Chapter Six: Space

CHAPTER OVERVIEW

- Space and Mass
- Three-Dimensional Space
- Two-Dimensional Space
- Linear Perspective
- Other Means of Representing Space
- Distortions of Space and Foreshortening
- Modern Experiments and New Dimensions

Works in Progress
Peter Paul Rubens’s Kermis

The Critical Process
Thinking About Space: Michael Scroggins and Stewart Dickson, Topological Slide

CHAPTER OBJECTIVES

This Chapter Will:
- introduce the element of space
- define elementary concepts of relating to space
- describe the many techniques artist use to suggest the illusion of three-dimensional space on a flat surface
- introduce necessary terms for understanding actual space and the space artists address
- explain different types of perspective, their application and function

KEY TERMS

<table>
<thead>
<tr>
<th>shape</th>
<th>overlap</th>
<th>oblique projection</th>
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<tr>
<td>mass</td>
<td>picture plane</td>
<td>position</td>
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<td>three-dimensional</td>
<td>vanishing point</td>
<td>monocular</td>
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<td>space</td>
<td>vantage point</td>
<td>binocular</td>
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<td>two-dimensional</td>
<td>frontal</td>
<td>foreshortening</td>
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<tr>
<td>space</td>
<td>diagonal</td>
<td>cyberspace</td>
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<td>negative shape</td>
<td>axonometric</td>
<td>hyperspace</td>
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<td>negative space</td>
<td>projection</td>
<td>verisimilitude</td>
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<td>figure-ground reversal</td>
<td>isometric</td>
<td>virtual reality</td>
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<td>reserve</td>
<td>diometric</td>
<td>one-point linear perspective</td>
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<tr>
<td>scale</td>
<td>trimetric</td>
<td>two-point linear perspective</td>
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LECTURE AND DISCUSSION TOPICS

1. What is Space? Einstein’s Theory of Relativity

Question: What discovery affected our concept of space at the beginning of the twenty-first century? 

Answer: Albert Einstein's theory of relativity caused major revolutions in physics and astronomy. Einstein’s theory introduced to science the concept of "relativity"—the notion that there is no absolute motion in the universe, only relative motion—thus superseding the 200-year-old theory of mechanics of Isaac Newton. Einstein showed that we reside not in the flat, Euclidean space and uniform, absolute time of everyday experience, but in another environment: curved space-time. His theory played a significant role in advancing physics to the nuclear era, and revolutionized our view of cosmology, with its predictions of apparently bizarre astronomical phenomena such as the big bang, neutron star, black hole, and gravitational waves.

What does all that have to do with art? Einstein’s theory taught us that space is fluid and takes place in time. For traditional artists, the manipulation of the elements of art to create the illusion of three-dimensional space on a two-dimensional picture plane was essential to their work. Modern and contemporary artists embraced the basic premise of Einstein’s theory and often distort it in a denial of verisimilitude. Similarly, artists working in three-dimensional media either choose to create actual three-dimensional objects that cause the viewer to interact with them in real, three-dimensional space or challenge our perceptions of real space.

2. Making Space, Visually Speaking...

When an artist draws a simple shape on paper—a square, a circle, any shape—they have really created two things: the shape, and the space that surrounds it. Usually, the space surrounding a shape becomes the background and pushes the shape into the foreground (see Richard Diebenkorn’s Woman in Chaise, fig. 131). When an artist begins to draw larger shapes on the same paper, these new shapes appear closer. (see Donald Sultan’s Lemons, fig. 125). If shapes overlap one another, then the artist is working with "illusory space." Methods for creating this sense of depth, or space, include the overlapping altering an object’s size, rendering detail, or altering color intensity. (see Caspar David Friedrich’s Woman in Morning Light, fig. 132).

3. Three-Dimensional Space

Barbara Hepworth’s Two Figures (fig. 129) are two standing vertical masses, which occupy three-dimensional space like standing human forms. Hepworth has also carved out negative spaces that acquire a sense of volume and form by means of the mass that surrounds them. A characteristic of three-dimensional art is that we encounter it in a physical way that is different than two-dimensional art. We must walk around, through, close to, or far away from three-dimensional works to truly relate to them. Because they take up space, just as humans do, three-dimensional sculptures often seem more impressive and commanding. Other three dimensional forms create space, as seen in the photograph of the interior of the Musée d’ Orsay (fig. 128). Have students consider space from another perspective that we rely upon it for shelter and storage.
4. Perspective
A complex method of creating the illusion of actual space on a flat picture plane is known as perspective. Perspective was known to the Greeks and Romans but not mathematically codified until the Renaissance. It allows the picture plane to function as a window to a scene. To understand the ability of perspective to create space, compare the use of perspective in Leonardo da Vinci’s *The Last Supper* (figs. 136 and 137) to the lack of perspective in Matisse’s *Harmony in Red (The Red Room)* (fig. 155). To further student’s understanding of linear perspective, see figures 133 and 140 in the text for explanatory diagrams of this system. Encourage students to manipulating perspective diagrams in the companion CD-ROM.

