WHAT MAKES AN ARTISTICALLY GOOD MICROGRAPH?

Tom Harnish

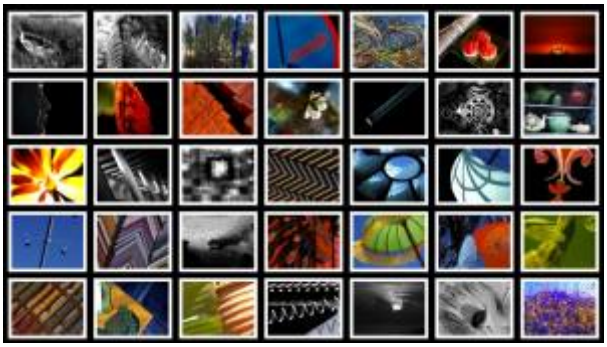
I wrote a long diatribe about the technical side of micrography and the issues surrounding image manipulation. But a lot of amateur and professional microscopists are interested in the artistic side of micrography, too. So here's another long diatribe with info from a study that offers a quantitative look at what makes a great image.

Most people who are photographers know, in general, to use the rule of thirds, keep the horizon straight, get close, etc. and much of that applies to micrographs. But if you do all that some images still seem ugly, some are okay, and some are pleasing. Why? It turns out there are certain fundamental characteristics that distinguish a stunning image from a boring one.

Researchers at Carnegie-Mellon University and Microsoft asked professional and amateur photographers, and even non-photographers, to report what they thought made a great photo. Then they put computers to work digging into a mountain of images to mine the best ones. They struck gold when they found that people universally agree on three characteristics that make the difference between good and bad photographs.

SIMPLE

The single most distinguishing characteristic of top-rated photos in an online photo contest, it turned out, was simplicity. The subject, regardless of what it might be, was easy to separate from the background in good photos while snapshots-quality photos tended to be busy, confusing, and cluttered. A good way to check this is to look at thumbnails. If the little images don't catch your eye, full-size versions probably won't attract you, either. The screen grab of thumbnails of a few of my images shows some examples. Your eye...or at least my eye...goes right to the good ones. But note that overall it's an awful image because it has lots of edges.



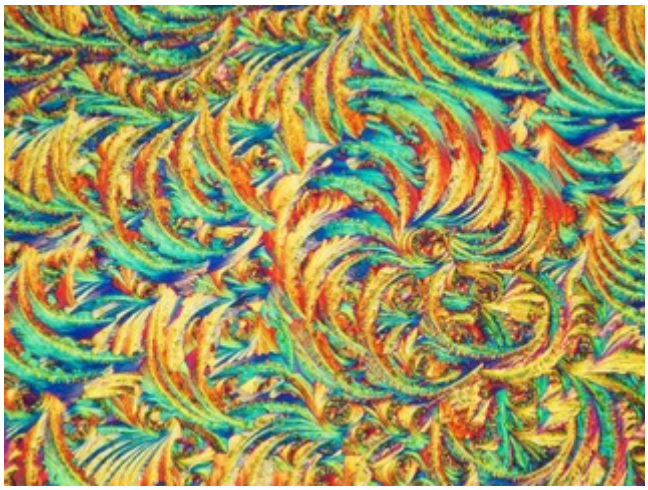
The three most common ways to create simplicity are to 1) use a narrow depth of field to blur the background, 2) find lighting contrast—a bright object against a dark background— that will isolate the subject, and 3) use color contrast to make the image pop. My image with the chair and orange

wall is an example of the latter. A specimen against a pure white or black background works great in micrographs.

The researchers used edge detection and spatial distribution algorithms on 40,000 contest photos. They found high-rated images had few edges, and poor images had many edges—especially near borders—because of clutter. They also found that the highest rated images appeared more vibrant and colorful, thanks to carefully controlled contrast, brightness, and saturation.

SURREAL

Surprisingly, “real” looking photos were universally considered poor pictures. But if you think about it, that’s exactly what a snapshot is: everyday objects in everyday settings—a simple photographic record of the real world at a particular time and place. What do people like? Surreal was the hands-down favorite, anything that made an image unusual. That’s undoubtedly one of the reasons we’re attracted to the images of microscopic crystals in polarized light, as you can see in this remarkable image of crystalized callus remover by Loes Modderman.



Top rated photographers, the researchers found, used lighting and filters to capture a careful selection of unusual but usually complimentary colors or an extraordinary combination of blacks and whites. My image an orange label with the Chinese characters on an antique urn is an example.

Good images, they found, are created using special camera settings and positions to create unusual angles and perspectives, and careful post-processing to produce something you won't see in everyday life. A highly-rated photo was characterized by subject matter that was extraordinary either because the scene, action, or emotion shown was unusual, or because a common subject was captured in an unusual way.

CORRECT

Photos people liked typically have some part of the photo in sharp focus, although the researchers found that, on average, blur was high. The water blur behind the Dogwood flowers at Yosemite is an example.

A zoom lens, pulled during an exposure (such as the image of stained-glass windows by Ken Douglas), can create an interesting blur, and motion blur can be used to show speed—photographers like to do that with race cars, for example.

But a photo with camera shake, or one created with a cheap lens, was seldom appreciated. Good contrast is typical of photographs people like. Point and shoot cameras and inexpensive microscope camera adapters—thanks to cheap lenses—produce washed out images that were judged inferior. Simple sensors that use average brightness and limited in-camera processing can produce poor images too.

All generalization are bad (including this one); likewise, every rule has exceptions. We all can point to exceptional images that don't have the three characteristics I've written about here. But if you make your micrographs simple, surreal, and correct according to the research you'll produce images people love.

Comments to the author are welcomed, email: tdharnish AT gmail DOT com

The author's article 'What Makes a Technically Good Micrograph?' is also featured in the May 2019 issue of *Micscape*.

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