case, the volume is rendered front to back for the eye using the Under operator (see Section 39.4.3). When the dot product is negative, slice along the vector halfway between the light and the inverted view directions, and render the volume back to front for the eye using the Over operator (see Figure 39-9b). In both cases, render the volume front to back for the light using the Over operator.

3. For each slice:
   a. Pass 1: Render and blend the slice into the eye buffer.
      i. Project the slice vertices to the light buffer using the light's modelview and projection matrices. Convert the resulting vertex positions to 2D texture coordinates based on the size of the light's viewport and the light buffer.
      ii. Bind the light buffer as a texture to an available texture unit and use the texture coordinates computed in step 3(a)(i). Recall that a set of 3D texture coordinates is also needed for the data texture lookup.
      iii. In the fragment shader, evaluate the transfer function for reflective color *C* and opacity *A*. Next, multiply *C* by the color from the light buffer C_L , and blend *C* and *A* into the eye buffer using the appropriate operator for the current slice direction.
   b. Pass 2: Render and blend the slice into the light buffer using the Over operator. In the fragment shader, evaluate the transfer function for the alpha component and set the fragment color to 0.

Volumetric shadows greatly improve the realism of rendered scenes, as shown in Figure 39-11. Note that as the angle between the observer and the light directions changes, the slice distance needs to be adjusted to maintain a constant sampling rate. If the desired sampling distance along the observer view direction is d_V and the angle between the observer and the light view directions is q, the slice spacing d_s is given by Equation 7:

Equation 7 Relationship Between Slice Spacing and Sampling Distance Used for Half-Angle Slicing

$$d_s = \cos(\theta/2) d_v$$