

Dennis Lee Brown



Creating Cast Shadows

*Light and An
Opaque Object*

**It is a critical part of
any drawing or
painting composition
that all its' objects
and/or subjects
indicate light and
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Creating Cast Shadows

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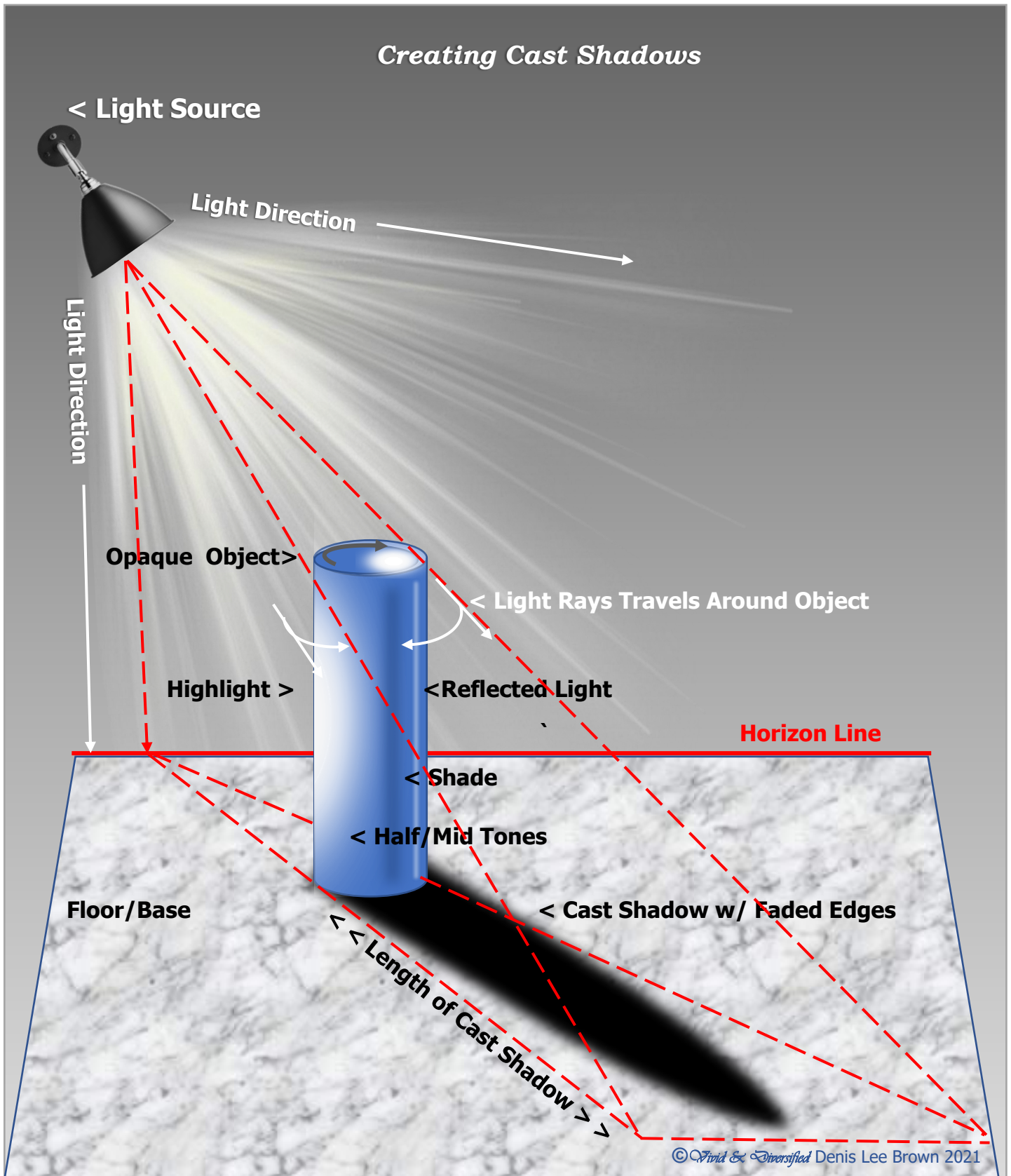
Light Front Left

