STEVE CAPLIN'S A TO Z OF DESIGN

R: Reflections

Steve Caplin walks us alphabetically through the concepts essential to success for any jobbing or aspiring designer.

ABOUT THE AUTHOR

Steve Caplin is a designer and illustrator working for a range of national newspapers. His best-selling *How to Cheat in Photoshop*, now in its fourth edition, is published by Focal Press.

Creating reflections in Photoshop can be the easiest, or hardest, job in the world. It depends on the object you're reflecting and the surface on which it stands.

The simplest type of reflection is a head-on view of an object – you flip a copy of the image vertically then lower the opacity. As mirrors are the only surfaces that are perfectly reflective, you'll also need to fade out the reflection so that it's more transparent the further it is from the base of the object.

The easiest way to do this is to add a layer mask to the reflected copy and use the Gradient tool to draw a white-to-black gradient vertically downwards from the object's base. This produces a smooth, gradual fade. Reflections of this kind are popular on websites at present, largely due to the effect being a style that is built-in to Apple's iWeb application.

If the object is flat but not head-on to the camera, the reflection becomes slightly more complicated. When a copy is flipped vertically it won't line up with the base of the original: you'll need to distort it to fit. Usually, shearing the image is the simplest way to match the original. Enter Free Transform mode using Command-T: then hold Command and Shift as you drag a side handle vertically. The Command key allows that side to move independently; the Shift key limits its movement to up or down. Finally, apply the Gradient to a layer mask, as described above, to create a soft fade.

The third type of reflection occurs when we can see two faces of the object – such as a box viewed from an angle. No amount of shearing or distortion will make a vertically flipped copy match the original, since fitting one side will throw off the other. The solution is to split the faces into separate layers by selecting a face and using Layer > New via Cut (Command-Shift-J). Now all the sides can be sheared independently.

But what of lowering the opacity and fading with layer masks? It would be tricky to make two separate gradients align on our two layer masks. We could merge them but there's a better solution. Select both layers and press Command-G to make a new group. You can now change the opacity of the group as a whole and apply a Gradient to a layer mask for the group. Combining multiple layers into groups will make even complicated reflections behave as you want. And it's good practice, too.

The fourth type of reflection is when there are multiple planes in the object, such as a box whose lid we can just see. When reflected, the lid would be visible, but not in the position it appears in the original. Again, the solution is to split the object into multiple layers, distorting the sides, and sliding the top down so it appears lower in the mix.

▼ 01 **A head-on subject, such as this wardrobe, is the easiest sort of reflection to make. First, flip a copy vertically and move it below the original, then lower the opacity and use the Gradient tool on a layer mask to fade it away smoothly.**

▲ 02 An angled view of the same wardrobe is more problematic. When flipped, the reflection clearly won't fit the object. But by shearing it in sections, we can make it line up with the base of the original.

▲ 03 When we spin this wardrobe around and raise our point of view, we have a different problem: that curved top won't be so visible. Separating it into back, side and top allows us to transform each individually.

This process gets more complicated with non-boxy objects, such as cars. The only way of dealing with these most complex of reflections is to split the reflected object into as many constituent layers as is necessary to make it work. Again, unifying all the layers as a single group will help you to deal with them afterwards; and if the opacity of the group is sufficiently lowered, any minor inconsistencies can be easily concealed.

There's another, rather different approach that feels a bit like cheating. Let's say you have a photograph of an object with a large top and narrow sides, such as a notebook, and you want to make a reflection beneath it. You could cut the sides in two, as before, but there's a simpler method.

Make a copy of the notebook layer and move it behind the original. Now lower its opacity and drag the whole thing vertically downwards. Assuming the sides are more or less symmetrical, you'll get the impression of a reflection without having to do any reflecting: you may need to shear the sides slightly, and perhaps flip any off-centre features or writing, but you'll end up with a far more convincing result this way.

This last approach can also be used when reflecting objects such as candlesticks, which have a large curved base. Flipping vertically and distorting the base into an opposite curve will prove almost impossible. It's far easier to make a copy of the base alone, slide it downwards and flip a copy of the whole candlestick behind it.

Finally, we need to consider reflections on surfaces that aren't perfectly smooth, such as water. We need to distort the reflection so that it appears to ripple on the surface. You can use a Photoshop filter such as Ocean Ripple to create your distortion but it's more effective to use a Displacement Map.

Duplicate the reflection and, if it's a group, merge the group into a single layer. Copy the water in a greyscale document and blur it slightly to remove the hard edges. Save it to disk and use Filter > Distort > Displace on the flipped reflection.

Choose the saved file when asked for a displacement map and you'll find that the displacement will precisely match the surface of the water. You may need to experiment with the displacement amounts to get the best results, so be prepared to run this filter a couple of times in order to get it exactly right.

▲ 04 To make the reflection for this MacBook, the bottom section is simply duplicated and slid down behind the original. It's then a straightforward matter to flip elements such as the thumb recess, and place the screen behind it.

▲ 05 When reflecting in a non-flat surface, we need to add some distortion to make the effect convincing. Here, as simple Ocean Ripple filter is sufficient.