

Book review: Michael Madary's *Visual Phenomenology*

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Forthcoming in *Philosophical Review*. Please cite the final published version.

It is often held that vision is purely present-tensed; that vision informs us only about how objects in our environment are (more or less) *right now*. It is not hard to tell why this thought is so popular. Just look around and reflect on what you see. I predict that you will get the appeal.

As natural as this thought might be, it is mistaken – at least, so says Michael Madary. Madary's thesis can be stated simply:

(AF) Visual perception is an ongoing process of anticipation and fulfillment.

In a nutshell, what is distinctive about (AF) is the idea that vision is partly *future-tensed*. For (AF) posits visual contents that involve *anticipation* – that is, visual contents that are not just about how the objects of vision are *right now*, but also about how these objects *will (appear to) be* as the perceiver visually explores them from different perspectives. As time passes, these future-tensed visual contents will normally end up either being fulfilled or being thwarted.

What is especially impressive about Madary's arguments for (AF) is their range. Madary buttresses (AF) with evidence from armchair phenomenology, from perceptual psychology, from neuroscience, and even from the Husserlian tradition. That strategy – of supporting one claim with many firm pillars – is one to be greatly admired, and in this book it is executed very well.

Madary advances (AF) as a claim not only about the causal processes that enable vision, but also as a claim about the phenomenology of vision – as a claim about what it's like to visually perceive (3). There is, however, some unclarity about what (AF) means. Madary tells us that (AF) is a thesis about the *structure* of vision (3), but it is not clear to me precisely how this metaphor is to be literally interpreted. It is tempting to interpret the metaphor as saying that part of *what it is*, metaphysically speaking, to be a visual perception is to be an ongoing process of anticipation and fulfillment. But this interpretation seems to be incorrect, for Madary seems to remain neutral about even the weaker claim that (AF) is a metaphysically necessary truth (4). Madary does say that “*all* visual perception of the external environment involves anticipation and fulfillment” (p. 39, emphasis mine), so perhaps the talk of “structure” is just meant to indicate that Madary takes (AF) to be a true universal generalization about vision? I am not sure.¹

¹ One problem with this interpretation: Madary later contrasts claims about the *structure* of vision with claims about the *contents* of vision (157). But if structural features of vision are just universal

Madary's arguments for (AF) come in two main bundles. The arguments in the first bundle are primarily phenomenological (chs. 2-4), while the arguments in the second bundle are primarily empirical (chs. 5-7). From there, Madary goes on to address objections (ch. 8), to suggest that visual perception is social (ch. 9), and to situate (AF) against the thought of Husserl (appendix). Limitations of space – but not of interest! – preclude me from examining all of this. I will just tour a few landmarks.

Phenomenological arguments for (AF). Madary identifies several phenomenological constraints on a theory of vision. First, vision is *perspectival*, in the sense that as you change your perspective on a perceived object, the object will typically look different to you in certain salient respects (28). Second, vision is *temporal*, in the sense that vision “appears to be *continuous* over time” rather than appearing to be “... a series of discrete snapshots” (33). Third, vision is substantially *indeterminate*, in the sense that any visual perception of a scene is compatible with multiple determinate ways that the scene might be (36-7). Madary suggests that all visual perceptions have these three qualities, and I am inclined to agree.

Madary goes on to argue that (AF) would perspicuously explain why all visual perceptions have these three qualities (38-9). Once we accept (AF), we can say that vision is perspectival because vision involves the anticipation of how objects will look from different perspectives; we can say that vision is temporal because these anticipations are continuously “stirred up,”² and either fulfilled or thwarted, as we explore our environments; and we can say that vision is substantially indeterminate because these anticipations themselves vary substantially in their determinacy.

I worry that these considerations do not give especially strong support to (AF) over its rivals. For, as you will recall, what is distinctive about (AF) is the idea that vision is partly future-tensed. But vision could obviously be perspectival and substantially indeterminate without being in any way future-tensed. Vision could even be temporal *in the sense that Madary describes* – in the sense of seeming continuous over time – without being in any way future-tensed.

But I think that I find in Madary another phenomenological argument for (AF).³ Madary asks us to imagine two subjects, Lily and Rosemary, who each walk around a particular sculpture, viewing it carefully. Imagine that Lily and Rosemary each visually attend to precisely the same features of the sculpture, in the same order, for the same period of time; their visual systems have the same

features of vision, then it is not clear why there would be a contrast here – surely there could be universal features of the contents of vision.

