Image, Image-Making, And Imagination

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1. Introduction

Despite the importance and ubiquity of visual imagery as a means of representation, philosophers have tended instead to concentrate upon language, because of its standing as the natural vehicle for voicing conceptual thoughts and discursive reasoning. The relative philosophical neglect of images has been coupled with a parallel neglect of those mental states to which visual images seem to be most closely linked. Recent philosophers, at least, have covered reams of paper with reflections about beliefs and other mental states whose instances typically revolve around linguistically articulable information, but they have spent far less time investigating the imagination, for instance, or dreams.[1]

One feature of visual imagery that acts as both an enticement to investigation, and as a potential obstacle to its progress, is its sheer diversity. Visual images may be realized using radically different media, for instance: thus mental visual imagery exploits neurological resources, while frescos employ pigments and plaster. And the range of styles that visual images manifest might make one wonder whether the category of "visual images" really possesses the unity that surely characterizes the phenomenon of human linguistic representation, and which makes it natural to see all human languages as different branches of a single tree. The pictures produced by small children in the West seem to be very different to those produced during Ancient Egypt's Middle Kingdom, for instance, and those last are very different again to Hokusai's drawings.[2]

The striking differences between different modes of image-making are also relevant here, as they can seem to put additional pressure on the idea that there is any interesting unity to the class of visual images at all. Are medical imaging techniques that cleverly use standardized causal pathways to generate handily pictorial records of bodily facts—X-rays, say—really to be assimilated to the production of pictures by artists, with their creative and deliberate use of pictures as a means of communication and aesthetic expression? Are astronomical images that translate into visible form data relating to invisible radio waves really engaged in the same business as standard photographs, which just record visible facts? And where do mental visual images fit into things?

The power of the imagination is, for many of us at least, intimately connected to visual imagery. Our most vivid imaginings commonly revolve around mental visual

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[1] The imagination plays an important part in the philosophical ideas of many philosophers before the twentieth century, however: it features prominently in Hume's Empiricist system, for example, and in Kant's Transcendental Idealism. See David Hume, *A Treatise of Human Nature*. 2nd ed. Eds. L.A. Selby-Bigge and P.H. Nidditch (Oxford: Clarendon Press, 1978), and Immanuel Kant, *Critique of Pure Reason*, trans. and eds. Paul Guyer and Allen Wood (Cambridge: Cambridge University Press. 1999). There are encouraging recent signs of a growing philosophical interest in the imagination: for instance, see Amy Kind, ed., *The Routledge Handbook of Philosophy of Imagination* (London: Routledge, 2016).

[2] A wish to understand better the remarkable variety of pictorial styles has been a driving force within art history, for example: Wölfflin provides a famous early attempt to theorize in a systematic way about stylistic variations. See Heinrich Wöllflin, *Principles of Art History. The Problem of the Development of Style in Later Art*, 7th edition. Trans. MD Hottinger (Mineola, NY: Dover Publications, 1932).

imagery, and there is a great deal of toing-and-froing between our imaginations and nonmental visual imagery. Pictures can shape our imaginings: I can employ mental visual imagery to imagine Muddy Waters shaking hands with Beethoven, for example, despite only ever having seen pictures of both men. Pictures can, conversely, capture what we imagine: skilled artists may be able to translate mental visual images into concrete form; and one can easily conceive of pictures that just happen to correspond to mental visual images that one has produced.

The imaginative exploitation of imagistic resources therefore allows us to translate core aspects of what we imagine into material form, while the concrete objects thereby produced often play a central by, in turn, extending our imaginative powers. Our imaginative capacities shape the making of images, while the making of images has the ability to shape our imaginative capacities. What are the connections between vision, mental visual images, and indeed nonmental visual images that allow for this traffic between the contents of our minds and images located in the outside world? And how are image-makers able to exploit the distinctive powers of imagery, to extend the modes of representation that are available to us, and hence also to extend the resources upon which our imaginations can draw?

