Kai's Power Tips #5

One Minute Quickies:
Have a Ball... Instant Spheres

Why?
Cause one needs spheres, damn it, and the teeming millions want to know how...
The basic technique is ultra simple. But there are a few tricks worth noting.

How?
The spheres can be generated at any size, exact numbers are only examples provided for repeatable results.

1) Go to File > New and create a 400x300y window, grayscale, 72 dpi.

2) Select the Ellipse Marquee, click and drag from the center of the window to create a circle, in our example 200w 200h.

3.0 Tip>> No need to waste mouse travel time when you can select the elliptical marquee tool just by hitting the "m" key! You now have the rectangular marquee selected? No problem- pressing the "m" key will toggle back and forth between the elliptical and rectangular marquee!

TIP >>> The Shift key will change the marquee to be a true circle and the Option key (Alt key) forces it to be centered on the initial click point. Often overlooked is the fact that these keys can be combined and operate DURING the dragging (In many other programs such modifiers have to be pressed first or not be functional at all).

TIP >>> Use Window > Show Info to see the initial pixel location (i.e. find 200x 150y exactly) as well as current cursor position and, while dragging, the width and height of the ellipse/circle.
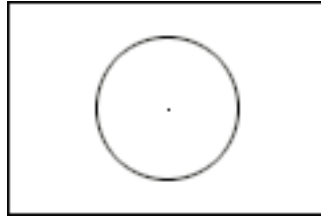
3) Since the sphere needs a white highlight fading off to darker shadows we need to invert the fore and background colors. Use Windows > Show Palette. The pop-up says Fore (ground): select white from one of the small color samples, or drag the RGB sliders to 255. Set the pop-up to Back and select a Black background.

TIP >>> The usual way to set the foreground color is with the eyedropper. Double clicking on it will reset the fore and background to b&w. Use the Option key (Alt key) while sampling with the eyedropper to set the background: if you had even a few black pixels you could reverse the colors above with two clicks and without the palette window. Also: Remember the Preferences setting for Eyedropper sampling

TIP TIP >>> Often overlooked is the fact that the eyedropper works across MULTIPLE windows! You can get a color from any other window in the background without making that window come to the front ... VERY useful. In Photoshop 2.5 you simply click on the switch colors icon, a double-headed arrow located in the box containing the foreground and background colors.
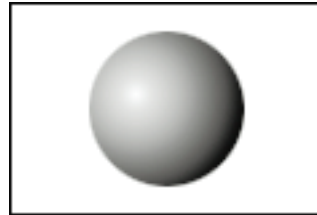
4) Double click on the Blend tool (next to the fill bucket) and click "Type : 'Radial'".

3.0 Tip>> Still lazy with the mouse, are you? Just hit the "G" key to select the blend (gradient) tool.

5) Now for the Instant Sphere: Click the Blend tool at 150x 100y and drag to 200x 250y (exact numbers not critical here). But the cicular marquee must still be selected!
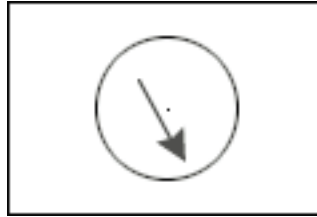
Voila: Instant Plain Sphere:

Notice that the effect works much better with the highlight slightly displaced from the center. In this scenario the fill is really only composed of concentric circles and that is detected easily if the highlight is in the center.

Note: If this doesn't look like a very smooth sphere to you, check if the little Apple icon in the upper left corner has color stripes. It is supposed to be gray! If you have color there, you are still in the 16 shades of gray of the system palette and you are missing 240 additional ones... Go to the "Control Panels" under the Apple menu and in "Monitors" set it to 256 GRAYS! Big difference.

What Else?

The sphere image is influenced by several variables: the start and end color, the position of the highlight (initial click) and shadow (drag-release distance), and the settings in the Blend tool dialog. Experiment with other positions and settings.

In order to seriously improve the subtlety of the effect to the point of an almost ray-traced look, in a fraction of the time, try the following technique:

1) With the basic sphere still shown and its marquee selected we will do overlay fills with the blend tool. The key is to use transparency settings. Do as in 5) above but vary the start- and end-points.


Tip >>> To achieve the transparency you could double click on the blend tool and set Opacity in the dialog to, say, 33% or 22%..(I use identical digit numbers a lot, its faster). But much faster is to simply press the digits 1 through 9 while you operate the tool, setting opacity to 10% through 90% instantly. This often overlooked shortcut works for all tools to which transparency applies!

2) The effect of multiple overlaying blends is to soften the fill, get rid of the "concentric circle" quality, add realistic multiple highlights and generate spheres similar to "Radiosity" techniques.

3) With repeated use of the fill you may notice that the sphere's edge may not retain a perfectly circular shape (exaggerated in this small sphere). The quickest and easiest method is to use Select > Defringe (for 3.0 users- Select > Matting > Defringe) with a setting of 1-3, which will expand inside pixel color to the edge of the selection
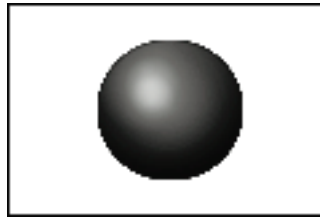
Tip >>> In case Defringe is greyed out (it only works on 'floating selections') use one of the arrow keys to nudge the selection by a pixel.

