

Living Large

How big a reproduction can my camera produce?

In my previous column I poked at the myth surrounding the ever increasing size of camera sensors. I explained that size is indeed not everything when it comes to image quality. In fact *quality* of the file trumps size in just about every circumstance. Even 6mp camera files can be enlarged by well over 500% with perfect results if best practices are employed. Sure, we've all heard that enlarging (aka: up-ressing, scaling, interpolation...) more than 120% is inadvisable and that any up-res will result in data loss. Like most contradictory digital-imaging information it's all true- under certain circumstances that is.

This question of How Big? is complex to answer and full of apparent contradictions. Suffice to say you can probably go a heck of a lot bigger than you think. Here are the key components you need to be aware of:

Interpolation

Any changes to the actual native size of a image file requires "interpolation". Interpolation is basically creating something out of nothing. As the file is enlarged the data is sort of spread apart resulting in virtual gaps. Your imaging application (usually Photoshop) employs interpolation of data to fill in the missing information by guessing what should be in the gaps based in the data on the borders of the gaps.

The bigger the file is enlarged the more guesswork will be required resulting in less precision in the final file. True enough, but the real issue is visual quality, not theoretical data loss.

Method of Interpolation

Simply put Photoshop will do a fine job with most files when upscaled 500 to 1500% at least. The results will vary depending on subject matter, output device and most importantly viewing distance (more on that later.) The only time I've seen a third party up-res application do better than PS is with very large murals that may be viewed at a relatively close distance.

I've seen great results from SizeFixer and heard very positive reviews of Alien Skin's Blow Up. The well-marketed Genuine Fractals has been a disappointment for me.

Start with a better native file

It stands to reason that software interpolation will be more effective on a high quality file. "Garbage in = garbage out". That's why a smaller file with fewer artifacts can enlarge with equal to or better than results relative to a larger file that has more artifacts as is often the case with today's super-sized megachips.

Most professional-grade cameras and backs from 6mp+ will offer similar results when scaled to roughly 11x17 inches. Results will vary depending on ISO

settings, inherent noise and interplay between the chip and any given lens. Some lens/chip combinations are problematic as are some cameras set to ISO's above 100.

Scale for the intended use

Viewing distance is the most important criteria for determining "How Big?" A file from a consumer 6mp camera stands a chance of equaling a file from a \$30,000+ pro back on a billboard.

Why? Because you're likely to view the billboard from a city block away. Distance is the great equalizer. (look up "pointillism") Most large format output is intended to be viewed from a distance at least equal to the diagonal of the print, which will completely conceal many imperfections. Closer than that and all bets are off. My dear departed friend, Bruce Fraser lamented, "Most photographers idea of correct viewing distance is the length of their nose". At that distance about the only media that will withstand scrutiny is an 8x10 transparency on a lightbox.

In general, viewing a file at 50% magnification in Photoshop will reveal any visible flaws. I usually evaluate at 25% for on-press commercial grade reproduction. Viewing at 100% will result in little more than high anxiety, over correction and even higher retouching bills.

"Never scale more than 120%" Riiight... That old saw needs to be put to rest. It was perhaps valid when applied to scanned film within a page layout program such as Quark. Scanned film is (and especially was) of really terrible quality compared to a really good digital camera file. Megabyte for megabyte a great camera file can be enlarged many times over a scanned file.

Do's and Dont's

These are general guidelines- Experiment; your results may vary depending on file quality, subject, etc.

Do

- Apply sharpening AFTER up-scaling
- Apply a small amount of noise reduction before enlarging if necessary
- Use selective sharpening-only i.e. sharpen areas of detail, keep smooth areas soft
- Use Photoshop bicubic in ONE step up to 500% or so, bicubic-softer over 500% or so (bicubic-sharper is for down-scaling).

Don't

- Sharpen in-camera or at native size (turn off sharpening in your app's preferences, especially Capture One).
- Trust all noise reduction systems. Some types smear too much detail. Noise Ninja and Neat Image are recommended.
- Use multiple steps-up. Contrary to popular belief it's unnecessary and may

result in odd artifacts.

Be afraid to try. Regardless of what you have been told do your own testing. Seeing is believing. Try enlarging a small portion of a file, print it out on your ink-jet and view it at the intended distance.

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