The form XObject specified by the **O**

far planes, respectively. A value of **ANF** for **CS** means that the near and far planes are determined automatically based on the objects in the artwork.

The **Subtype** entry specifies the type of projection, which determines how objects are projected onto the near plane and scaled. The possible values are **O** for *orthographic projection* and **P** for *perspective projection*.

For orthographic projection, objects are projected onto the near plane by simply discarding their z value. They are scaled from units of the near plane's coordinate system to those of the annotation's target coordinate system by the combined factors specified by the **OS** entry and the **OB** entry.

For perspective projection, a given coordinate (x, y, z) is projected onto the near plane, defining a 2D coordinate (x_1, y_1) using the following formulas:

$$x_1 = x \times \frac{n}{z}$$
$$y_1 = y \times \frac{n}{z}$$

where n is the z coordinate of the near plane.

Scaling with perspective projection is more complicated than for orthographic projection. The **FOV** entry specifies an angle that defines a cone centered along the z axis in the camera coordinate system (see Figure 9.5). The cone intersects with the near plane, forming a circular area on the near plane. Figure 9.6 shows this circle and graphics from the position of the camera.

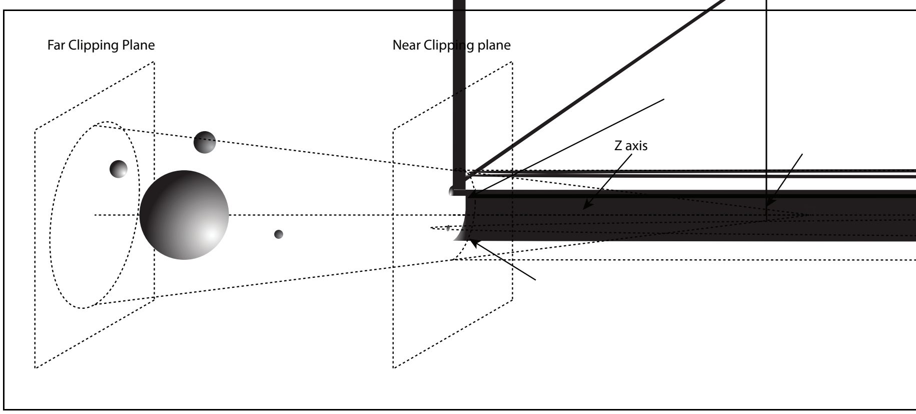

FIGURE 9.5 *Perspective projection of 3D artwork onto the near plane*

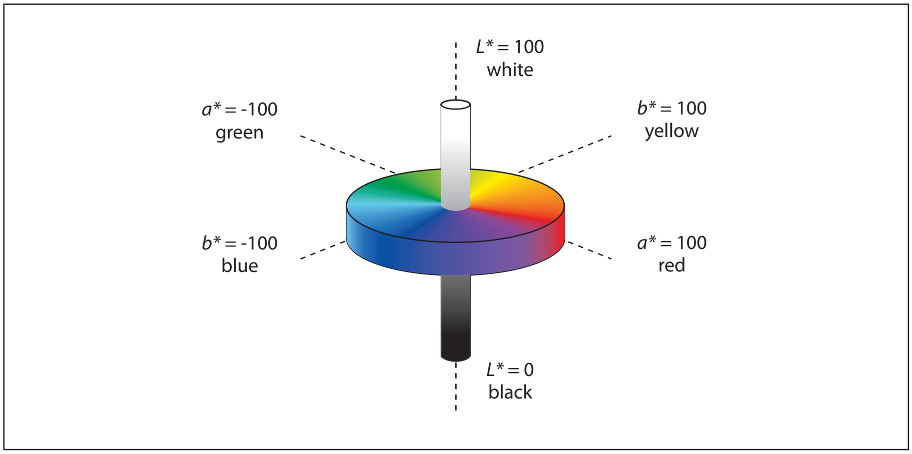

PLATE 3 ***Lab*** *color space ("Lab Color Spaces," page 250)*

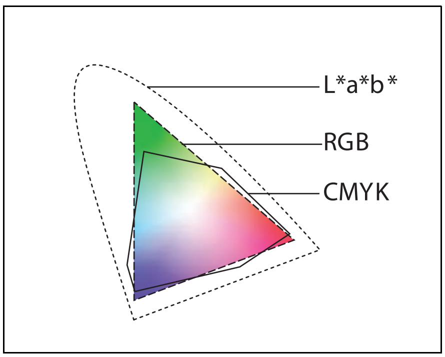

PLATE 4 *Color gamuts ("Lab Color Spaces," page 250)*

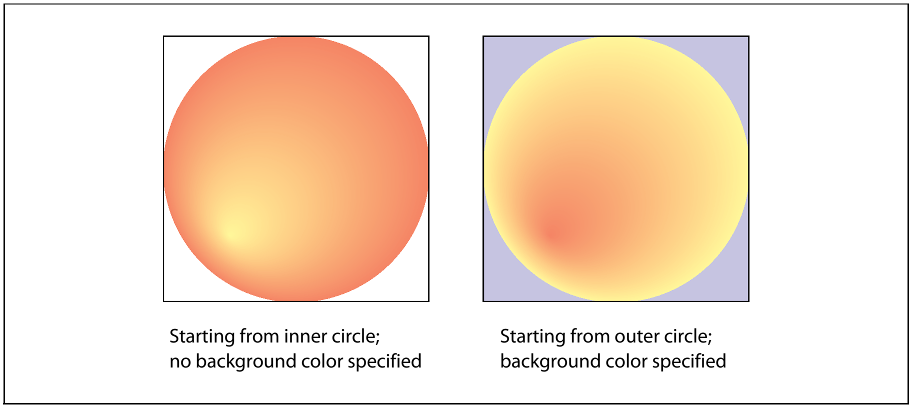

PLATE 12 *Radial shadings depicting a sphere ("Type 3 (Radial) Shadings," page 313)*

