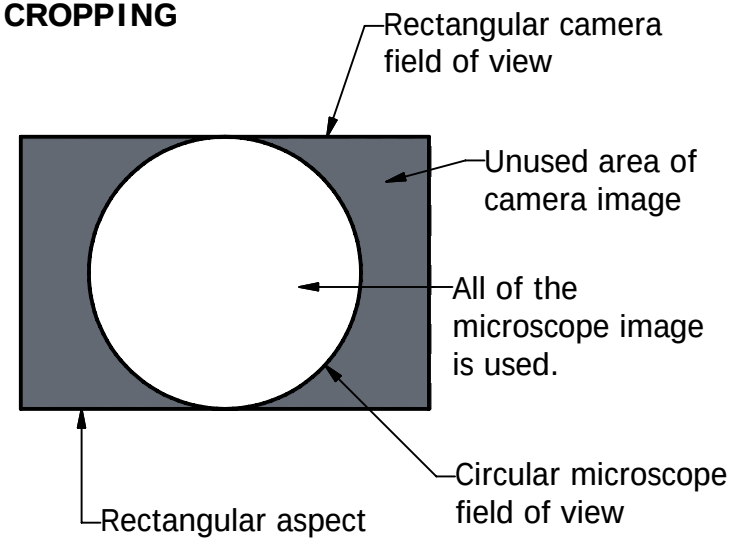
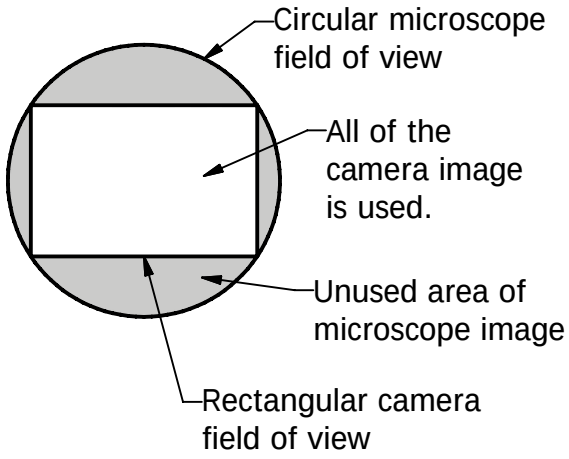
The "cropping" describes how the circular shape of the microscope's field of view is fitted to the rectangular shape of the camera's field of view. Since these shapes do not match, the fields cannot be scaled and overlaid without leaving some of one or the other (or both) fields unused. The type of cropping is chosen based on the goals of the application. In choosing the cropping, one must evaluate whether it is better to not use part of the microscope field, versus not using part of the camera field, or some combination of the two. Depending on the application, this choice may be simply a matter of visual style, or it may be dictated by requirements such as having to see all of the microscope field (which dictates an inscribed crop) or having to use all of the camera field (which dictates an outscribed crop). On some adaptations, the crop is fixed by the adapter; on others a zoom lens on the camera is incorporated, so the user can change the crop by zooming between wide-angle and telephoto settings.

UNDERSTANDING CAMERA-TO-INSTRUMENT CROPPING



INSCRIBED CROPPING: The circular microscope field of view "inscribes" the rectangular camera field of view. This is the most commonly used crop, because it "looks" like a traditional microscope film photograph, and good digital cameras are able to capture all of the resolution of the image at this scale. While all of the microscope's field of view is captured in the photograph, the left and right sides of the photograph are unused area. With digital photography, the unused areas of the photograph can be filled-in during post-processing to be white or transparent instead of just black. Geometrically speaking, to establish inscribed cropping, the optics of the adapter scale the vertical aspect of the camera field to the diameter of the circular microscope field. Sometimes the scaling of the circular field may be deliberately shrunk to somewhat smaller than the vertical aspect, to allow for manufacturing tolerances in the optical and mechanical elements.



OUTSCRIBED CROPPING: The circular microscope field of view "outscribes" the rectangular camera field of view. This results in photographs which are completely "lit" without any black, unused areas, but the edges of the microscope field of view are not recorded in the photograph.

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cropping.idw