

DEEP DIVE

Ambient Occlusion & Bounce Light

Light that cannot reach tight crevices creates ambient occlusion — the subtle darkening at junctions.

Bounce light fills shadows with reflected color from nearby surfaces.

Two phenomena profoundly affect the shadow side of forms: ambient occlusion (darkening in enclosed or occluded areas) and bounce light (secondary illumination from reflected light). Understanding both elevates shadow rendering from a flat, dark void to a rich, spatially convincing space.

AMBIENT OCCLUSION IN DEPTH

Every surface exists in an environment that supplies ambient light from multiple directions. Surfaces that face open space receive more ambient light; surfaces in enclosed areas (crevices, corners, contact points) receive less. Ambient occlusion maps this geometric accessibility -- the tighter and more enclosed the area, the darker the ambient occlusion. It is one of the most photorealistic rendering techniques because it is physically accurate and adds depth to any scene.

SOURCES OF BOUNCE LIGHT

Bounce light can come from: the ground (often warm, since most ground surfaces are warmer than the sky), nearby walls (taking the color of the wall), adjacent objects (a green tree reflecting green light onto a face), or even the object itself (internal bounce between two curved surfaces facing each other). Each bounce source has a color, an intensity, and a directionality.

BOUNCE LIGHT TEMPERATURE

Ground-bounce light is typically warm because ground surfaces (earth, concrete, grass) are warm-colored and lit by warm sunlight. This warm bounce light on the shadow underside of objects creates the classic three-dimensional feel of plein-air painting -- warm light on top, cool shadow side, warm reflected bounce on the bottom. This sequence (warm, cool, warm) cycles through the vertical axis of most outdoor lit objects.

EXERCISES

Day 1: Paint a white sphere on a colored surface -- the sphere's shadow side should reflect the surface color.

Day 2: Set up a still life with multiple colored objects near each other. Paint the color contamination between them via bounce light. Day 3: Identify and render ambient occlusion in a complex still life -- find every crevice and make it the darkest value in the piece. Day 4: Paint an object with three distinct bounce light sources (top warm, side cool, bottom warm). Day 5: Paint a face where ground bounce light (warm) is clearly visible on the chin and lower cheek areas.