4. Distorting Space for Reality
The stereoscope, an offspring of photography, was invented in the 19th century. The concept was to use two photographs side by side to imitate the binocular vision of actual vision, or human eyesight. *Man with Big Shoes* (fig. 151) is an example of a stereoscopic card that not only creates the illusion of three-dimensional space by mimicking binocular vision, but it also exemplifies foreshortening. Foreshortening is used mainly in figurative work to make up for the lack of space seen in the picture plane between the objects in the foreground and those in the background. Illustrate a less extreme version of foreshortening with Phillip Pearlstein’s *Model on Dogon Chair, Legs Crossed* (fig. 153).

5. Verisimilitude or Not?
In the modern era, artists have often intentionally violated the principles of perspective or verisimilitude (apparent visual truth) in an effort to better equate the three-dimensional image with the two-dimensional surface. In Henri Matisse’s *Harmony in Red (The Red Room)* (fig. 155), the artist has eliminated almost any sense of three-dimensionality by uniting the different spatial areas in one large field of unified color and design. The wallpaper and the tablecloth are the same fabric, objects appear overly large, shapes are repeated, and the tree trunks beyond the room repeat wallpaper pattern with the room. In fact, the window can be viewed either as a window or a painting on the wall. In traditional painting, the frame functions as a window; now the window has been transformed into a frame. View other works by Matisse at *Henri Matisse at the Web Museum in Paris* to further the discussion of Matisse’s union of space and plane.

In another example of intentionally confusing space, Cézanne’s Mme. *Cézanne in a Red Chair* (fig. 156) is deliberate in its lack of three-dimensional depth. Cézanne has avoided certain conventions that would allow depth to be implied in favor of integrating ideas of pattern and flat space into the work. In doing so, he suggests that accurate description of the scene is not as important as the design of the canvas and the activity of painting itself. We are not looking so much at a portrait of his wife as we are a play of pattern and color. Cézanne has used this approach to organize the composition into dynamic relationships. The painting results in an animated image of a potentially static subject. Ask students how they respond to the works of Cezanne and Matisse?

5. Space Today
Multi-media technology, including video and computer technology, has made it possible to create artificial environments that a viewer experiences as real space. Cyberspace,
hyperspace, and virtual reality are becoming increasingly viable representations of reality. A viewer can seemingly navigate through a world of actual space that is completely computer generated. Ask students how our traditional notions of space are challenged with this new technology. Should we redefine our notion of space?

CRITICAL THINKING: More Opportunities to Think About Art
Several artworks are detailed in the Critical Thinking and Works in Progress features found in this chapter. In addition, diverse opportunities for studying these works are located on the Companion Website and Companion CD-ROM.

1. Works in Progress: Peter Paul Rubens’s The Kermis
A Works in Progress feature of this chapter is an in-depth look at Peter Paul Rubens’s The Kermis (figs. 145-147). Emphasized to students the diagonal recession within this composition that sets up a feeling of imbalance, which addresses the drunken ribald nature of the festivities that Ruben’s wanted to convey. Explain that Kermis is the celebration of a saint’s feast day. By examining the preliminary drawings for the final painting, we learn about the development of Rubens’s creative process. The first drawing (fig. 145) delineates, in a strong diagonal, peasants seated at a table. Point out that many of the elements of the early study survive in the final painting, but not without modification. At the far left of the drawing, at the near end of the table, two men appear to be exchanging a tankard of ale, as if the one is paying the other. In the final painting, the exchange between these two is far less amicable. Indeed, they seem to be fighting over their beer. On the backside of this drawing is another set of studies for the dancing figures in the final painting (fig. 146). The pairs of dancers coil around each other in a close embrace. Rubens is apparently searching for the right combination of dance-like movement and sexual embrace. Through these studies, we begin to see the social or moral complexities that define the time in which Rubens lived. Ask students to describe how the artist’s painting was adjusted for both compositional and moralistic concerns.

2. Thinking about Topological Slide
Chapter 6 ends with The Critical Process, an analysis of Michael Scroggins’s and Stewart Dickson’s Topological Slide (figs. 157-158) and how the technology involved in the creation of this works affects our comprehension of space. Be sure to refer to the detailed analysis of this work, which answers many of the questions posed, found in the back of the textbook and visit the Topological Slide website linked to A World of Art Companion website to have a cyberspace experience.

WRITING ASSIGNMENTS
Direct students to their Student Study Guide when assigning Writing Assignments as the following assignments are written as instruction for the student and are contained in the guide as they are here.
1. **Writing About Space**
Have students select an ancient and a modern work of art, and write an essay that describes the similar and disparate uses of space. Have students identify the type of spatial strategies employed by the artists.

