

# A New Look at Perception (Thank you, El Greco)

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El Greco was one of the greatest artists of the Spanish Renaissance, and also one of its most idiosyncratic. His contemporaries were puzzled by his fantastic use of color, and even more so by his oddly distorted vision. Many of his figures—*Saint John the Baptist* and *The Repentant Magdalen* and even his own self-portrait—are unnaturally elongated, as if they are being stretched from toe to head.

El Greco found a more appreciative reception among 20<sup>th</sup> century art historians, but the puzzle of his style persisted. Then, in the early 1900s, one expert came up with an explanation: The painter suffered from a severe astigmatism—a distortion of the eye—which “stretches” the world vertically. In other words, El Greco was merely painting what he saw. Case closed.

Except that it wasn't, really. This idea remained popular among critics and historians for nearly a century, until one pointed out a problem with this line of thought: If El Greco did indeed perceive a stretched out world, then he would also have seen his canvas as stretched out—and his reproductions on the canvas. In other words, the distortions of the real world and the reproduction would cancel each other out; the real world elongation would never be transferred to the canvas. Clearly, his distinctive style could not be explained by a literal perceptual disorder.

The wrongheaded thinking that kept this theory alive for a century is now known to logicians and perception experts as the El Greco fallacy. It's a peculiar kind of illogical thinking, which is highly intuitive but obviously wrong once it's illuminated. And its sweep may go far beyond Renaissance art. Indeed, it may be keeping alive one of the most popular—but questionable—ideas now current in the field of human perception.

At least that's the argument of two Yale University scientists. Chaz Firestone and Brian Scholl decided to apply the El Greco logic to two prominent psychological phenomena, both examples of “top down” influences on what we see. “Top down” influences include beliefs and desires and abilities, which a wave of recent research has shown to shape our vision of the world. For example, it's been reported that people who are wearing a heavy backpack will see hills as steeper, presumably because they are aware that the hill will be more difficult to ascend with this burden.

Firestone and Scholl had their doubts about this line of study and especially about the evidence marshaled to support it. So they decided to revisit two of these well-known effects with slightly altered methods—methods that would expose any El Greco-type fallacious thinking. Here they are:

Imagine holding a rod across the front of your body, with both hands, and approaching a doorway. Most people facing this task will wonder if the doorway is too narrow for the rod, and they will judge the width of the opening. That's higher level cognition, and the research shows that holding the rod influences that judgment by actually making the doorway look smaller—compared to what it would look like to people holding no rod. In the original study, volunteers holding the rod (or not) looked at the

doorway, and then turned to face a researcher, who held a tape measure. The researcher pulled the tape measure out until the volunteer said to stop—at the length that matched the perceived doorway. That’s how the researchers measured perceptions of the door’s width, leading to the conclusion that thinking directly shapes perception.

Now, here’s what Firestone and Scholl did differently. First, they replicated the original study and got the same results. But then they made this change: After facing the doorway with the pole, they turned to face not a tape measure but another doorway. This doorway, which they could also potentially pass through, was adjustable, and became the measuring device. A researcher widened or narrowed it until it matched the first opening.

This may seem like a subtle difference, but it’s crucial for this reason: If holding a rod does indeed “shrink” the perceived opening, then this version of the experiment should “fail.” That is, volunteers should see *both* doorways as narrower—just as El Greco would have to have seen both real figures and reproductions as elongated. If holding the rod still shrinks the doorway, it cannot logically be explained as a literal perception distortion.

And that’s just what the scientists found. The volunteers with the rod continued to see the compressed doorway even though they should not have. If holding the rod really made the doorway look narrower—as the original work claimed—it should have made both doorways look narrower, and the effects should have canceled each other out. In short, there is no evidence from this line of study that thinking shapes literal perception.

Firestone and Scholl wanted to show the versatility of the El Greco strategy, so they ran a second study of a completely different kind of top-down influence on perception. This one focused on a recent finding that thinking about unethical behavior actually dims the light that is perceived—as if thinking “dark thoughts” literally makes the world a darker place.

In the original work—which they replicated—volunteers recalled either an ethical or an unethical act from their past, including the emotions they experienced at the time of the act. Then they all rated the brightness of the room on a scale of 1 to 7. In Firestone and Scholl’s El Greco version of the experiment, they simply replaced the 7-point scale with seven gray patches varying from light to dark. The volunteers picked the patch that most closely matched the room.

Again, this seems like a small change, but it brings the El Greco fallacy into play. If reflecting on unethical deeds indeed makes the room look darker, then this version should fail: The walls of the room would look darker, but so would the patches, so these effects should cancel one another.

They found the same perceptual distortion as in the original (and replicated) experiment, as described in a forthcoming paper in the journal *Psychological Science*. This means that the effect cannot be perceptual. If the walls looked darker, the patches should also have looked darker—but they did not. Something else must account for the perceptual distortion. The room did not literally darken for those unfortunate volunteers who were fretting about their moral slipups.

So what accounts for the perceptual distortions in these past studies, if not the influence of higher order thoughts and emotions and abilities? That, for now, remains as mysterious as the source of El Greco’s

strangely distorted vision.

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