The View Camera
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Swings and Tilts

There are just a few main rules to remember with view camera adjustments:

1) Tilting or swinging the back away from perpendicular to the center-line of the lens will stretch and distort the image.

2) If the film plane and lens plane are parallel to each other, the plane of focus in parallel to both of them. To focus on a plane other than parallel to the film, remember that the three planes—film, lens, and focus—will intersect in a point in space. This is the *Scheimpflug* rule.

3) A rectangular object parallel to the film plane will appear rectangular on the film

Illustrations on view camera movements from **The Camera** by Ansel Adams, © 1980

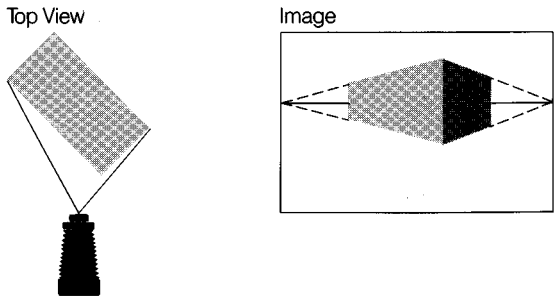
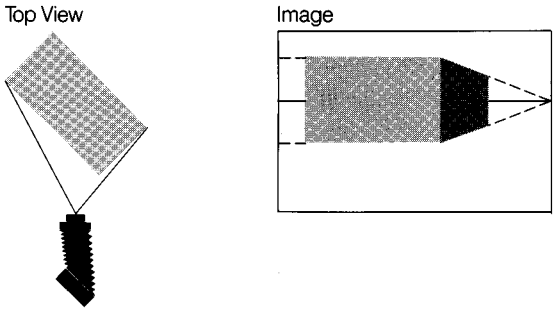


Figure 10–3. *Perspective.* The concept of vanishing points, used by artists when drawing in perspective, applies to photographs as well. In the case of a building photographed from an angle, the parallel horizontal lines of both sides of the building converge at two vanishing points. If the swing back adjustment is used to keep the camera back parallel to one of the building surfaces, the parallel lines of that side will be parallel in the photograph.



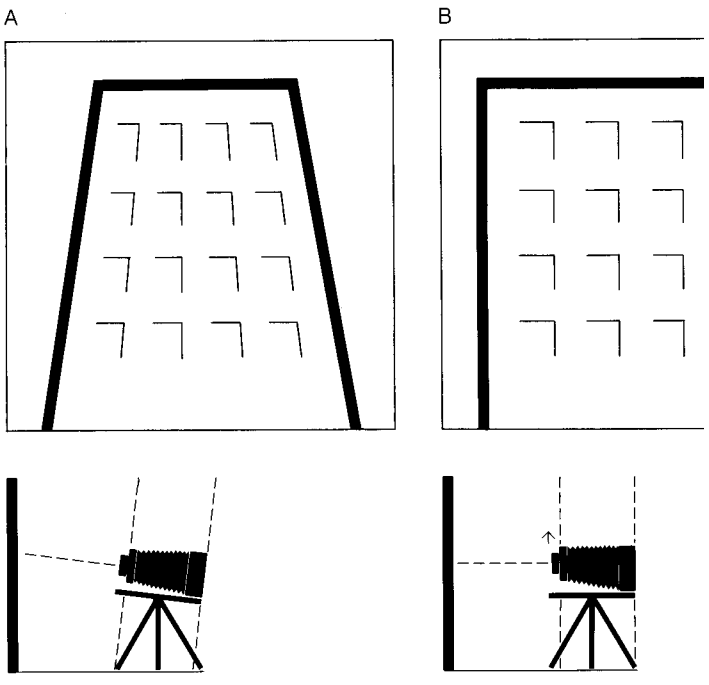


Figure 10–5. *Using adjustments to control convergence.* The rising front can be used to "look up" at a tall building while keeping the camera back vertical to avoid convergence.

(A) If the entire camera is pointed up to include the top of the building, the parallel sides of the building will converge in the image.

