Review of Dominic Gregory, *Showing, Sensing, & Seeming*, Oxford: OUP, 2013

James Stazicker, for *Perception*

Dominic Gregory's book is an impressively wide-ranging, yet integrated, philosophical account of a class of representations which he calls 'distinctively sensory' (henceforth 'DSRs'). This includes some paintings, photographs, films, audio recordings, episodes of imagination and memory, and more. Gregory's original approach is to start by analysing what unifies the broad class of DSRs, then, in the second half of the book, to apply his analysis to debates about representations of more specific kinds – including the cognitive-scientific debate about mental imagery, as well as more conceptual debates about the nature of pictorial depiction and memory.

This is not the kind of philosophical book which will be most immediately accessible to some readers of *Perception* whose specialism is not in philosophy. Much attention is paid to definitions and fine distinctions, and the wording required to formulate them is often quasi-technical and long winded. However, Gregory explains things from the bottom up, giving clear explanations when philosophical jargon or specialist theories are introduced. So the patient reader might learn a lot even without a background in philosophy.

Gregory starts from an idea he takes to be pre-theoretically compelling: some representations are 'distinctively sensory', in that they have a close tie with experiences in the perceptual senses. Chapter 1 identifies correspondences between DSRs and sensory-perceptual experiences which the analysis should explain. For example, the specificity of DSRs corresponds in some ways to the specificity of sensory perception. If you see a row of three balls, one red, one yellow, one blue, your visual experience must specify which ball is on the left, which is on the right, and which is central; visual imagination and other DSRs are similarly specific.

Chapter 2 develops two notions that are central to Gregory's analysis. A *perspective* is a spatiotemporal location from which things could be perceived. A *sensation* is a sensory-perceptual experience which presents some things 'as true' of a scene. Using these materials, Gregory aims to capture the idea that a DSR may represent either a perceptual experience or a scene. For example, you might exploit visualisation either to imagine seeing three balls, or to imagine the balls themselves.

Chapter 3 formulates the analysis. The gist of it is as follows:

- DSRs represent *under subjectively informative modes of presentation*. That is, DSRs characterise things in a way which enables you to know what it would be like to experience those things.
- A DSR represents a scene by representing a perspective as one around which things satisfy, or make true, sensations of a certain type – for instance as one around which experiences of a certain shape would be accurate, because that shape is there in the scene.
- A DSR represents an experience by representing a sensation itself as being of a certain type – for instance the type which involves visual experience of a certain shape.

This analysis involves some controversial choices. Talk of perceptual 'sensations' is unfashionable in philosophy (of course that's not an objection in itself), and some

philosophers will balk at the claim that perceptual experiences present things 'as true', on the grounds that perception is not in the intellectual business of truth and falsity.

Perhaps those choices are largely terminological, but there is also a controversial choice at the heart of Gregory's analysis: even where a DSR represents a scene, rather than a sensation, the DSR represents the scene *in terms of a type of sensation*. It's natural to agree with Gregory that visual imagination, say, represents a scene in terms of its visual appearance. But Gregory interprets 'appearance' here as referring to a sensation. Instead, one might take appearances to be *objects* of perception, including visible shapes and colours. One could then agree with Gregory that visualising is representing a scene's appearance under a subjectively informative mode of presentation, without agreeing that visualising represents things in terms of types of sensation. It's not obvious, at least, why an account along these lines could not explain the correspondences between DSRs and perceptual experiences identified in Chapter 1. For instance if visible shapes are relatively specific, given the nature of visual perception, and these same shapes are among the appearances we represent in visualising, that might explain why visualised shapes must also be relatively specific. No doubt any such account would have disadvantages, but it would be good to know why Gregory thinks his analysis preferable, especially as his argument for his analysis lies in its explanatory advantages.