The current essay will investigate various aspects of the issues just broached. It will start by exploring "visual imagery" as a general category: it will argue, in particular, that deep semantic differences exist between visual images of different sorts; and it will initially identify one very striking range of cases that encompasses both suitable mental and nonmental visual images. It will proceed to develop a philosophical account of what is distinctive about the range of visual images thus identified. Subsequent sections then use the resulting ideas to investigate some of the ways in which various strategies for creating visual images exploit in remarkably inventive ways possibilities that are latent within the general phenomenon of imagistic representation.[3]

2. Visual images in general

The domain of visual images may be carved up into lots of different categories: there are the visual images which existed before 1900, and then there are the rest; there are the visual images that show cute small dogs, and then there are the rest; and so on. But one particularly significant way of dividing up visual images, at least for our purposes, is to distinguish between those images that are *representations* and those which are not. This way of differentiating between visual images is complicated, however, by the fact that many visual images function, in representational terms, on multiple levels.

While visual images often help to shape the contents of our imaginings, for instance, the contents of our imaginings often outrun what those images display. Use visual imagery to imagine a cow. Now imagine that the cow is fifty years old. The visual image that you produced serves to represent a fifty-year-old cow in your imagination, but there is nothing inherent within the meaning of the image itself that determines that the imagined cow is fifty years old. The fact that the image displays a fifty-year-old cow is, rather, a supplementary addition to the image's content, an addition owed to

[3] Parts of the following discussion will employ some ideas that are developed in more detail, in a more general context, in Dominic Gregory, *Showing, Sensing, and Seeming: Distinctively Sensory Representations and Their Contents* (Oxford: Oxford University Press, 2013).

something like a *supposition* that the cow shown in the image is fifty years old.[4] You could have used an indiscernible image in imagining a thirty-year-old cow, for instance, or a ten-year-old one.

Visual images may also communicate relatively abstract ideas, by exploiting previously understood connections between visible items and general concepts. Few adults would miss the nod to mortality contained within Guercino's initiation within painting of the *Et in Arcadia ego* theme, for instance, with the picture's portrayal of two young men gazing at a skull. And visual images may perhaps also communicate abstract ideas in other ways: Barnett Newman's painting *Anna's Light*—which presents the viewer with a large expanse of relatively uniform redness—is about as stereotypically "non-representational" as pictures get, yet maybe it does indeed express "the flood of life made possible by [the 'break of origin']."[5] We can sidestep some of these complexities, however, if we focus upon just some of the representational layers involved in visual imagery.

One capacious category of representational visual images encompasses those that represent things by showing what they look like. The visual images that feature in our imaginings do this: your earlier mental visual image of a cow displayed a cow by showing things as looking a certain way, for instance. Similarly, Guercino's painting represents a skull by showing things as looking a certain way. By contrast, Newman's *Anna's Light* does not seem to show what anything looks like, any more than an arbitrary patch of brickwork does, even if the picture does engage in representational work at another level.

The category of visual images that show what things look like evidently cuts across radically different media. Your previous mental visual image of a cow characterized a cow in very broadly the same sort of way as many pictures of cows do, in that it represented a cow by showing something that possessed a suitable kind of visual appearance. There are, of course, huge differences of other sorts between genuine pictures of cows and your mental visual image, just as there are huge differences between silent "inner speech" and real outer speech. But those additional differences ought not to blind us to the fact that there are also, at a very high level, similarities in the ways that the representations work: they have the same kinds of meanings, at a very basic level.

While some visual images show what things look like, then, not all of them do. It is worth emphasizing that paradigmatically "non-representational" pictures, like the Newman painting mentioned above, are not the only examples of visual images that do not show what things look like. The outer regions of the category of visual images—where it starts to be questionable whether we are dealing with "images" at all—contain many items that do not perform that function; consider, for example, topographical maps, or flow-charts. More interestingly, though, many more central cases of representational visual images seem also not to be engaged in the business of showing what things look like.

Cubist pictures often represent things by merely incorporating allusions to ways of representing items by showing what they look like, for instance, without themselves capturing visual appearances: Picasso and Braque produced numerous paintings which depict items like guitars, drinking glasses, and pipes, using graphical echoes of bits of

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[4] Peacocke notes the way in which supposition-like elements of imaginings may add to the contents of visual images. See Christopher Peacocke, "Imagination, Experience, and Possibility" in *Essays on Berkeley*, eds. John Foster and Howard Robinson (Oxford: Clarendon Press, 1985), 19-35.

