

Imaginative Images

Getting decent looking full color online images can be a nasty problem. Except for several outrageously costly models, most digital cameras are not even remotely good enough yet. Especially for lettering or other fine detail. Instead, I've discovered that a scanner can take a much better photo than a digital camera can.

Here's some rather amazing scanner examples...

www.tinaja.com/images/bargs/casio1.jpg
www.tinaja.com/images/bargs/lumin1.jpg
www.tinaja.com/images/bargs/noisegn1.jpg
www.tinaja.com/images/bargs/punchdn1.jpg
www.tinaja.com/images/bargs/thermoc1.jpg

Consider some eight inch object. A digital camera might deliver 800 pixels per line at best. A premium scanner can easily deliver 10,000. Leading to an area resolution that is many *hundreds* of times higher. Your exposure, distortion, lighting, and focus will usually be right on. You also work directly with high res bitmaps instead of being forced into compression artifacts. It's fast, simple, and cheap.

Naturally, you are limited to "front only" scenes. And to objects that fit on your scanner bed. Your chosen scanner must also have an exceptional depth of field. And lighting does tend to drop off dramatically on the more rearward portions of your subject. But within these obvious bounds, there is no comparison in the results you'll get.

Scanning a "Photograph"

Your imaging process can begin by placing an object on a suitable scanner and then generating useful workfiles for further processing. Here's some handy tips...

Use a premium scanner– Make sure your chosen scanner has a minimum resolution of 1200 DPI, scans "millions of sharp colors", and offers a truly exceptional depth of field. Preferably a legal size or even larger. The *Hewlett Packard Scanjet 6100C* seems to be one good choice.

Keep the glass exceptionally clean– Any thumbprints and cat hair on the scanner glass are sure to end up as image blemishes. Clean your glass immediately before each use. Carefully avoid any and all scratches.

Stabilize the object– Remove the lid. Then use a variety of erasers or plastic doodads from a "props box" to make sure your object will sit perfectly still during scanning. Add tape to the scanner frame to secure any line cords or anything else that might move your object.

Get parallel– Once again, you use erasers to prop up the corners of an object. Such that the front panel or whatever is *perfectly planar* to your scanner glass. Instead of awkwardly sitting on random knobs or switch handles. When possible, physically support the entire object slightly off the glass.

Carefully select support points– Make sure any erasers or other supports do not mask anything crucial underneath. Place supports only over "easily edited" object areas. Such areas should be nearly identical left, right, and below your intended support point. And lettering free.

Get square– It is of utmost importance to carefully align your object. Use a mechanic's combination square to *aim for a one pixel alignment accuracy* if possible. Slightly slanty edge lines are certain to cause you editing grief. These can be exceptionally difficult to deal with later.

Paper the background– Select an appropriate paper color and cover every remaining part of the scanner bed. Cutting holes in the paper sheets or creasing them might improve stability and get you up as close to your glass as possible. Stabilize with tape or weight if needed. But don't worry too much about the exact paper uniformity.

Goose the gamma– If available, try using an extremely sharp rising custom gamma curve. One that dramatically brightens all levels. Most especially those very darkest ones. Your curve should climb very steeply and then gradually flatten out. *Lighten everything*.

Zoom moderately – Even with the higher resolution, you'll want to get as many pixels working for you as possible. A moderate zoom before your final scan is a good choice. This usually also will end up as nearly "full" size on a larger monitor with higher screen resolution.

Use bitmap format– Uncompressed bitmaps are by far the best choice when both maximum lettering sharpness and freedom from generational artifacts are needed. Always do save and process initially in a bitmap format. Change only your final edited images to JPEG or other more compact formats. And then only as a last step.

Use CD-R Disks– Raw bitmaps can consume prodigious amounts of memory, especially on repeated version saves. Keep these bitmaps out of your main computer memory by using CD-R optical drives. Saving all work in progress to a dedicated CD-R disk. Be sure to resave often. Disks are now cheap. Use of one per image is a good idea.

Converting "Photograph" to Image

The next step in the process is to digitally "improve" the scanned image, changing it into something that's halfway between a photograph and an art drawing. The secret is to remove the image defects while still accurately conveying key device features. Your best of "improvements" should seem to utterly disappear when they are properly done.

Here's some processing suggestions...