2. **Experiencing the Three-Dimensionality of Sculpture**
Assign students to investigate a sculpture park, such as the renowned Storm King Art Center in upstate New York (a link to Storm King and a listing of other parks is available at [www.artnut.com/intl.html](http://www.artnut.com/intl.html)). Have students write a fictional story that narrates a character’s experience as they roam through the park and confront the three-dimensional works and the space they consume.

### HANDS-ON PROJECTS
*Direct students to their Student Study Guide when assigning Hands-On Projects as the following assignments are written as instruction for the student and are contained in the guide as they are here. For additional project ideas, remember to investigate the Hands-On Projects found on the Companion Website.*

1. **Perspective Drawing**
A good way to test an understanding of perspective is to take tracing paper and, with a ruler, trace the perspective lines of several paintings in the text. Have students begin with Gustave Caillebotte’s *Place de l’Europe on a Rainy Day* (fig. 138). Many of the perspective lines are already indicated in the text, but see how many more they can add. Next, assign William Merritt Chase’s *The Nursery* (fig. 234). Have students describe the perspective plan. What work from this chapter does it resemble? Have them trace the perspective plan of Jacques-Louis David’s *Oath of the Horatii* (fig. 239). How does this help them understand how the artist focuses his composition? Finally, have them trace the perspective lines in Vincent van Gogh’s *The Night Café* (fig. 189-202). Notice that there seems to be two conflicting vanishing points, one straight through the room and out the doorway, the other higher, almost directly under the large light on the left. What effect does this conflicting perspective create?

2. **Architectural Design**
Assign students to design an ideal airport or other public building that must manage a heavy flow of traffic. Have them take into consideration the interior and exterior space: the function of the building and flow of people; the physical view of the exterior and its relationship to the function; and its placement in the existing environment. Use Eero Saarinen’s Dulles International Airport (figs. 526-528) as inspiration.
RESOURCES

A World of Art Companion CD-ROM:

Perspective Activity
Enter the Hands-On Exercises room found in the World of Art Companion CD-ROM and complete the Perspective activities. The visual demonstrations will further your understanding of both one point and two-point linear perspective, and how both create a realistic sense of depth on a two-dimensional picture plane.

A World of Art Companion Website:
Remember to direct students to A World of Art companion website (www.prenhall.com/sayre) to help further their understanding of the materials discussed in this chapter with ideas for completing hands-on projects and exercises. Self-testing materials are also available and offer students the opportunity to evaluate their understanding of the chapter materials in a variety of formats. In addition, links to websites featuring contemporary artists, and museum and gallery exhibitions related to this chapter will enhance discussion and comprehension. Links for this chapter include:

CONTEMPORARY ARTISTS: Sky-and-Water is one of the most succinct and definitive example of M.C. Escher's skill at manipulating positive and negative space (figure-ground relationship). The Dutch graphic artist's genius was consistently revealed through his spatial illusions, drawings of improbable (if not impossible) structures, and his imaginative repeat patterns that serve as textbook examples of metamorphosis. His ability to play visual puns through the three basic planes of geometric space is evidenced in his work Relativity. These two images are but a few of hundreds of drawings and woodcuts that he produced during his lifetime.

CONTEMPORARY ARTISTS: Martin Puryear's Self (page 91) is in the permanent collection of the Joslyn Museum in Omaha, NE. You can see the work and read about Puryear's influences, his response to the destruction caused by warfare, and his inspiration discovered through his studies of prehistoric societies.

GALLERIES AND MUSEUMS: "Hypernotes" a bi-weekly personal and polemical Oslo-based view on Norwegian and international art, media, and photography.

GALLERIES AND MUSEUMS: Topological Slide is featured in this chapter text has its own website. Michael Scroggins and Stewart Dickson created Topological Slide for the Art and Virtual Environments Project at the Banff Centre for the Arts in 1991. The Topological Slide premiered at the Art and Virtual Environments Symposium held in conjunction with the Fourth
International Conference on Cyberspace at the Banff Centre in 1994. To learn more about the Slide, visit this fascinating site.

**Other Suggested Websites:**

- **Linear perspective** information is available at the following websites:
  - www.sanford-artedventures.com/study/g_perspective.html
  - www.mos.org/sln/Leonardo/ExploringLinearPerspective.html

- **M. C. Escher**’s biography, a virtual ride and more of his famous figure/ground reversal images can be viewed at www.mcescher.nl/

- **Sculpture Park** information, including a comprehensive list of parks in the United States are viewable at www.artnut.com/intl.html

**Suggested Videos and Multi-Media:**

*Videos and other resources are available for purchase through any of the distributors listed in the Resources section of this manual.*

Elements of Design *overview* (30 Minutes)
Matisse: Voyages, 1990
The Dutch Masters: Rubens, 2000
Matisse: Voyages, 1990
Drawing Linear Perspective
Masters of Illusion *creating space in two-dimensions* (30 minutes)
Behind the Scenes with David Hockney *depth, perspective, space* (30 minutes)
Tessellations: How to Create Them *instruction for art project* (20 minutes)
Laurie Anderson, Puppet Motel (interactive CDROM using virtual space and time)