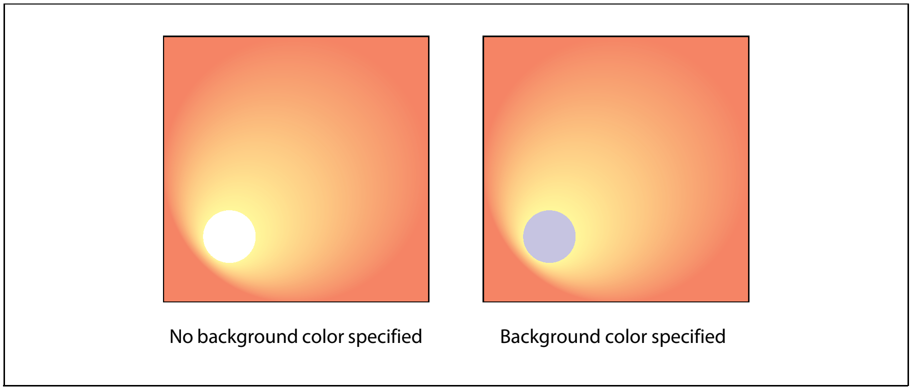

PLATE 13 *Radial shadings with extension ("Type 3 (Radial) Shadings," page 313)*

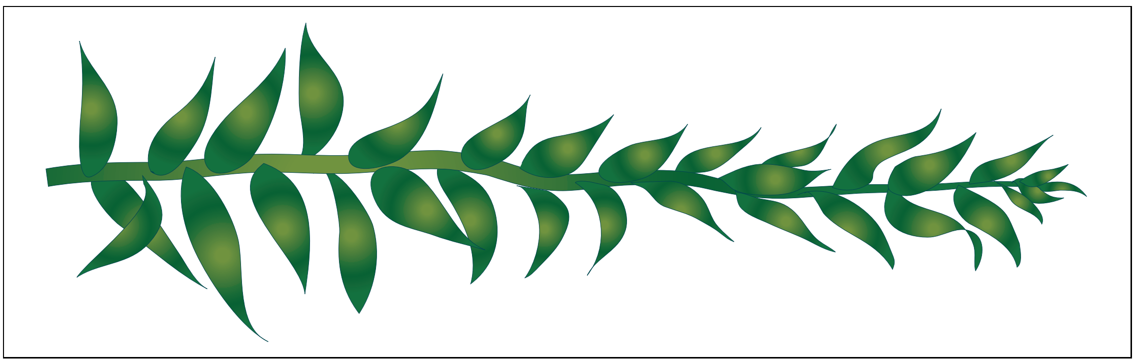

PLATE 14 *Radial shading effect ("Type 3 (Radial) Shadings," page 313)*

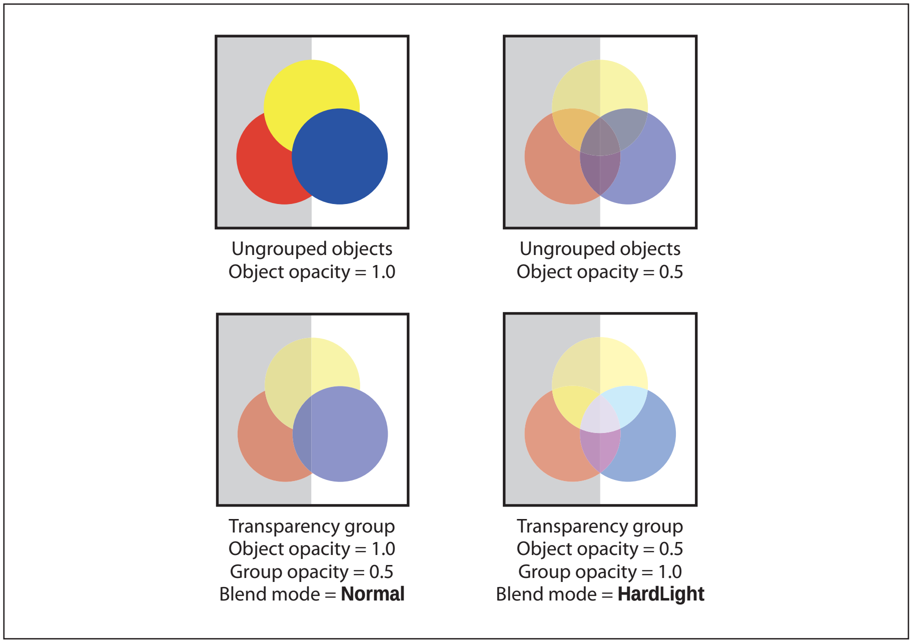

