What is Vignetting?

Vignetting, which occurs in every lens, is a decrease in the amount of light transmitted by the lens at the edge of the lens field of view. In cameras, either film or digital, vignetting will show up as a darkening of the image in the corners. The amount of vignetting will depend on the lens and the aperture, and will be most apparent when the lens is set to the widest aperture. The smaller, compact, lenses in digital cameras often have significant vignetting.

The images to the right show the effect of vignetting and the image after correction (simulated).

What is Color Shading?

Color shading is similar in effect, but only occurs in digital cameras. In a camera, as you move to the edge of the sensor the angle at which the light hits the sensor changes - in essence, the light hits the sensor, or film, at a slight angle, not perpendicular. In film cameras – this angle has no effect – film is not sensitive to this angle. In a digital camera, however, this angle causes a shift in color near the edges of the sensor as shown in the images to the right (simulated).

Color shading is due to the angle of the light interacting with the structure of the CCD as well
as the micro lenses on the CCD. Due to this effect, digital camera lenses must be designed to be more “telecentric” than traditional film lenses. A more telecentric lens, the angle the light hits the sensor is more nearly perpendicular everywhere.

**HP Color Shading and Vignetting Correction.**

The traditional way to correct for vignetting and color shading is to improve the lens and this is the approach most digital cameras take. However, with the increased desire for small lenses, it becomes very difficult to design a lens without significant color shading and vignetting. In HP Photosmart digital cameras – color shading and vignetting are automatically corrected. While it is not uncommon for a digital camera to do vignetting correction, color shading correct is more uncommon. Furthermore, the way HP does this is different – and better.

**Each Camera is individually calibrated.**

In fact, for many (most) of HP’s Photosmart digital cameras, each camera is specifically measured and calibrated, on the production line, for color shading and vignetting correction. That means each and every camera is specifically corrected for the lens and sensor that is in that specific camera. Most digital cameras, if they correct for vignetting and color shading, do so based upon an “average” lens.

© Copyright 2005 Hewlett-Packard Development Company, L.P. The information contained herein is subject to change without notice and is provided “as is” without warranty of any kind. The warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.