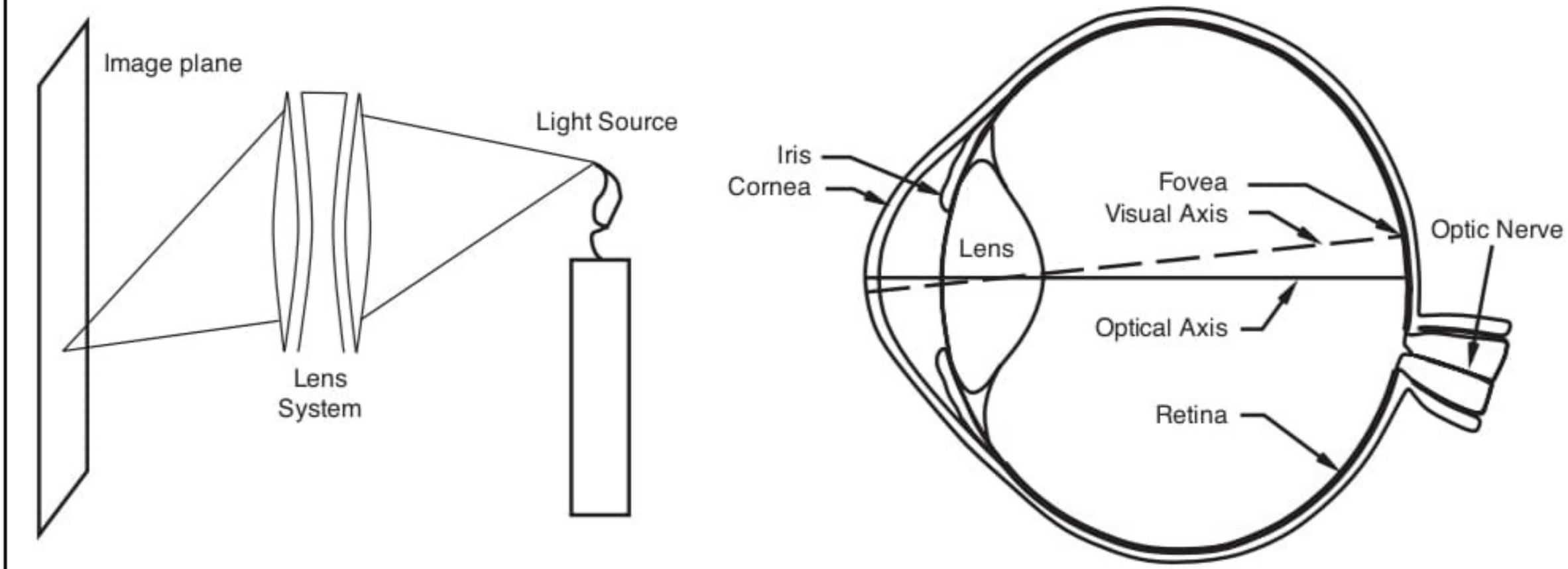

Figure 24.3 Lenses collect the light leaving a scene point in a range of directions, and steer it all to arrive at a single point on the image plane. Focusing works for points lying close to a focal plane in space; other points will not be focused properly. In cameras, elements of the lens system move to change the focal plane, whereas in the eye, the shape of the lens is changed by specialized muscles.

- Eyes and modern cameras use a lens system to gather sufficient light while keeping the image in focus.
- A large opening is covered with a lens that focuses light from nearby object locations down to nearby locations in the image plane.
- However, lens systems DEPTH OF FIELD have a limited depth of field: they can focus light only from points that lie within a range FOCAL PLANE of depths (centered around a focal plane).
- Objects outside this range will be out of focus in the image.
- To move the focal plane, the lens in the eye can change shape (Figure 24.3); in a camera, the lenses move back and forth.