(B) With the camera carefully leveled, the rising front may be applied to maintain the correct geometric rendering.

In cases where the camera's rising front is inadequate to bring the top of the building into the image area, the falling back may be added. If necessary, the camera may be pointed upward and the lens and film planes tilted to vertical, providing the same effect as added rising front capability. The lens's coverage will limit the total of such adjustments. When photographing a building head-on, as in this example, the camera back must be parallel to the building in the horizontal direction, as well as being vertical.

Scheimpflug rule:

Figure 10–8. *Focus and depth of field with lens tilted.* (A) When photographing only the facade of a building, the camera back and lensboard can be kept in the vertical position, and the depth of field region extends in front of and behind the primary focus plane.

(B) If important foreground areas must be included in the depth of field region the lens can be tilted forward. The primary focus plane, indicated by the dotted line, then intersects the planes of the lensboard and film at a single point. The depth of field region extends on either side of the plane of focus. Note that the camera back has been kept in the vertical position to maintain accurate rendering of the building.

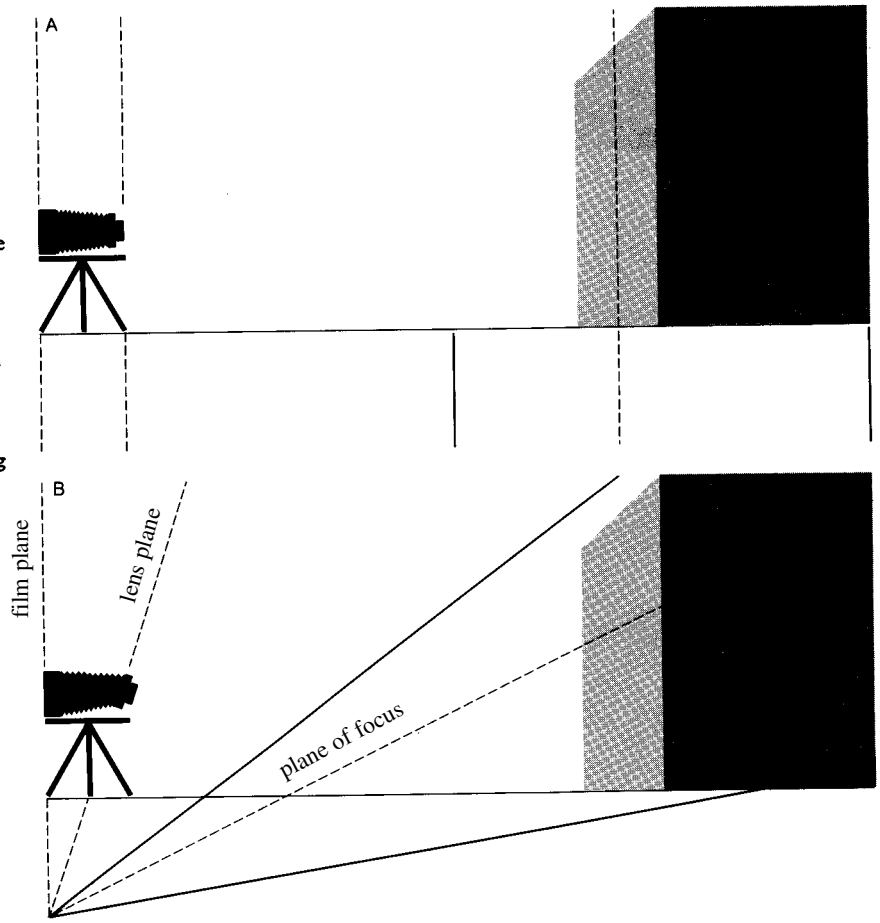


Figure 10–6. *Vignetting caused by lens tilt.* The use of any adjustment that moves the lens axis away from the center of the film area may cause vignetting. From the drawings it can be seen that tilting the lens risks vignetting, while tilting the camera back generally does not.