Hack 19. Release Eye Fixations for Faster Reactions

> It takes longer to shift your attention to a new object if the old object is still there.

Shifting attention often means shifting your eyes. But we're never fully in control of what our eyes want to look at. If they're latched on to something, they're rather stubborn about moving elsewhere. It's faster for you to look at something new if you don't have to tear your eyes away—if what you were originally looking at disappears and then there's a short gap, it's as if your eyes become unlocked, and your reaction time improves. This is called the gap effect.

In Action

The gap effect can be spotted if you're asked to stare at some shape on a screen, then switch your gaze to a new shape that will appear somewhere else on the screen. Usually, switching to the new shape takes about a fifth of a second. But if the old shape vanishes shortly before the new shape flashes up, moving your gaze takes less time, about 20% less.

It has to be said: the effect—on the order of just hundredths of a second—is tiny in the grand scheme of things. You're not going to notice it easily around the home. It's a feature of our low-level cognitive control: voluntarily switching attention takes a little longer under certain circumstances. In other words, voluntary behavior isn't as voluntary as we'd like to think.

How It Works

We take in the world piecemeal, focusing on a tiny part of it with the high-resolution center of our vision for a fraction of a second, then our eyes move on to focus on another part. Each of these mostly automatic moves is called a saccade [Section 15].

We make saccades continuously—up to about five every second—but that's not to say they're fluid or all the same. While you're taking in a scene, your eyes are locked in. They're resistant to moving away, just for a short time. So what happens when another object comes along and you want to move your eyes toward it? You have to overcome that inhibition, and that takes a short amount of time.

Having to overcome resistance to saccades is one way of looking at why focusing on a new shape takes longer if the old one is still there. Another way to look at it is to consider what happens when the old shape disappears. Then we can see that the eyes are automatically released from their fixation, and no longer so resistant to making a saccade—which is why, when the old shape disappears before the new shape flashes up, it's faster to gaze-shift. In addition, the disappearing shape acts as a warning signal to the early visual system ("There's something going on, get ready!"), which serves to speed up the eyes' subsequent reaction times. It's a combination of both of these factors—the warning and the eyes no longer being held back from moving—that results in the speedup.

In Real Life

Just for completeness, it's worth knowing that the old point of fixation should disappear 200 milliseconds (again, a fifth of a second) before the new object appears, to get maximum speedup. This time is used for the brain to notice the old object has vanished and get the eyes ready to move again. Now, in the real world, objects rarely just vanish like this, but it happens a lot on computer screens. So it's worth knowing that if you want someone to shift his attention from one item to another, you can make it an easier transition by having the first item disappear shortly before the second appears (actually vanish, not just disappear behind something, because we keep paying attention to objects even when they're temporarily invisible [Section 36]). This will facilitate your user's disengagement from the original item, which might be a dialog box or some other preparatory display and put her into a state ready for whatever's going to need her attention next.