

Optical ghosting: Camera artifacts are not “paranormal”

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We here at Doubtful News often report on anomalous images that are unfortunately described as ghosts or UFOs or some other mysterious phenomena. I received this excellent (and quite technical) explanation describing some odd photo anomalies from DN reader **Pete Attkins**. I am glad to share it with you here as one of our features.

I always enjoy looking at stills and video footage of so-called UFOs and ghosts. My specialty is night and twilight photography so I've seen far more than my fair share of both!

I've had to spend many hours taking test shots with each of my lenses in order to find out which are the most suitable for night photography and which are hopeless.

Below are two images taken with my worst lens: Nikkor 85 mm f/1.8, which is famous for its ability to beautifully capture both portraits and architecture. It's a great lens for its intended purposes, but it's hideously useless for night shots. This lens has pronounced sagittal coma flare (usually called just '[coma](#)') when used wide-open, but coma artifacts should be absent from my images because both shots were taken with the lens stopped down. However, lenses are designed to minimize all aberrations in object space at the plane of focus; they cannot be designed to also minimize aberrations from out-of-focus internal reflections.



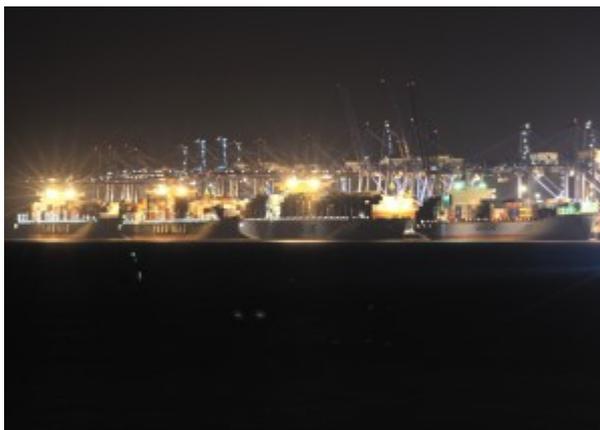
Lots of orange ghosts and orbs (upper third), aperture f/5.6. Photo: Pete Attkins



A blue and orange ghost (top right) with a blue orb underneath it, aperture f/11. Photo: Pete Atkins

Search Google Images using the term “sagittal coma flare” to see some astonishing examples of coma. Even the Zeiss ZM 35mm f/2 Biogon T* produces some truly bizarre coma so imagine what a typical compact camera/camcorder zoom lens will produce under difficult lighting conditions.

Coma, longitudinal/axial chromatic aberration, and flare sometimes combine to produce some amazing images. I have several shots showing three or more green “objects” hovering just below the surface of the River Orwell.



Green unidentified submarine objects. Photo: Pete Atkins

Lens flare is a generic term that encompasses many different optical aberrations. For example: veiling glare reduces global image contrast; ghosting produces inverted ghosts which are diametrically opposed to the optical axis; spherical aberration adds an odd-looking flare pattern to out-of-focus image regions (these are particularly odd when the object is nearer than the object focal plane, such as flying insects or lens internal reflections).

Digital video images are difficult to assess because the cameras suffer (at the very least, to some extent) from [rolling shutter syndrome](#). Then, the captured frames are encoded using a high level of compression that is not designed for accurate single frame playback.

Most still cameras suffer from this time distortion because they use image plane shutter curtains (or an electronic equivalent in the sensor). Older film cameras that use a leaf shutter in the lens produce a totally different time distortion effect, but this effect is highly suitable for analysis.

I find it most disconcerting that “the experts” who make bold statements about UFO and ghost images/videos do not appear to understand these fundamental limitations of the image capturing hardware.

Pete Atkins

Source: <http://doubtfulnews.com/2012/12/optical-ghosting-camera-artifacts-are-not-paranormal/>