[5] Yve-Alain Bois, *Painting as Model* (Cambridge, MA: MIT Press, 1993), 213.

pictured guitars, glasses, and pipes. Similarly, pictures by young children often represent items without showing what they look like, relying instead upon relatively abstract diagrammatic forms of representation. It is, for instance, surely perverse to assume that, when three-year-old children represent their parents using blobs with faces, whose arms and legs are displayed using lines coming straight out of the blobs, they are purporting faithfully to capture the visual appearances of familiar people.[6]

The contents of visual images that show things as looking certain ways are bound to vision in a way that the contents of pictures like, say, many Cubist still-life paintings are not. One who understands Magritte's famous painting of a pipe (the one captioned "Ceci n'est pas une pipe") thereby has an appreciation of what it is like to see a pipe of a certain kind, for instance, whereas one who understands some of Picasso's pictures of pipes does not, just as a result of understanding the pictures, come to appreciate what the depicted pipes look like. In this respect, the Picasso pictures are similar to many verbal representations that make reference to pipes: you understand the sentence "A man smoked a pipe," but your mere understanding of that sentence does not lead you to an appreciation of just what the relevant pipe is meant to look like.

The domain of visual images—understood as incorporating both mental and nonmental cases—is thus *semantically heterogeneous*: it encompasses representations whose most basic meanings differ quite starkly in kind. On the one hand, there are those visual images that show things as looking certain ways, a class that encompasses many pictures and which also contains the mental visual images that feature in our imaginings. And, on the other hand, there are the rest. (It may be that the category of "the rest" is itself semantically heterogeneous, of course.) This hardly implies that there is no point in investigating visual images *per se*, of course. But it does mean that we may, in good conscience, focus on just some visual images, to the exclusion of others.

Indeed, the previous remarks suggests a potential "divide and conquer" strategy which one might follow in philosophical investigations of visual imagery. One might distinguish between images that belong to different fundamental semantic categories—that is, which possess elementary meanings of distinct sorts—and one might investigate the nature of the images that belong within each of those categories. One might, too, explore the interactions that exist between the ways in which images of the relevant sorts may be produced and the sorts of meanings that they thereby come to possess.

What follows makes a modest start on some of that work. In particular, it will concentrate upon those visual images that show things as looking certain ways. As we will see in the next section, those cases form a nicely unified range of instances, one that is amenable to a coherent theoretical investigation, and their theoretical unity will enable us to shed clearer light upon some very important features of many, if not all visual images.

3. Distinctively visual representations in particular

Use mental visual imagery to imagine a bicycle. Your mental visual image shows things as looking a certain way, and it thereby represents a bicycle. Similar remarks apply to lots of pictures of bikes, although it is conceivable that a picture of a bike might depict a bike without showing things as looking a certain way, just as some Cubist

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[6] For an interesting discussion of the representational characteristics of children's pictorial art, with a helpful survey of prior literature, see part V from John Willats, *Art and Representation: New Principles in the Analysis of Pictures* (Princeton, NJ: Princeton University Press, 1997).

paintings depict pipes without showing what they look like. Your visual mental image of a bike is therefore a "distinctively visual" image of a bike.

More generally, let's say that a visual image is a *distinctively visual* image precisely if it shows things as looking certain ways. The category of distinctively visual images supplies us with many paradigmatic examples of visual images. Mental visual images seem always to be distinctively visual, for instance, and huge numbers of pictures, from many cultures and times, are also distinctively visual images. The famous Paleolithic cave paintings at Lascaux contain images that depict horses by showing things as looking certain ways, for instance, just as pictures of horses on Ancient Greek vases do, and just as George Stubbs's pictures of horses do too.

Distinctively visual images have contents, or meanings, of a special sort: the nature of what one grasps when one looks comprehendingly at, say, a distinctively visual picture of a pipe is different in type to the nature of what one grasps when one comprehendingly views some Cubist paintings that depict pipes, for instance, or when one understands an utterance of the sentence "A woman smoked a pipe." To give those contents a label, let's say that distinctively visual images have *distinctively visual* contents.