PLATE 16 *Transparency groups (Section 7.1, "Overview of Transparency," page 515)*

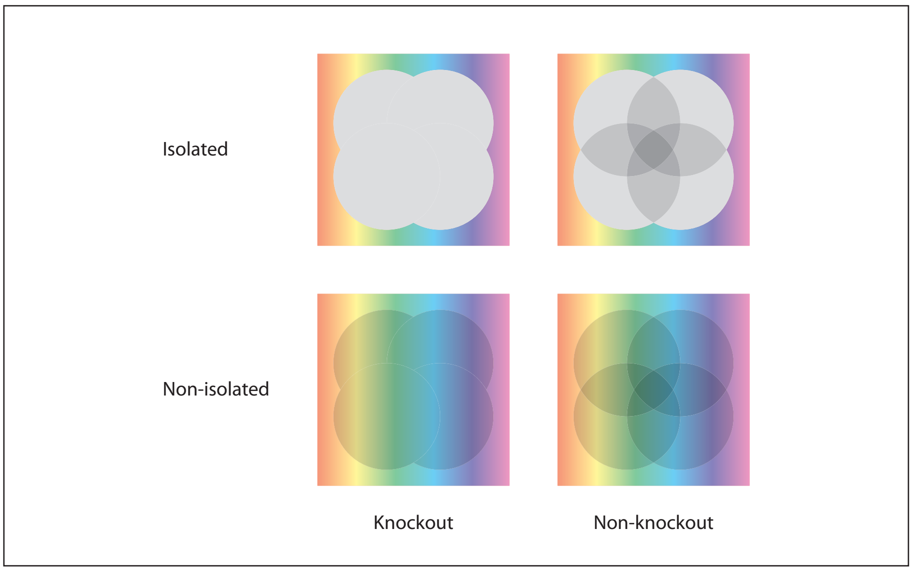

PLATE 17 *Isolated and knockout groups (Sections 7.3.4, "Isolated Groups," page 539 and 7.3.5, "Knockout Groups," page 540)*