Light Left Side

Light Source & Opaque Object

Creating Cast Shadows

There are two types of shadows. Form shadow is a shadow caused by the planes turning away from the light source. A cast shadow is caused by one structure blocking the light from hitting another object or thing. Example: A wooden block hinders the light from reaching the part of the table right behind the opposite side of the block. An object's cast shadow is the object's adjacent shadow in which its outline is distorted (softened/burred). A cast shadow is distinguished from a core shadow in that it is slightly brighter, and its edges are softer the further it gets from the object.



Graphic 1: Illustration of Light Source & Opaque Object

It is a critical part of any drawing or painting composition that all its' objects and/or subjects indicate light and shadows. The shaded side of the items in a drawing or painting depends on where its light source is found in the picture. Because "light rays" hitting an opaque object, is the factor that creates the "cast shadow" which lies on the base of the opposite side of the illuminated side.

When light hits an object, and as it travels passes it, if it is opaque (impenetrable), the light traveling goes around it (passes by) and the light is blocked directly behind the object. That area has no direct light, creating a dark area, described as a "cast shadow".

To calculate the length and direction of a cast shadow, follow the steps described in the sequences of illustrations shown below. Further examples of how cast shadows work show you what happens in a variety of lighting and compositional situations. Knowing how to do this is useful when you are drawing from your imagination or when cast shadows are obscured by objects you don't want to include in your picture.

Calculation Instructions:

To calculate the length and directions of a cast shadow, first,

- *locate the light center of the light source,*
- *then locate the point directly beneath the light on the surface (plane) receiving the cast shadow.*
- *Make a mark of the imagined point of contact.*
- *(When the sun (light) is close to the horizon, the horizon is the point of contact.)*

Light & Cast Shadows		
	<i>Light Direction</i>	<i>Cast Shadows</i>
1	Directly overhead	The base of the object
2	Overhead left of center	Shadow cast to the lower right
3	Overhead right of center	Shadow cast to the lower left
4	Directly in front of the object	Shadow cast behind an object
5	Directly behind object	Shadow cast in front of an object
6	Overhead left & right	2 Shadows casted left & right
7	Directly center-left side	Shadow cast directly left
8	Directly center-right side	Shadow cast directly right
9	Flood on the left	Shadow cast behind up to the right
10	Flood center front	Shadow cast directly behind and up
11	Flood on the right	Shadow cast behind up to the left

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Graphic 2: Light Source Direction & Cast Shadows

If the light source is central to a group of objects, all the cast shadows will radiate from that central point. The cast shadow will be created by the passing light at a different position in the layout.

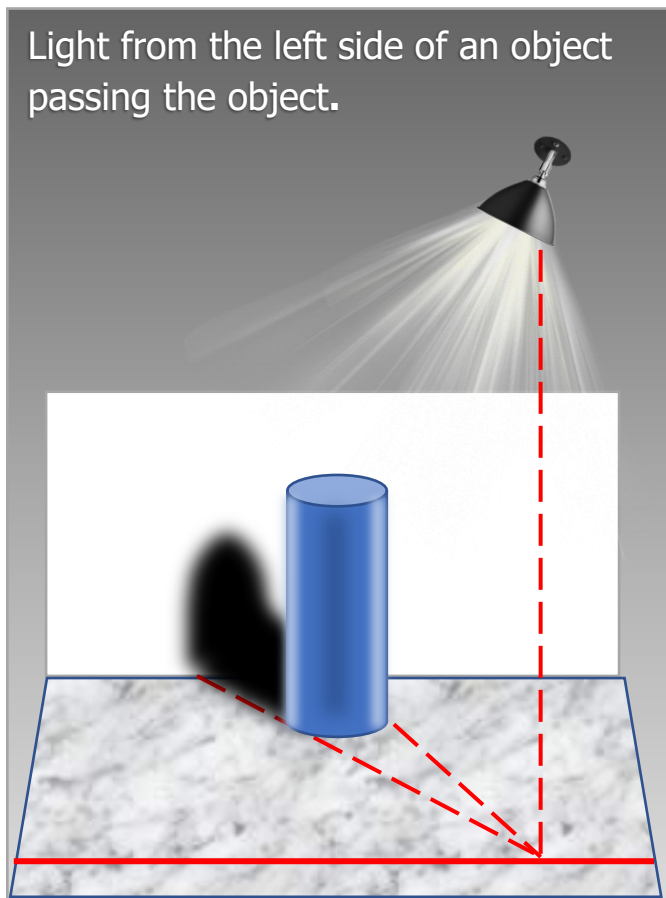
When the light source is off the page, its position must be imagined calculating the length and direction of cost shadows within the picture.

