

## **Do Things Look Flat?**

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### Abstract

Does a penny viewed at an angle in some sense look elliptical, as though projected on a two-dimensional surface? Many philosophers have said such things, from Malebranche (1674/1997) and Hume (1739/1978), through early sense-data theorists, to Tye (2000) and Noë (2004). I confess that it doesn't seem this way to me, though I'm somewhat baffled by the phenomenology and pessimistic about our ability to resolve the dispute. I conjecture that, maybe, projectivist views draw some of their appeal by over-analogizing visual experience to painting or photography. Theorists writing in contexts where vision is analogized to less projective media – signet ring impressions in wax in ancient Greece, stereoscopy in introspective psychology circa 1900 – seem substantially less likely to attribute such projective distortions to visual appearances.

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## Do Things Look Flat?

i.

I've put a penny on my desk, and I'm viewing it at an angle. I'm inclined to think it looks circular. What do you think? Give it a try. Does it look circular to you, too? Or, instead, do you only know or judge that the penny is circular, while the figure it presents to your sight – its actual visual appearance – is an ellipse? I gaze out my window and see a row of streetlights. Does it look like they shrink as they recede into the distance? Or do they all look the same size?

Alva Noë (2004) and Sean Kelly (this issue) join a long line of philosophers (stretching at least from Malebranche 1674/1997 [§I.7] through Michael Tye 2000) in saying that there's a sense in which the penny looks elliptical and the distant streetlights look smaller and a sense in which they don't. According to Alva, we “experience [the penny's] circularity in its merely elliptical [apparent] shape” (p. 166-167): Part of experiencing the penny as circular, given its angle relative to us, is simultaneously experiencing its elliptical visual appearance. Sean says, in contrast, that we normally see the penny simply as circular; only by exception do we experience its “apparent shape”, its ellipticity. We don't experience both the circle and the ellipse simultaneously, Sean suggests, but rather flip between the two much as we flip sequentially between seeing an ambiguous figure one way and seeing it another.

Now who's right? I stare at the penny confounded. In what sense is its “apparent shape” an ellipse? I'm not sure I agree with either Alva or Sean. I'm not sure I can see it as elliptical at all. Maybe I can in some sense see the far streetlights as looking smaller than the close ones, but I don't think I experience Gestalt switching of the sort Sean

describes. I've drawn a duck-rabbit and set it next to my penny. It seems like what's going on when I shift from seeing the duck to seeing the rabbit is different from anything I can muster with the penny or the streetlights. On the other hand, when I look at the rim of my coffee cup, a bit farther away and at a more oblique angle, it seems I can get a bit into the mood of seeing the rim as elliptical, especially if I unfocus my eyes a little. Maybe there's even a Gestalt switch?

How much of my confusion and uncertainty is merely confusion and uncertainty about labels, about how best to describe my experience in words, and how much is genuine confusion about the phenomenology itself? What do "looks" and "appears" mean? Are we all using these terms in exactly the same way, or might we be talking at cross-purposes? I'm not entirely sure. But I'd guess that the dispute isn't entirely linguistic. When I look at the penny, at the streetlights, at the mug, I feel different impulses that accord or conflict differently with what Alva and Sean have said; but my use of words, my understanding of the key terms in the dispute, hasn't changed. Rather, I feel like I'm reaching variable judgments about, and find difficult to fathom, the phenomenology itself. You too, or no? Many philosophers seem to think it's rather difficult, or even impossible, to be mistaken in sincere and careful judgments about currently ongoing visual experience. Perhaps, then, they'd say that Alva's and Sean's dispute is entirely linguistic or purely theoretical, that the phenomenology itself, considered simply on its own, is absolutely obvious?

Here's one possibility: Alva and Sean have each captured an aspect of an immensely complex and variable phenomenology of vision, and they're just too enthusiastic about generalizing. Here's another: The phenomenology of vision is fairly consistent and systematic, and one or more of us is simply mistaken about it. And another: Despite what I said above, the phenomenology is plain and indisputable, and underneath linguistic differences we really all agree.

Now how are we, as a discipline, to decide among these alternatives? And if we decide in favor of the second of them, how are we to assess the competing views? Sean worries that disputes of this sort often become irresolvable foot-stomping matches: "this is the phenomenology!" (stomp, stomp), "no it's not!" (stomp, stomp). I share this worry. In fact, I think it's nearly insurmountable.