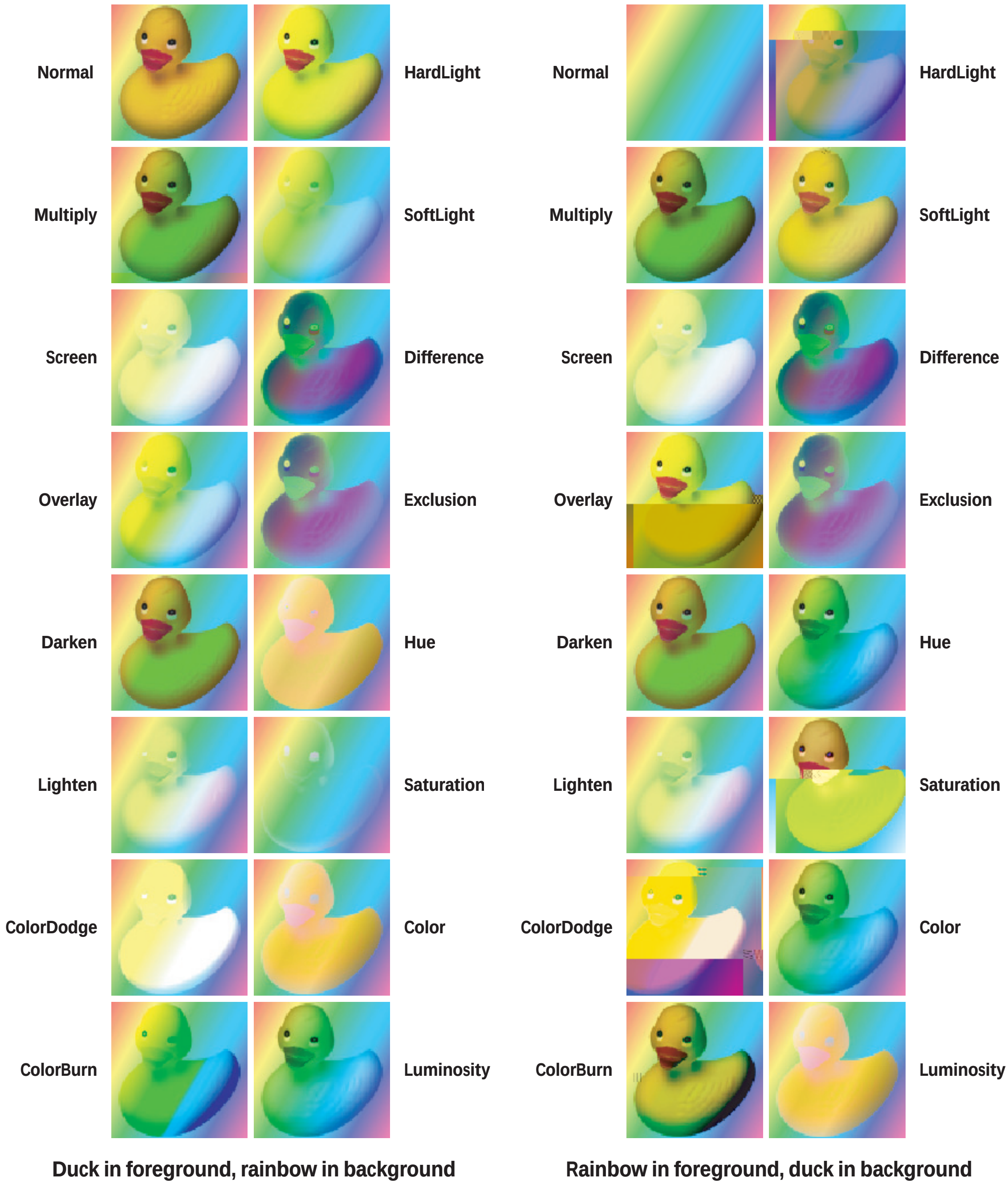

PLATE 18 *RGB blend modes (Section 7.2.4, "Blend Mode," page 520)*