Notice how a cast shadow can be calculated even when the surface receiving it changes direction.

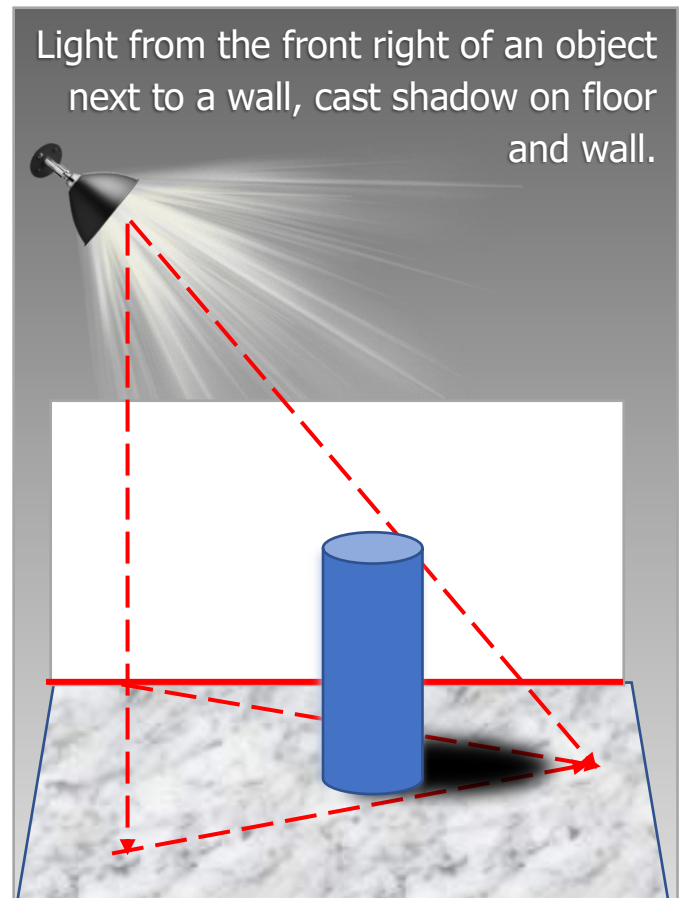
To find a point along the perimeter of the cast shadow, draw a vertical line from the point on the object you want to locate to the ground beneath it. (In the first of these examples, the tree trunk is the vertical line and the top of the tree the point we want to locate.) Then draw lines from the light source and the point beneath the light source (you may have to imagine the exact location of this point on the ground) through the top and bottom of this vertical line. Where these lines cross will be that particular point in the cast shadow. This helps locate the corners of cubes in cast shadow or the shadows of floating objects, and in plotting the cast shadows of curving objects.

Light & Cast Shadow Variations

Calculate each object separately depending on where the light source is, and where the object is located in the composition.



Graphic 4: Variant 1 - Light in front of an object to the right



Graphic 3: Light Left side of the object.

To calculate the length and direction of a cast shadow, follow the steps described in the sequences of illustrations shown below. Further examples of how cast shadows work show you what happens in a variety of lighting and compositional situations. Knowing how to do this is useful when you are drawing from your imagination or when cast shadows are obscured by objects you don't want to include in your picture.