To dispel his concern, Sean suggests a reaction-time experiment. Alva will probably, in his reply to Sean, provide reasons to think the results of such an experiment could at best be only suggestive (without getting into details, let me recommend the literature arising from Cooper et al. 1992). But generally, let me say, it seems to me that inferences from quantitative behavioral results to conscious experience are always somewhat speculative – and will remain so until we have a clearer general grasp of the relationship between consciousness and behavior (if ever we do).

My overall attitude about such matters is near despair. I am, as Alva puts it, a "new skeptic" about our ordinary, everyday understanding of conscious experience. But unlike most of the new skeptics Alva describes, I'm not sanguine about our ability to resolve questions about consciousness through third-person methods. The whole business, I think, is a disastrous mess.

Let's consider an issue on which Alva and Sean evidently agree: that the "apparent shape" of the coin is an ellipse. Now, I'm not sure exactly what Sean means when he says this, since he also insists that ordinarily the coin doesn't "look" elliptical and that we don't generally "experience" the ellipse – but let's assume that Sean intends his phrase non-vacuously, that on his view there is some real sense in which the coin "appears" elliptical, and that we can, on occasion at least (as he seems to say) experience that ellipticality.

Many philosophers have said similar things – even people, like J.L. Austin, you might think wouldn't (see his 1962, p. 26). Sean and Austin may be speaking somewhat in the spirit of concession, but still they say it: In some sense the coin appears elliptical. Now is this right? Is this a concession they should be making?

There are several ways to transform a circle into an ellipse, but the most natural in this context seems to be to project it obliquely onto a two-dimensional plane – presumably a plane perpendicular to the line of sight. We might be tempted, then, to say that "apparent shape" in general is defined by planar projections, and thus – does this follow? – that there's a kind of two-dimensionality to visual appearances (in the relevant sense of 'appearance'). I suspect some of the people who say the coin looks elliptical might balk at this last suggestion, but it isn't obvious where to put on the brakes.

I'm also not sure planar projection explains the lightposts smalling off into the distance. The far ones will be smaller if we project along lines coming to a vertex at the eye, but any projections from the side will intersect the plane obliquely, and thus appear

considerably larger in the plane than their straight-ahead counterparts – weirdly larger if projection onto the plane is supposed to represent visual experience (see fig. 1). It seems, thus, that we should project appearances not onto a plane but rather onto a sphere centered at the eye. (This would also capture the idea that apparent size normally varies with visual angle subtended.) But of course, technically, the projection of a circular region onto a spherical surface isn't elliptical: The ellipse is a planar figure. Should we say, then, that the apparent shape is, most accurately, a concave ellipse-like figure projected as if on a spherical surface? Well, as hard a time as I have seeing the shape of the coin as elliptical, I have an even harder time seeing it as concave! (This is true even if I exchange the penny for a quarter and bring my very nearsighted left eye about three inches from it.)

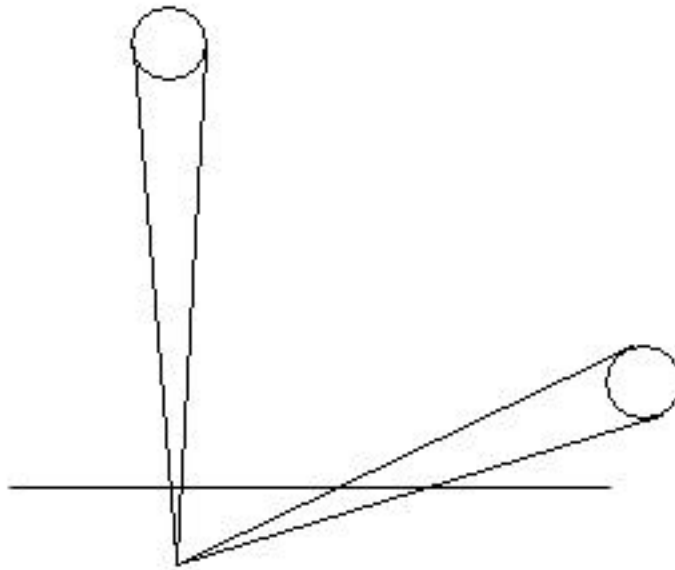


fig. 1

Maybe this discussion is too technical and picayune. Maybe I've missed the spirit of Noë's and Kelly's (and so many others') view in saying that the apparent shape of the coin is an ellipse. If so, I invite them to explain the geometrical transformation involved.

iv.

Is it just obvious and undeniable that the coin appears or looks (in some sense) elliptical, in a way that no geometrical cavils can touch? It's not obvious to me. But of course that's just confessional, just me, and maybe I'm being obtuse or willfully blind. Quite possibly so!