Having formulated the analysis, Chapter 3 appeals to the claim that DSRs represent things in terms of sensation-types, to explain the correspondences between DSRs and sensations identified in Chapter 1. The explanations are broadly compelling, but they leave some difficult questions unsettled. For example, Gregory explains that the sensation-types in terms of which DSRs represent may be generic, as when a sketch leaves open what colours things have. So we might wonder whether his analysis really explains Chapter 1's constraint on DSRs' specificity. If a DSR can specify three balls' relative positions in terms of a generic sensation-type which does not specify their colours, why is that a DSR cannot specify their colours in terms of a generic sensation-type which does not specify their relative positions? Perhaps representations of the former sensation-type can be 'subjectively informative', while representations of the latter cannot. But it's not clear how the analysis could explain this. In fact, it's tempting to appeal to less unified explanations than Gregory's: in the case of sketches but not of visualisations, we might appeal to the fact that these representations must be visible, to explain why they're subject to some of the same constraints as visual perception.

Chapter 4 exploits the analysis to explain various forms of indeterminacy in DSRs, and explores connections between DSRs and conceptual capacities. Chapters 5 and 6 argue that the analysis generates constraints on the format of the vehicles of DSRs: Chapter 5 discusses the neural processes underlying mental imagery; Chapter 6 discusses physical pictures, engaging critically with philosophical accounts of the nature of depiction. Chapter 7 explores an account of the *lifelikeness* of some pictures. Chapter 8 discusses DSRs of the past, and suggests an account of their epistemic role in justifying beliefs about the past.

In the remainder of this review I'll focus on Chapter 5. Gregory neatly summarises the key experimental evidence, explaining how it interacts with his analysis. He argues that visual imagination is likely to share some of the neural basis of vision. First, he suggests that this may be required to explain how visual imagination could be subjectively informative. Second, he appeals to experimental evidence that visual imagery, like vision itself, has higher resolution at the centre of the visual field than at the periphery (Finke and Kosslyn, 1980); Gregory suggests that this is best explained by

taking cortical magnification at central locations to be responsible in both cases.

On the other hand, Gregory argues that some classic imagery experiments are not good evidence about the neural vehicles of visual imagination. Kosslyn (1973) presented drawings and asked subjects to form images of them, focusing initially on one end of each image. With the drawings removed, subjects were asked to report features from them. Response time was a function of the distance on the drawing between the feature and the point of initial focus. Since response time is similarly a function of distance if you scan a physical picture with your eyes to identify a feature, Kosslyn argues on this basis that neural vehicles of mental imagination have a pictorial format. Here Gregory sides with a debunking interpretation (Pylyshyn, 2006): the evidence can instead be explained by subjects' exploiting their knowledge about vision, to perform the task in a way which simulates scanning a picture with their eyes. Gregory argues that his analysis provides a necessary addendum to Pylyshyn's explanation, explaining how the knowledge subjects exploit could be 'subjectively informative'.

This divided approach to the evidence raises the question why Gregory draws the divisions where he does. Why does subjects' rich knowledge suffice to explain responses times, but not to explain visual imagery's pattern of resolution? While some constraints on visualisation are explained by what subjects know about sensation-types, other constraints are explained by the neural machinery, and independently of what subjects know about sensation-types. What principle divides the constraints in this way? In fact, a clearer view of that principle might help us to answer the question raised above about specificity – about why relative positions, but not colours, must be specified in visualisation. But again, that would not be an answer at the level of generality Gregory aims for – an answer in terms of the representational contents of DSRs in general, rather than their particular implementations.

Despite these unsettled questions, Gregory's discussion is a valuable example of how philosophical theory about the contents of mental representations may interact informatively with experimental work. More generally, his book is a thought-provoking, unified defence of a particular view about an impressively wide range of representations. Those interested in philosophical theories of imagery and pictorial representation, and in how those theories interact with empirical debates, could learn a lot by engaging with it.

1. Kosslyn, S. M. (1973). Scanning visual images: some structural implications. *Perception and Psychophysics* 14: 90-94.
2. Pylyshyn, Z. W. (2006). *Seeing and Visualizing*. Cambridge MA: MIT Press.
3. Finke, R. A. and Kosslyn, S. M. (1980). Mental imagery acuity in the peripheral visual field. *Journal of Experimental Psychology: Human Perception and Performance* 6: 244-264.