- 1.** To calculate the length and direction of a cast shadow, first locate the center of the light source, and then locate the point directly beneath the light on the surface (plane) receiving the cast shadow. Make a mark on the imagined point of contact. (When the light source is close to the horizon, the horizon is the point of contact.)
- 2.** From this mark, draw lines through the outer edges of the portion (objects' base) of the object touching the ground. This will give us the direction and width of the cast shadow. (Treat the object as though it were transparent to locate the edges on the backside.)
- 3.** Length of the Cast Shadow - Draw lines that start from the center of the light source, touch the top of the object, and continue until they intersect with the lines that define the edges of the cast shadow. Where these lines meet marks the length of the cast shadow.
- 4.** Place the cast shadow on the ground (floor) within these lines.

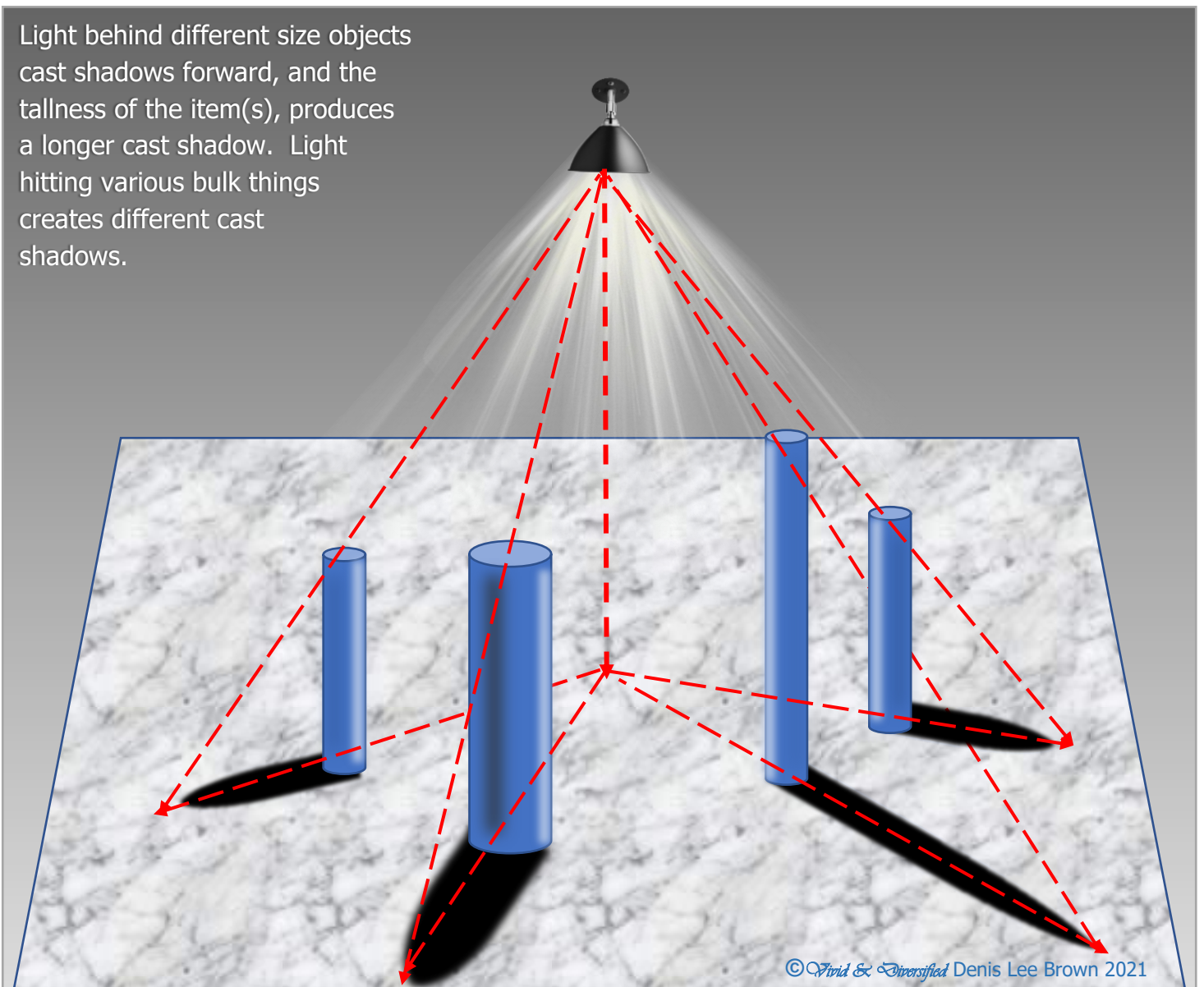
NOTE: The cast shadow of each object in laying out the composition is carefully calculated separately, and it becomes part of the overall drawing arrangement.