However, I'll tell you what I suspect. I suspect that our inclination to regard the apparent shape of the coin as an ellipse and the farther lightpost as smaller – our inclination to attribute to visual appearances or visual experience what I'll henceforth call projective distortions – is due to over-analogizing visual experience to flat media such as paintings or snapshots. Alva himself thinks theorists have often over-analogized visual experience to snapshots, mistakenly attributing to visual experience photographically rich detail from the center far into the periphery. What I'm suggesting is that Alva (and to a lesser extent Sean, and many others) over-analogizes to pictures in a different way, taking visual experience to be, in some sense, flat like a picture: The coin “looks” elliptical because that's how we'd paint it.

We over-analogize the mind quite often, I suspect, casting what's difficult and recondite in terms of better-known outward media and technologies, then misattributing features of those technologies to the mind. If you're a Searle fan or a connectionist, you might think we did that in the 1980s, analogizing thought to classical computation.

(Earlier philosophers analogized the mind to a watch or hydraulic device.) My favorite example of over-analogizing, however, is the over-analogizing of dreams to movies.

This went so far that in the 1950s the overwhelming majority of North Americans said they dreamed in black and white! (Now we say we dream in color. I'm not sure that's true either. See Schwitzgebel 2002, 2003; Schwitzgebel & Huang submitted.)

v.

I'm not sure how to establish what I've just suggested. Maybe it can't be established.

But here's a conjecture which, if true, may support the idea: Theorists writing in contexts where vision isn't typically analogized to two-dimensional, projective media will be substantially less likely to attribute projective distortions to visual experience than those analogizing vision to painting or photography. Two historical periods are especially relevant to this hypothesis: ancient Greece, where the dominant analogy for visual perception was impressing a signet upon wax, and introspective psychology circa 1900, where the dominant analogy (for binocular vision) was the stereoscope.

If a signet ring is correctly applied, the impression in the wax will accurately match, in complement, the entire shape of the signet, with a correspondence part-for-part that doesn't vary with the circumstance of application. Unlike photographs or paintings, wax impressions don't reflect different parts of their subject, or take on a different arrangement of shapes, depending on the conditions of creation (though, of course, we may see signet from different perspectives, or a signet may be engraved, incidentally, with a perspectively represented scene). Now perhaps this absence of perspective is a weakness in the wax-signet analogy: Clearly, in some sense, perception – vision



especially – is perspectival. Maybe, indeed, this is why the analogy to painting or photography has been so compelling historically, since these media are perspectival in a way that undeniably resembles vision in at least one respect: A picture will portray (and omit) almost exactly the same parts of its subject as a viewer would see (and not see) from that side. But of course the truth of the projectivist view doesn't follow from this alone.

Aristotle and Plato famously employ the signet ring analogy for perception and memory in De Anima (424a; 435a; see also De Memoria 450a where he employs both the signet ring and the picture analogy) and the Theaetetus (esp. 191c-194d), respectively. And indeed in these works, and in related works I have reviewed, neither ever speaks in a projectivist way about visual appearances, though they do discuss other puzzles about perception, and Plato discusses differences in intellectual perspective at length. Epicurus embraces the signet ring analogy (see Letter to Herodotus 49 [note the word  $\epsilon\pi\alpha\pi\sigma\tau\eta\sigma\iota\varsigma$ ] and Plutarch's Brutus) and positively asserts that our impressions are the same shape as the objects perceived (i.e., not, apparently, projective distortions). Sextus Empiricus, though critical of the signet analogy in some places (e.g., Against the Logicians I.228, 250-251, 372, II.400), appears to employ it uncritically in others (AL I.293; Outlines of Skepticism I.49) and never to my knowledge analogizes perception to having a picture in the mind. He's a particularly interesting case because he repeatedly emphasizes variation and distortion in sensory appearances, offering extensive catalogues at, e.g., OS I.44-52, 100-127; AL I.192-209, 414. None of these discussions contain any

clear examples of projective distortion.<sup>1</sup> But it's hard to imagine that Sextus would leave off his lists the kinds of cases that dominate later projectivist discussions, like the penny viewed obliquely or the row of columns receding into the distance, had they occurred to him.