Pick suitable tools– One obvious choice here is Adobe's *Photoshop*. But I've found very useful results can be gotten with plain old *Paint* for editing. Followed by the *Arcata Pet ImageViewer* for sizing and the enhancement of brightness, contrast, and gamma. Plus JPEG conversion.

Resave often– CD-R media has a nasty habit losing a file every now and then. Sometimes recoverable, sometimes not. Be sure to repeatedly save ongoing work to new and incrementally higher filenames. Never back up less often than you are willing to loose.

Crop to subject– My own preference is to have a solid pastel color background. One that emphasizes your object shape but otherwise fades into obscure invisibility. Select one pixel in a lighter background area as the target tint. Expand this first into a rough background which covers everything not immediately adjacent to the subject. Then use individual pixel tools to actually crop to subject.

Save a palette– Save one or more portions of the original background in distant locations. These will give you a stash of blending pixels that may be very handy for later jaggie reduction and other use. The palettes can be erased after all of your other work is complete.

Remove the props– The chances are there'll be pieces of eraser or whatever left on your image. These are removable by sliding copies from nearby pixels over them. Either by dragging *Paint*'s box selection tool, or by using the pencil to copy nearby pixels or lines. Note that the pencil can be forced to draw horizontally or vertically only by holding down the shift key. A most handy insider secret.

Retouch defects– This is where you get rid of the cat hair and all the pixels whose colors are just plain wrong. This can get done on a pixel-by-pixel basis. You can also select larger regions to let nearby textures overwrite any problem areas. Note that dragging such a region diagonally is less noticable. And that a pixel retouch can feather any obvious region discontinuities.

Deal with jaggies– Try to get as many perfectly horizontal or perfectly vertical edge lines as possible. Cropping into the subject often can eliminate a jaggie or two. Physically offsetting the whole top of the image by a pixel every time it gets really needed is another possibility. Lighten edges where appropriate. Remaining jaggies can be feathered by using suitable anti-aliasing tints from your saved palette.

Crowd shadows– Almost certainly, there will be distracting and uselessly dark areas in your image. One useful way to deal with these is to crowd them. Do this by sliding an adjacent brighter region down into the dark by a pixel or two. The trick is to get the last "brown" line to replace the first few useless "black" ones.

Remove undesirables– The next step beyond defects is to selectively improve an object. Such as taking out lettering or calibration labels. Or fixing blemishes and paint chips. Or using solid color fills over awkward areas. Just make sure your final image fairly represents the original product.

Emphasize a few edge details– On the other hand, certain edges sometimes should be made purposely jaggy. Pipe threads, ferinstance. Or fine sensor details. Fortunately, the eye views detail in black and white rather than color, so a certain mismatch between threads and their colors will not be noticed. If you have to, completely redraw a region to get an exact pixel accuracy of whatever you are trying to portray. But a little of this goes a very long way.

Use symmetry tricks– Once you have one corner of an object rounded and anti-aliased and de-jaggied the way you want it, make a copy and flip it vertically or horizontally. Then copy this to unprocessed corners. Sometimes you can even mirror the left half of an image portion with the right. Improving appearance while saving lots of time and effort. But don't get too obviously perfect. And carefully blend anything jarring.

Selectively brighten– *Photoshop* and other fancy editing programs let you selectively enhance portions of images. You can fake this with *Paint* by isolating the element to be brightened, fixing it with *ImageViewer*, and returning it to *Paint* as an overlay. This is one roundabout way to deal with low brightness on further away image areas.

Add needed extras– It's often easier to add product feet as hand drawn artwork. Or to splice in a line cord from some other image. Or even to merge two image portions by first using the *Paint attributes* to expand the size and then dragging into it. If something looks too garish (such as a brushed aluminum handle), try replacing it with flatter and more subtle *Paint* pixels.

Crop, balance, and convert– Once the image looks as good as you think *Paint* can get it, switch to a program that lets you crop to size. And then lets you reemphasize contrast, brightness, and gamma. Almost all scanned images can be dramatically improved by raising both your contrast and brightness. Subtle gamma changes can also help. Finally, convert your final to more compact JPEG format.

For More Assistance

Dozens of additional examples of scanned "photographs" are at www.tinaja.com/barg01.html An additional scanning tutorial is up as www.tinaja.com/glib/muse139.pdf Custom consulting on these techniques is available by way of my www.tinaja.com/info01.html or by emailing me directly at don@tinaja.com Let's hear from you. ♦

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