While the focus of the current chapter is on visual images, it is worth noting that the category of distinctively visual images falls within a much wider family of representations that are not inherently linked to vision. Our imaginings often feature mental *nonvisual* imagery, for example: one can imagine someone's voice; one can imagine a foul smell; and one can imagine something hot pressing against one's skin. But mental auditory images and many playbacks of audio recordings are alike in showing things as sounding certain ways, while mental olfactory images show things as smelling certain ways; and mental tactual images may capture what things feel like against the skin.

Distinctively visual images thus belong to a very broad family of "distinctively sensory" representations that serve to represent what they represent in ways that are intimately linked to corresponding varieties of sensory experience. The purely mental members of this family—mental visual images, mental auditory images, and the rest—play a very prominent role within our imaginative lives.[7] And note how natural it is to think of the representations within this much broader category as being imagistic: a playback of an audio recording may present us with an "auditory image" of certain events, for instance.

It should also be emphasized that the "distinctively visual" nature of distinctively visual images derives simply from the nature of their *contents*—that is, from the nature of the information that we grasp when we understand them—rather than from any facts about what the representations themselves *look like*. Many people have been attracted to the idea that pictures of, say, bicycles must somehow "look like" bikes but there are no reasons for thinking that, in general, distinctively visual images of bikes must look like bikes.[8] The mental visual image of a bike that you used in imagining a bike was presumably some sort of complex neurological state, for instance, and it seems unlikely that the relevant state will itself look like a bicycle in any significant way.

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[7] For a treatment of visual images within the broader context sketched in the text, see Dominic Gregory, *Showing, Sensing, and Seeming: Distinctively Sensory Representations and Their Contents* (Oxford: Oxford University Press, 2013).

[8] The accounts of pictorial depiction developed in Budd (1993) and Hopkins (1998) provide sophisticated developments of the idea that pictures of things should "look like" what they depict, for instance.

What is especially visual about the distinctively visual contents of distinctively visual images? Well, for one thing, the "ways that they show things as looking" amount to types of visual experiences. Produce again a mental visual image of a bike. Your visual mental image represents a bike by showing things as looking a certain way. Imagine that things were to look that way to you in the course of a visual experience. Then it would look to you, in the course of that visual experience, as if a bike were really to be present in front of your eyes; that is, you would have a visual experience of a certain type, one that involves the apparent presence of a bike.

More generally, consider a distinctively visual image that explicitly shows something of a certain kind, because it shows things as looking a certain way. Anyone to whom things looked that way would seem to see an item of the relevant sort. Distinctively visual images explicitly show things like bicycles and the rest, that is, because their contents feature ways for things to look involving appropriate sorts of items. Some of the most basic representational properties of distinctively visual images are thus owed to the fact that their contents involve types of visual experiences.[9]

Distinctively visual images are not just connected to vision by virtue of the fact that their contents involve ways for things to look, however. Consider the following sentence: "The way that things look to Clint Eastwood right now is different to the way that they looked to him a moment ago." That sentence makes reference to two ways for things to look, and the sentence's meaning consequently involves those ways for things to look. But the sentence's meaning is not linked to vision in the way that, say, the content of your earlier mental visual image of a bicycle was. Distinctively visual contents thus somehow involve ways for things to look in a special fashion.

To isolate what is crucial here, compare your earlier visual mental image of a bike with the following picture of one:

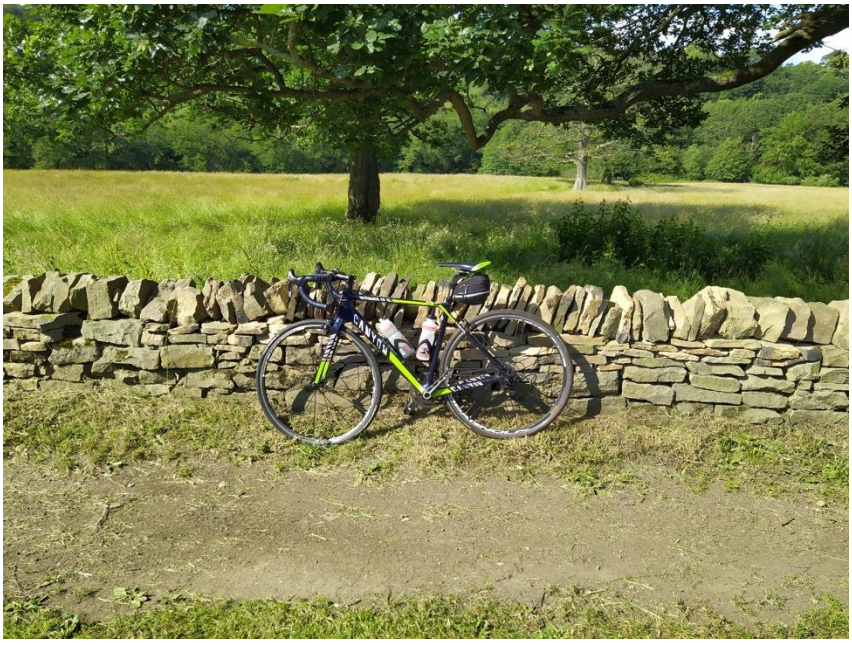

FIGURE 1: A bicycle. PHOTOGRAPH BY DOMINIC GREGORY

[9] It is worth noting that it is not being claimed here that distinctively visual images must always themselves *represent* visual experiences; it is not being claimed that, for instance, a mental visual image of a chair inevitably represents the chair as being seen by someone. See fn.11 for a little more on this point.

Like your mental visual image of a bike, Figure 1 shows a bike because it shows things as looking a certain way. And, when you view and comprehend Figure 1, you come to be aware of the way that the picture shows things as looking. But note that your awareness of that way for things to look takes a striking form: you appreciate *what it would be like* for things to look to someone the way that Figure 1 shows things as looking. (You can, in the wake of viewing Figure 1, imagine "from the inside" seeing the scene shown in the image, for instance.)

Your comprehending viewing of Figure 1 thus involves a crucially "subjective" ingredient. And this ingredient was missing from, say, your earlier encounter with the sentence "The way that things look to Clint Eastwood right now is different to the way that they looked to him a moment ago." For in that last case, your understanding of the sentence provided you with no awareness at all of what it would be like for things to look to you either of the ways mentioned. But the same subjective feature is present in other, distinctively visual, cases. When you entertained your earlier mental visual image of a bike, for example, you thereby appreciated what it would be like for things to look to someone the way that your mental visual image showed things as looking.

More generally, the distinctively visual contents of distinctively visual images do indeed involve ways for things to look in a special manner. For they characterize ways for things to look simply in terms of what it would be like for us, in subjective terms, if we were to enjoy visual experiences in which things looked those ways to us.

We have therefore managed to identify another, very important, respect in which distinctively visual images are linked to vision itself. And this particular facet of their nature is manifested in fairly striking phenomena. It means that we can learn what things look like from pictures, for example, because our encounters with pictures lead us to an awareness of what it would be like to see the depicted items. Similarly, our ability to use mental visual imagery to imagine an item of a certain kind reflects our awareness of what those sorts of items look like.

Here is a summary of what we have so far. Many visual images—but not all—show things as looking certain ways. Mental visual images perform this representational function, for instance, as do many pictures. These "distinctively visual" images have contents of a kind that are linked to vision itself in certain notable respects. In particular, the ways that distinctively visual images show things as looking amount to types of visual experiences. And distinctively visual contents pick out these types of visual experiences—the ways that they show things as looking—in terms of what it would be like for us if things were to look those ways to us. Furthermore, by showing things as looking certain ways, distinctively visual images are able to display scenes of various sorts. Figure 1 shows a bike, for example, because the way that it shows things as looking involves the presence of a bicycle. The next section explores an important aspect of distinctively visual images that we have so far ignored.

4. Issues of perspective

Look around yourself for a moment. All of the things that you just seemed to see, you seemed to see from a particular viewpoint. More generally, vision is spatially *perspectival*: the scenes that we encounter, in the course of visual experiences, are always organized for us around a central perspective, with the items that we see being located in various directions, and at various distances, from that place. And this feature of vision is reflected in the nature of the distinctively visual images that we have encountered previously.

Figure 1 shows a bike in a perspectival fashion, for instance. Likewise, if you use mental visual imagery to imagine a house, the mental visual image will show a house from a certain perspective. By contrast, Barnett Newman's abstract painting *Anna's Light* does not show us "the flood of life" from some particular spatial viewpoint, any more than the sentence "The flood of life can be rather overwhelming" does. Note that the perspectives involved in the contents of distinctively visual images need not be the viewpoints occupied by *us* while we encounter the images: you can use mental visual imagery to imagine what things look like from somewhere on the moon even while safely at home on Earth, for instance.

