from the shadow vanishing point. Finish the shadow by drawing lines from the intersections to the near and far bottom corners of the box.
Now we'll cast shadows from a negative sun. This setup places the light source somewhere behind the viewer.

When casting shadows from a negative sun, the light source is placed below eye level. The SVP is directly above it on the horizon. Start with the form and shadow vanishing point. Draw lines from the SVP through the box's outside bottom corners.

Place the light source below the horizon line. The closer it is to the horizon the longer your shadows will be. From the light source, go through the top two outside corners of the form. Find the intersections on the ground plane, then draw lines from the vanishing points through the intersections to define the shadow.
By now it should be pretty clear how shadows are drawn. As we move towards explaining how to cast shadows in artificial light, remember that there's one key difference. Because the light source is close by, we need to place the shadow vanishing point somewhere on the ground plane. Outside of placing the SVP on the ground plane, you should find the drawing process to be the same.

1

Next we'll cast a shadow from artificial light. Since the light source is close to our subject matter, the SVP is no longer on the horizon line.

Draw your forms and place the SVP on the ground plane. The farther away the SVP is from the horizon line, the closer the light source is to the viewer. From the SVP, draw lines through the bottom corners of your forms.
Next, establish the light source directly above the shadow vanishing point. From the light source, draw lines through the top corners of your forms, ending where they intersect the lines from the SVP. To complete the shadow, connect the dots and bring them to the outside bottom corners of the shape as shown.

The chapter continues into more complicated territory. Here’s what you’ll find in the next 20 pages:

- **Shadow Cutouts** (how to manage ‘holes’ in your shadow)
- **Shadows from Floating Objects** (in positive, parallel and negative light)
- **Shadows on a Vertical Surface**
- **Shadows on a Raised Horizontal Surface**
- **Shadows on an Angled Surface**
- **Shadows cast from one wall to another**
- **Shadows from a Sloping Object**
- **Shadows from Cylinders**
- **Shadows from Spheres**