
SHORT AND SWEET

On the origin and status of the “El Greco fallacy”

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Abstract. The oddly elongated forms painted by the Spanish Renaissance artist El Greco are popularly but incorrectly attributed to astigmatism. The particular reason this explanation fails has long offered a deep lesson for perceptual psychology, even motivating recent research. However, the details and historical origins of this lesson—often called the “El Greco fallacy”—have been obscured over many retellings, leading to an incomplete and even inaccurate understanding of its provenance and status. This note corrects the record, which is richer, subtler, and more interesting than recent accounts would suggest.

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Famously, the Spanish Renaissance artist El Greco painted subjects with unnaturally proportioned figures. In works such as *Saint John the Baptist*, *The Repentant Magdalen*, and even a self-portrait, the main forms appear inexplicably long and thin (figure 1). According to a popular history recapitulated in scientific discussions (eg Anstis 2002; Medawar 1979; Ramachandran and Rogers-Ramachandran 2006; Rock 1966), some art historian or doctor once proposed to explain these elongations by suggesting that El Greco suffered from uncommonly severe astigmatism, which distorted his perceived environment as if by vertically ‘stretching’ it. If El Greco experienced a stretched-out world, it was reasoned, then perhaps he simply painted what he saw.

Of course, reflection on this theory reveals a confusion: If El Greco truly experienced a stretched-out world, then he also would have experienced a stretched-out *canvas*—and so any real-world distortions experienced by an astigmatic El Greco would never have transferred to his reproductions. Thinking otherwise has come to be called the “El Greco fallacy”.

Though often attributed to later sources, the term “El Greco fallacy” appears to have originated with Irvin Rock (1966),⁽¹⁾ who saw in this error an important lesson for perception research. Discussing perceptual adaptation, Rock notes that to appropriately measure the tilt-aftereffect—wherein, eg, vertical bars appear tilted one way after adaptation to bars tilted the other way—one cannot simply have subjects adjust a second set of bars to visually match the perceived orientation of the vertical bars; for if subjects truly saw the vertical bars as tilted, then they would also see their adjustable bars as tilted, and the effects would ‘cancel out’. Rock names this insight “in honor of those art historians who believe El Greco painted elongated figures because he suffered some visual defect and saw his figures that way” (p. 12). Several scientists have since seen similar implications in this story: Gibson (1972) generalizes the fallacy to any constant-error distortion affecting equally the item reproduced and the means of reproduction, and Medawar (1979) adapts the El Greco fallacy into an “intelligence test”, concluding that anyone fooled by the astigmatic theory is unfit for a scientific career and “must be rather dull” (p. 9). (Out of either consideration or ignorance, Medawar attributes the astigmatic El Greco theory to “an ophthalmologist who shall be nameless”.)

⁽¹⁾Pirenne (1970) attributes the term to J J Gibson, though without citation. (Gibson’s first in-print mention of the fallacy appears to be an unpublished 1972 manuscript.) For what it is worth, Rock implies that the term originated in his laboratory.



Figure 1. [In color online, see <http://dx.doi.org/10.1068/p7488>] Canonical examples of the elongated figures painted by Spanish Renaissance artist El Greco. [Clockwise from left: *Saint John the Baptist*, ca. 1600, oil on canvas, 111.1×66 cm (reprinted with permission from the Fine Arts Museum of San Francisco); *The Repentant Magdalen*, ca. 1577, oil on canvas, 108×101.3 cm (reprinted with permission from the Worcester Art Museum); *Portrait of a Man*, ca. 1590–1600, oil on canvas, 52.7×46.7 cm (reprinted with permission from the Metropolitan Museum of Art).]

The El Greco fallacy surely offers a deep and subtle lesson for perception research. Indeed, Firestone and Scholl (in press) suggest that it afflicts several prominent claims of ‘top–down’ effects on perception and can be adapted into a research strategy to determine whether such effects are truly perceptual. But how accurate is the El Greco fallacy’s popular history?

The notion of an astigmatic El Greco indeed originated with a doctor. In 1913 and 1914, an ophthalmologist named Germán Beritens proposed and defended such a theory in a pair of Spanish-language pamphlets (Beritens 1913, 1914). Beritens’s ideas proved surprisingly influential, making international news within months (eg *Algemeen Handelsblad* 1914) and drawing American art historians to the Spanish city of Jaca (where an infirmed Santiago Ramón-y-Cajal also resided at the time). At his home there, Beritens would illustrate his theory by showing visitors specially fabricated lenses that made figures appear “ascetic and elongated”, just as in El Greco’s paintings (Schapiro 1927/2009, p. 103).

However, contrary to later grumbling, there is little evidence that serious art historians ever actually bought the astigmatic El Greco theory, despite its prominence in popular discussions of the artist's work. Instead, for the purposes of the El Greco fallacy's broader lesson, the true story is even *better*: Though scholars considered and rejected the theory, they did so largely on historical grounds rather than on the otherwise-plain theoretical confusion. For example, one historian, contemporary with Beritens, notes the distortions' inconsistent appearances in El Greco's oeuvre: "However plausible this [astigmatic] explanation might seem at first, a closer scrutiny of his work makes it impossible to hold. How is it that El Greco painted in such varying a manner throughout his lifetime?" (Marceau 1929, p. 17). Similarly, Beritens's visitor Meyer Schapiro (later the distinguished art historian) complains that the ophthalmologist "neglects Tintoretto, the teacher of El Greco, who employed similar distortions" (Schapiro 1927/2009, p. 103)—a criticism later echoed by Trevor-Roper (1959), who asserts that "The primary objection has always been securely based on the historical setting of El Greco's work, with his Cretan compromise between a Venetian naturalism and perspective, and an underlying traditional Byzantine stylization" (p. 721).

But, if it seems unlikely that so many scholars missed the fallacy inherent in the astigmatic El Greco theory, that is because they didn't. In fact, Beritens (1914) himself knew of the objection, even calling it the "principal argument that has been put against my theory" (p. 11). And he also attempted to rebut it, observing that artists set their subjects farther than their easels and arguing that the astigmatic distortions varied with viewing distance. Thus, though ultimately wrong about El Greco's elongations, even the astigmatic theory's father was not the theoretical insophisticate he is later portrayed to be, having thought through the El Greco fallacy more carefully than even those who would later call him "dull".

The logical error captured by the El Greco fallacy is real and seductive, and it may even afflict current perception research (see Firestone and Scholl, in press). But, as with the reasoning error itself, its history is more nuanced than it initially seems.

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