To find a point along the perimeter of the cast shadow, draw a vertical line from the point on the object you want to locate to the ground beneath it.

. (In the first of these examples, the blue cylinder is the vertical line and the top of the cylinder the point we want to locate.)

- Then draw lines from the light source and the point beneath the light source (you may have to imagine the exact location of this point on the ground) through the top and bottom of this vertical line.
- Where these lines cross will be that particular point in the cast shadow. This helps locate the corners of cubes in cast shadow or the shadows of floating objects, and in plotting the cast shadows of curving objects.

Light behind different size objects cast shadows forward, and the tallness of the item(s), produces a longer cast shadow. Light hitting various bulk things creates different cast shadows.

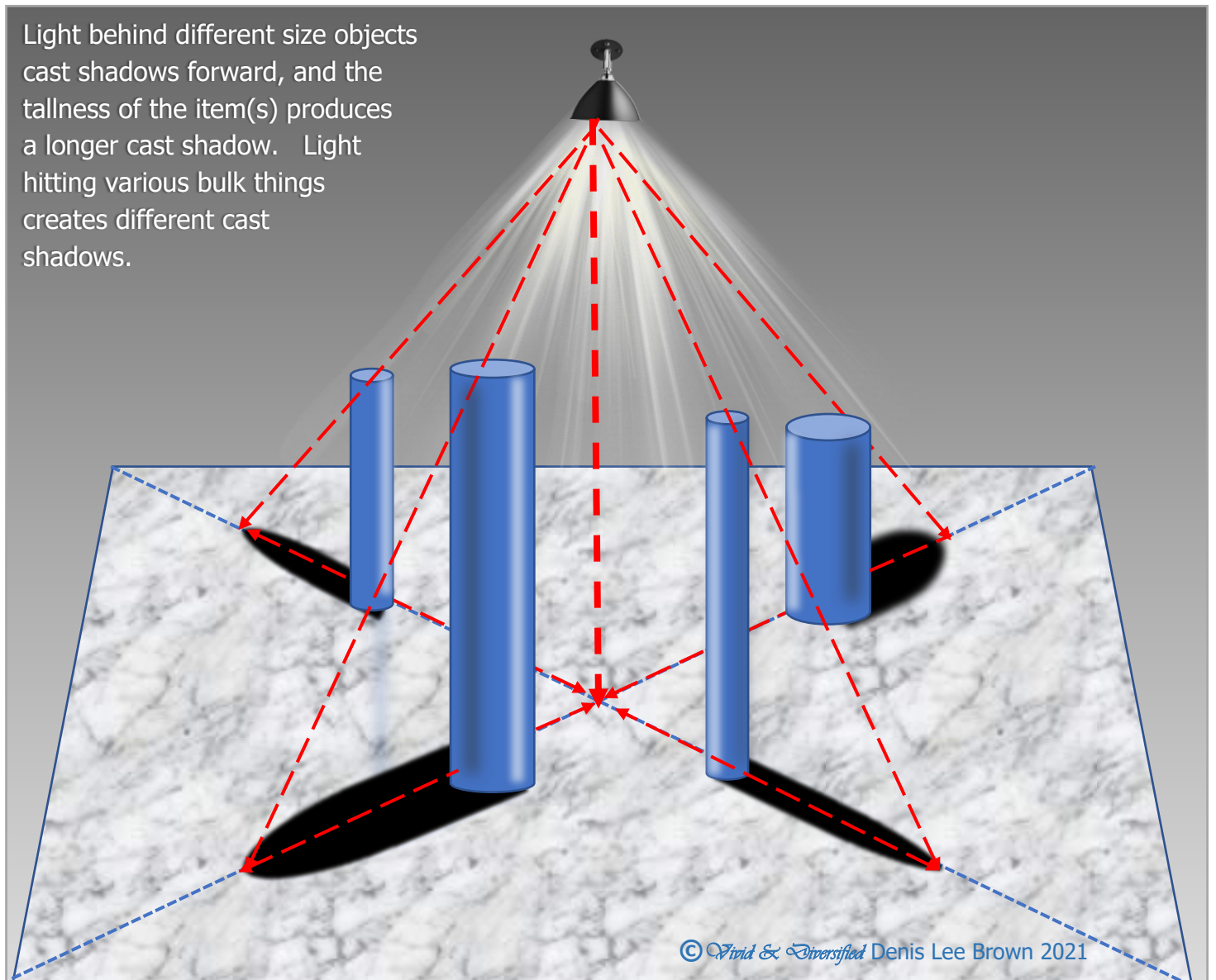


Graphic 5: Different Size Object & Cast Shadows

The cast shadow of each object in a composition is calculated separately.

If the light source is central to a group of objects, all the cast shadows will radiate from that central point outwards.

The umbra (Latin for "**shadow**") is the innermost and **darkest part of a shadow**, where the light source is completely blocked by the occluding body. An observer within the umbra experiences a total eclipse.



Graphic 6: Central Light & Cast Shadows



About the Artist

DENNIS LEE BROWN is an artist of exceptional talent in the art of fine drawing in graphite, charcoal, and pastels, along with that he has completed numerous paintings in oils and acrylics.

