

Visual Illusions as a Tool for Dissociating Seeing From Thinking: A Reply to Braddick (2018)

Perception

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Researchers in our field—like pretty much everyone else—seem to have a collective fascination with visual illusions. A recent *Perception* editorial, however, wonders whether this is a good idea (Braddick, 2018). In particular, while acknowledging plenty of useful research on (and inspired by) various individual illusions, Braddick asks whether it is really helpful to identify illusions more broadly as a category: “what have we gained by putting them in the same box . . . ?” (p. 1). Braddick’s suggestion is that doing so is a mistake motivated primarily by a superficial “innocent pleasure,” but that illusions as a category are actually “deeply unhelpful for science” (p. 1). In an explicit attempt to be provocative, Braddick even suggests that focusing on illusions as a natural kind (i.e. as a privileged grouping that reflects something important about the structure of the mind) is an “infantile disorder.” In this respect, Braddick’s editorial succeeds admirably: we are provoked! In particular, we are provoked to explain why we disagree: we think that “illusions” are a natural kind whose existence has profound implications for our (scientific!) understanding of seeing, thinking, and especially how seeing and thinking do and do not interact. This is a theme that has figured quite a lot in recent debates about how cognition may influence perception, but curiously it was not mentioned either in Braddick’s editorial or in subsequent defenses of the importance of illusions (e.g., Shapiro, 2018; Todorovic, 2018).

Seeing Versus Thinking

The name of this journal is *Perception*. There is another journal out there in our field called *Cognition*. Oops: Is this a mistake? If these terms refer to the same thing, perhaps these journals should seek to merge? But no: For many of us, it is sensible to have distinct journals, because we think of perception and cognition as at-least-partially distinct categories of mental processes. How do we know this? Since the dawn of perception research, perhaps the clearest indication that seeing and thinking can’t be the same thing has been that they can directly conflict with each other: You can simultaneously *see* one thing while *thinking* its opposite. (It *looks* like the two lines have different lengths, even though I *know* they’re the same.) This point has been made in many different ways, for example when discussing “cognitive impenetrability” (e.g., Pylyshyn, 1984), while theorizing about the “modularity of mind” (e.g., Fodor, 1983), and during active empirical debates about whether there are “top-down” effects of cognition on perception (e.g., Firestone & Scholl, 2016). But perhaps our favorite characterization of this idea—and how it effectively distinguishes perception from higher level thought—comes from Gaetano Kanizsa (1985):

The visual system, in cases in which it is free to do so, does not always choose the solution that is most coherent with the context, as normal reasoning would require. This means that seeing follows a different logic—or, still better, that it does not perform any reasoning at all but simply works according to autonomous principles of organization which are not the same principles which regulate thinking. (p. 33)

In this context, the relevance and importance of visual illusions should be clear: The empirical cornerstone of all of these ideas is that seeing and thinking can conflict—which is surely one of the core features of illusions as a general category. (Like Braddick himself, we will not aim in this short response to give a comprehensive definition of illusions, but we will just note that this essential *conflict* between perception and cognition is one of the critical properties of many such definitions; e.g., Gregory, 1997; Leslie, 1988; Pasquinelli, 2012.) This is true, certainly, in each of the actual visual illusions that Braddick himself mentions—as in the Ames room, which is so compelling *not* because it allows you to see people of different heights (boring!), but because it allows you to do so to an extent that you *know* is impossible. Indeed, in many cases, an illusion is not noteworthy *at all* unless the percepts it induces directly conflict with your higher level thought (“Oh look: two lines of different lengths! Wow!”).

Illusions as a Tool

The conflicts between seeing and thinking that are embedded in visual illusions may sound abstract, but they can also be used as a tool in vision research, to help identify when certain results do and do not implicate visual processing instead of higher level judgment. In discussions of putative top-down effects of cognition on perception, for example, it is common to assess “perception” simply by soliciting perceptual *reports*. But so often, these reports (supposedly of what observers are visually experiencing) are hopelessly confounded with observers’ higher level considered interpretations of scenes—that is, with what they *think* the right interpretations should be. Indeed, in several such cases, follow-up experiments have convincingly shown that results initially attributed to perception were in fact being driven by higher level judgment or even just by task demands (e.g., Durgin et al., 2009; Firestone & Scholl, 2014; Wesp & Gasper, 2012; Woods, Philbeck, & Danoff, 2009).

In all of these cases, the initial ambiguity arose precisely because seeing and thinking were confounded—such that observers’ perceptual reports were identical to their higher level judgments about what they were looking at. If illusions are in part cases where seeing and thinking diverge, then these examples might be considered as “anti-illusions,” where what observers say they are seeing converges perfectly with what they are thinking. In contrast, a perceptual report that, say, a ring of figures is rotating on a piece of paper (as in the Pinna rotary-motion illusion; Pinna & Brelstaff, 2000) is much more compelling: *that* perceptual report can’t reflect higher level thought, since you know paper can’t do that! In short, we think that what so many of these experiments desperately need—in a general, categorical sense—is *more illusions*.

Conclusion

Braddick (2018) suggests that we should ignore illusions as a category and should instead simply ask “questions about how perception works” (p. 2). But a critical part of understanding how perception works is understanding how perception is situated in the mind more generally, and understanding what indicates perception in the first place. And when trying to understand how the mind works, and how seeing and thinking relate to each other,

we think that the aforementioned examples show how illusions comprise a particularly useful natural category that is quite helpful for science after all.

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