

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.

BEGINNER

Two phenomena make lighting feel physically real: ambient occlusion and bounce light. Ambient occlusion is the darkening that occurs wherever two surfaces meet at a tight angle — in a crack, under a chin, in an armpit, at the corner of a room. Light simply cannot reach these places, so they are darker than the surrounding shadow. Even in bright ambient light, these tight contact areas are dark. Adding ambient occlusion darkening to your shadows makes forms feel like they are actually touching and sitting in space rather than floating. Bounce light is the opposite: reflected light from nearby surfaces fills the shadow side of forms with color. A figure standing on red ground has warm reflected light filling the underside of the chin.

HOBBYIST

Ambient occlusion and bounce light work in complementary opposition: AO darkens the deepest shadow areas, and bounce light lightens the mid-shadow areas. Together they create the characteristic shadow structure of realistic lighting: a mid-tone shadow with a lighter reflected light zone in the middle and a darkest-dark area at the contact point. This structure is visible in virtually every Old Master painting and in convincing contemporary realism. Studying Rembrandt specifically for shadow structure reveals this pattern clearly: the darkest areas of his shadows are where surfaces meet, and there is often a zone of lighter reflected light within the larger shadow area.

PROFESSIONAL

In 3D rendering, ambient occlusion became a standard render pass specifically because it so dramatically improves the plausibility of rendered imagery — it is the difference between objects that look like they are floating and objects that look grounded. For traditional artists, understanding AO and bounce light means you can analyze any photographic reference and identify which shadow details are reliable physical phenomena versus artifacts of the camera or post-processing. Controlling the balance between AO darkness and bounce light brightness is a primary tool for establishing the mood of a piece: strong AO with minimal bounce light feels ominous; generous bounce light with soft AO feels open and optimistic.