Dennis Lee Brown is an artist of exceptional talent with over 55 years of experience in the art of fine drawing in graphite, charcoal, and pastels. Along with that, he has completed numerous drawings of graphite, pastels, and charcoal. Along with paintings in oils and acrylics. Dennis is the author of various art instruction materials and books and the author of “Drawing Techniques”, “Graduate Blending Part 1 & Part 2”, and many others. He has provided art instruction in private school and well as an art tutor in his community.

Mr. Brown is the architect and administrator of several websites including:

Online Presence

- **Art Tutoring Website**

<https://artistdennisleebro.wixsite.com/arttutoring>

- **Pinterest Art Gallery**

https://www.pinterest.com/artistdennisleebrown/_created/

- Creations

https://www.pinterest.com/artistdennisleebrown/_created/

- Life-Like Portraits

<https://www.pinterest.com/artistdennisleebrown/portrait-drawings-by-dennis-lee-brown/>

- Pinterest Showcase

<https://help.pinterest.com/en/articles/showcase>

- Art Tutoring

<https://www.pinterest.com/artistdennisleebrown/learn-to-draw-anything-you-want-art-tips-tutorials/>

Drawing Blossoms

<https://www.pinterest.com/artistdennisleebrown/drawing-painting-floral-blossoms-in-acrylics-graph/>

- Abstract Art

<https://www.pinterest.com/artistdennisleebrown/dennis-lee-brown-works-of-abstract-art/>

- **YouTube Art Channel**

<https://www.youtube.com/channel/UCLD49p6jVFKbDzNIkyywyJA/videos>

- YouTube Video Bio

https://www.youtube.com/watch?v=LwHyKAM_hk8

- Drawing Techniques Video

<https://www.youtube.com/watch?v=CZLqw8ZCpK4>

Additional Websites:

- Linda's Headbands & Accessories
<https://www.lindasheadbands.com/>
- Ministry Website
<https://thepropheticwordsa.wixsite.com/thepropheticword>
- Growing Plants - *Plant Care & Information*
<https://dennisleebrowncrea.wixsite.com/dennisplantgarden>

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