In personal correspondence, Madary clarifies, “It seems to me that what I have in mind with the structure of vision could perhaps be described as universal features of the content of vision.... my view is that visual content must have this structure if it is to show up for us as contentful, as being intentionally directed to the world.”

² Madary borrows this fine metaphor from Husserl.

³ Officially, Madary presents the remarks below as an *illustration* of (AF) rather than as an *argument* for (AF), but I suggest that Madary is understating the force of his remarks here.

degree of acuity, and they even generate the same muscle movements as they walk (54-5). Must Lily and Rosemary have the same visual perceptions?

Many standard theorists of perception would answer *yes*. Madary answers *no*. For suppose that Lily is not especially familiar with modern art sculptures, while Rosemary is very knowledgeable – she even has an intimate familiarity with other works by the same creator. Then Rosemary will likely have much more determinate anticipations than Lily about how the sculpture will look as she walks around it. To embellish Madary’s example, Rosemary might expect to see certain signatures of the artist: a pattern of fine wrinkling, a sharp contrast between glossy and dull metals, a lightness to the overall composition. As she examines the sculpture, her anticipations will be stirred up and then either fulfilled or thwarted, and that will constitute a difference in what her visual perceptions are like.

I feel the tug of this phenomenological argument. For in the case of Lily and Rosemary, it *is* very natural to explain the differences in their phenomenologies by appealing to differences in the future-tensed contents of their visual perceptions. It is very natural to appeal to differences in *future-tensed* contents because, plausibly, Rosemary will not only notice different features regarding how the sculpture is *now*, but will also have different expectations about how the sculpture *will* appear as she explores it.

It is, of course, an interesting question whether there are alternative ways of explaining the differences in their phenomenologies.⁴

Empirical arguments for (AF). I am delighted by the breadth of Madary’s empirical arguments for (AF). If I may offer you just a taste: Madary claims that (AF) helps to explain phenomenal overflow (79-83), saccade patterns (99-102), selective rearing results (102-3), reversing goggle results (102-3), intrinsic cortical activity (119-23), massive feedback connectivity (123-5), and differences between dorsal and ventral visual processing (131-51). Of these many pieces of empirical evidence, let us choose just two to sample.

One piece of empirical evidence for (AF) comes from observations about *saccades* – rapid eye movements which typically occur, without conscious direction, many times per second. Madary observes that saccades are highly task-dependent. For example, in one experiment it was discovered that for subjects making tea, nearly every saccade served some task-relevant purpose: “locating objects, directing and guiding movements, or checking the state of a task-relevant variable” (100). Madary reports similar results in a wide range of empirically studied cases. Why does Madary take the task-dependence of saccades to support (AF)? Because the task-dependence of saccades can be well explained by the hypothesis that “subjects have implicit knowledge about precisely where to look in order to gain information relevant for their goals” (102), and (AF) posits future-tensed contents of just this kind.

⁴ For example, you might instead appeal to differences in their *beliefs* about how the sculpture will appear. You might also deny that there are differences in their phenomenologies, properly speaking; you might say that the only differences are in their *non-phenomenological perceptual contents*. Madary argues against these approaches throughout ch. 3.

Another piece of empirical evidence that Madary offers for (AF) is drawn from an empirically promising model of perception, the *Bayesian predictive processing model*. According to this model, “sensory input is continuously predicted by an internal generative model. If the prediction is not correct, an error signal propagates upward through levels of the hierarchy until the internal model is revised in a way that accommodates the error signal” (113). The Bayesian predictive processing model is supported by several facts about neurology – for example, the fact that hierarchical regions in the brain are connected by massive feedback structures (123-5). If the brain is continually making and testing predictions about incoming perceptual information, then we have an explanation for the existence of these massive feedback structures (126).

Madary notes that the precise significance of the existence of massive feedback structures is unclear and is the topic of much ongoing investigation (125). Still, I agree with him that (AF), understood merely as a hypothesis about the causal processes underlying vision, is one promising explanation.

In sum, I find (AF) to be very promising when it is understood as a hypothesis about the causal processes that enable vision. I am less confident about – though still intrigued by – (AF) when it is understood as a hypothesis about visual phenomenology. I am certain, however, that Madary’s book has wonderfully advanced the discussion.

ACKNOWLEDGMENTS: I am grateful to Michael Madary for an informative exchange about his book.