I'm no classical scholar, but in the ancient Greek literature I've managed to review thus far, I've found very few explicit comparisons of visual perception, or even visual imagery, to pictures or paintings, despite some translations that misleadingly interpolate the word 'picture' into ancient discussions of imagery. (We may be even more prone to compare visual imagery to flat media than visual sensation. Calling images "pictures" almost doesn't seem metaphorical. I wonder why this is. Are images actually flat? Or does their seeming insubstantially discourage comparison to more robust media regardless of their two-dimensionality or lack of it?) And I've found no clear case of any ancient Greek philosopher attributing projective distortions to visual appearances – though one begins to see projectionist distortion, along with a decline of the wax analogy,

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<sup>1</sup> Sextus does say that from a distance a square tower may look round or a large thing small (OS I.118; AL I.208, 414), but I read these as cases of genuine misperception rather than projective distortion. He also mentions that a column viewed from one end appears to taper but not when viewed from the middle (OS I.118). I'm inclined to read this as reference to illusion in the perception of columns, well known to the Greeks. (A genuine projectivist would say that the column appears to taper at both ends when viewed from the middle.)

if one goes to ancient Rome (Lucretius De Rerum Natura IV, circa l. 430) and Egypt (Ptolemy's and Euclid's optics).<sup>2</sup>

Stereoscopes, which enjoyed a vogue in late 19<sup>th</sup> century parlors, served as the preferred analogy for binocular vision among some of the early introspective psychologists (e.g., Helmholtz 1867/1925; Mach 1886/1959; Wundt 1897/1897; Titchener 1901-1905, 1910). A stereoscope holds two photographs, taken from slightly different angles, and presents one to each eye. If the perceiver succeeds in “fusing” the two pictures, she experiences a lively three-dimensional effect. Although stereoscopes are perspectival as signet impressions are not, the stereoscopic image is not a two-dimensional projection.

In accord with my conjecture, I've generally found that psychologists favoring stereoscopy as an analogy for sight also tend to avoid saying (except in cases of outright illusion) that “apparent size” varies with distance or that a circle viewed from an angle “looks” elliptical – though Helmholtz is a notable exception. Conversely, authors not as swept up in stereoscopy (e.g., Dewey 1886), or who seem generally to prefer the picture analogy (e.g., James 1890/1981), more frequently attribute projective distortions to experience.

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<sup>2</sup> The term “impression”, which seems derived from the signet metaphor, continued, of course, to have a prominence in philosophy into the modern period – but I suspect that the metaphorical force, the power of the suggestion of impressed wax, declines in those later uses. Likewise for contemporary psychological use of “stereoscopic” in reference to binocular vision.

Psychologists analogizing vision to stereoscopy tend to stress the difference between monocular and binocular vision. Mach, for example, in presenting the sketch reproduced in Noë (2004, p. 36), emphasizes that a flat picture can only adequately represent monocular vision; “stereoscopic” vision, he says, can’t be represented by a single plane drawing (1886/1959, p. 18). Would he, then, have been willing to say that a circle viewed at an angle looks like an ellipse monocularly but not binocularly? To contemporary sensibilities this may seem strange: It seems – to me at least – that monocular vision just isn’t that different from binocular vision (though see O’Shaughnessy 2003). Binocular disparity (as late 19<sup>th</sup>-century psychologists well knew) is only one among many depth cues. The world doesn’t go flat and then puff out as I open and close one eye, I think. But of course in stereoscopy, the difference between monocular and binocular views is essential.

Psychologists fond of the stereoscope analogy also seem readier than others to find doubling in visual experience, like the doubling of an unfused image in a stereoscope.

Titchener writes, for example:

[T]he field of vision ... shows a good deal of doubling: the tip of the cigar in your mouth splits into two, the edge of the open door wavers into two, the ropes of the swing, the telegraph pole, the stem of another, nearer tree, all are doubled. So long, that is, as the eyes are at rest, only certain objects in the field are seen single; the rest are seen double (1910, p. 309).

That most people fail to notice this, Titchener remarks, is “one of the curiosities of binocular vision”.<sup>3</sup>

vi.

Hume writes:

‘Tis commonly allowed by philosophers, that all bodies, which discover themselves to the eye, appear as if painted on a plain surface (1739/1978, p. 56).

And G.E. Moore says [after holding up an envelope]:

Those of you on that side of room will have seen a rhomboidal figure, while those in front of me will have seen a figure more nearly rectangular (1953, p. 33).

I suppose it isn’t as obvious to me as it has been to many others that there is any sense – no, that’s too strong – any fundamental, culturally invariant sense in which these remarks are true. But I’m not sure how to go about resolving this question. Staring longer at the penny leaves me only more perplexed.<sup>4</sup>

## References

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<sup>3</sup> However, such remarks aren’t limited to stereoscope enthusiasts: e.g., Reid (1764/1997, §VI.13).

<sup>4</sup> Thanks to David Barlia, Richard Betts, Pauline Price, Teed Rockwell, Charles Siewert, and Gideon Yaffe for useful discussion. For more reflections in a similar vein see Schwitzgebel (in preparation).

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