3.0 Tip>>> the Defringe command also works on layers in this version. Layers are essentially treated as a floating selections....

Tip >>> Other Methods to clean up the edge of a selection would be a) Edit > Stroke then add a 1 or 2 pixel border inside, center or outside (depending on the case) or b) to use Select > Border at 2 or 3 and then Blur.   The latter will be, well, blurred, the former can create nice sharp yet anti-aliased edges but only if either the background or the selection has solid colors or the stroke looks like a 'border'.

4) Now to add a finishing touch, here is how to add a quick shadow. First, while the finished sphere is still selected, copy it (command-c, ctrl-c) to the clipboard.

3.0 Walk-Through>>> Now that you have the sphere copied to the clipboard:

a) Just hit Command-v, ctrl-v (or choose Paste from the Edit menu) and then switch to the Layers palette. You will see a second layer marked "Floating Selection". As mentioned above, Photoshop 3.0 treats layers as floating selections, and vice versa.

b) To make it a permanent layer, just click on it in the palette, and drag it down to the small document icon at the bottom of the palette. Either click "OK" in the resulting dialog, or give the new layer a name, like....hmmm....Sphere, maybe?

c) Return to the "Background" layer by clicking on it in the palette. Choose select all (Command-a,ctrl-a) and fill the background layer with white (If white is your background color, just hit Delete. If it is your fore-ground color, hit Option-Delete, Alt-Delete. Then follow steps 5-7 with your background still the active layer.

5) Use the elliptical marquee and select a rough area for the shadow. Be sure to make it quite stretched hori-zontally, as the effect becomes much more unrealistic with the old "concentric circle" problem.
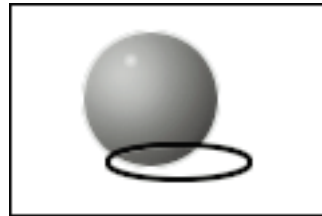
6) Set Select > Feather to a value about half the short diameter. Make it as big as you can (20,30,40) until Photoshop complains. This will create a soft band inside and out of the selection in which effects are soft-ened.

7) With the background still set to black all you have to do now is hit the "delete" key, voila. If the black part interferes with the appearance of the sphere (it might not) paste the 'clean' version back over it.

3.0 Walkthrough, continued>>> There is no need to paste the sphere back over the shadow. You should have the whole effect with layers, with one cool addition- you can reposition the sphere. Select the move tool (looks like four intersecting arrows), or just hit the "v" key (another cool shortcut- do you get the feeling that there are much more?). Make your "Sphere" layer the active layer, and then use the move tool to reposition the sphere over the shadow.

Tip >>> Very valuable to see the effect of Fringe, Border & other selection work is the Select > Hide Edges command. (Command-h,ctrl-h as well.) **MetaTIP >>>** I use it SO much in conjunction with Command X C and V (Cut, copy,paste) Ctrl X C and V that I defined a Quick Key "Command-Spacebar" to be available right next to these keys and remove the selection marquee "dancing ants" immediately ALL the time.

8) The feathered shadow depends on both the feather size and the background color. Try a dark grey instead of black to soften the effect. With the Hidden Edges you can repeatedly press the delete key and see the shadow grow and darken interactively..neat! Much better than trying to airbrush a freehand shadow in here! More complex shadows are covered in a separate document, as is "cleaning up edges".

9) Final things to try with the sphere: copy the clean sphere onto any other document and use the power of Edit >Paste (Compostite) Controls... vary the opacity, fuzzyness, etc. to achieve realistic glass spheres. To reflect the background onto the sphere use the Spherize filter and paste a half opaque version.

10) To colorize into a solid color sphere convert to Mode > RGB, then Image > Adjust > Hue and Colorize.

Tip >>> You can click in the Title bar (e.g. on the word "Levels") to quickly compare the before/after state of the Hue... settings.   This often overlooked feature is true for many dialogs that affect pixel brightness, saturation, etc. **MetaTIP>>>** After using the Preview button once the preview will not work again on 24 bit cards. Use "Option Preview" to restore it.

11) As with any contone grayscale images, the sphere can be affected in interesting ways with the Image > Adjust > Curves... Dialog.

Tip>>> For versions 2.5 and later, this dialog is now found under Image > Adjust > Curves. And for you 3.0 trailblazers- this, of course, works independently on layers. Be sure and select the "Sphere" layer to isolate it.

Interrupt the continuous greys with bands of black and white by drawing (in the Arbitrary dialog edit window) small lines horizontally at the top and bottom as shown here:
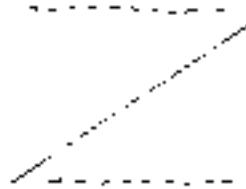
This will create sharp bands in the sphere. Then click "Smooth" to soften the lines.

Tip >>> you can leave the dialog and the cursor becomes the eyedropper. Click-hold on any part of the image and see where in the arbitrary map that grey level falls. You can locate specific bands that way (If you need that one special Jupiter ring...) Try this with a greyscale human face, too...

Season with the Spherize Filter or Pinch at -99 (Yes it does negative pinching!) and a couple more blends at 10% Opaque ("1" key).

Not bad for algorithmic painting, using neither airbrushes nor raytracing...

Read the Adobe manual and the Photoshop handbook. These tips are often complimentary to basic techniques described there.

Happy Photoshopping,   Kai Krause