How does the spatially perspectival nature of distinctively visual images relate to the perspectival nature of vision itself? Reconsider Figure 1. That image shows a bike, and it does so because it shows things as looking a certain way. More specifically, the picture shows a bike because it shows things as looking a certain way *from a particular viewpoint*, a viewpoint that is located fairly near to and in front of the relevant bicycle.[10] Figure 1 consequently shows the bike from that place.

The spatially perspectival nature of Figure 1's representation of a bike thus results from the fact that the picture show things as looking a certain way from a particular viewpoint.[11] Analogous points apply to other distinctively visual images. If you visualize a peacock, for instance, your visual image will show the peacock in a spatially perspectival fashion, because it will show things as looking a certain way from a particular viewpoint. More generally, any image which displays a scene, by showing things as looking a certain way, will have to show things as looking a certain way *from somewhere*. But the image will therefore display the scene in a spatially perspectival manner.

That feature of distinctively visual images reflects a significant property of vision itself. For when, in the course of real visual experiences, things look certain ways to us, we ourselves occupy particular viewpoints. And the natures of the viewpoints that we occupy are reflected in the visual experiences themselves: when things look to us to be a certain way, they look to us to be a certain way from somewhere. By contrast, the assumed representation of the flood of life in Newman's painting *Anna's Light* is not owed to the fact that the image shows things as looking a certain way from somewhere. The image's representation of the flood of life consequently lacks the spatial perspectivalness that is present in distinctively visual imagery and in vision itself.

The spatially perspectival nature of distinctively visual images prevents them from realizing certain representational possibilities. In particular, they cannot perform, merely using their most basic representational features alone, any representational functions that require a complete lack of spatial perspectivalness. One could not, for example, use unsupplemented mental visual imagery to imagine that the square root of

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[10] A distinctively visual image may show things as looking a certain way from a particular perspective without characterizing that perspective as being *occupied*: CCTV footage often shows what things looked like from unoccupied perspectives, for example. Distinctively visual images are thus able to display scenes, by showing things as looking certain ways, without representing the relevant scenes as being seen. For more on this point and for more on the general idea of a visual "perspective," see Gregory, *Showing, Sensing, and Seeming: Distinctively Sensory Representations and Their Contents*, and Dominic Gregory, "Imagery, the Imagination and Experience," *Philosophical Quarterly* 60, no. 241 (2010): 735-53.

[11] While Figure 1 shows things as looking a certain way from "a particular viewpoint," there is no really existing viewpoint from which the picture displays its scene: the picture does not single out a specific real place as being the one from which things look like *that*. The idea of a "specific viewpoint" that is being used to thus needs fairly careful philosophical handling; see chapter three from Gregory, *Showing, Sensing, and Seeming: Distinctively Sensory Representations and Their Contents*.

every prime number is irrational. But there are nonetheless many representational possibilities that remain open to distinctively visual images, in principle at least.

Nothing up to this point implies that each distinctively visual image may only show things as looking *one* way, for instance. For an image is distinctively visual, we have said, if it shows things as looking a certain way. But this leaves open the possibility that some distinctively visual images show things as looking a multiplicity of ways. Equally, any way that a distinctively visual image shows things as looking must be a way that the image shows things as looking from some perspective. But nothing up to this point implies that each distinctively visual image may only show things as looking a certain way from *one* perspective. Maybe some distinctively visual images show things as looking just one way from many distinct perspectives, for example; and maybe some show things as looking many ways from many perspectives.

Are any of those theoretical possibilities actually realized? The next few sections will look at how different ways of producing distinctively visual images systematically yield representations that do indeed realize some of the many perspectival possibilities that the general idea of distinctively visual imagery makes available.

5. Projective systems

Compare the following two images:

FIGURE 2: William H. Rau, *New Main Line at Duncannon (about 1890-1900).* William H. Rau (American, 1855-1920), *New Main Line at Duncannon*, about 1890-1900, Gelatin silver print 44 × 54.6 cm (17 5/16 × 21 1/2 in.), The J. Paul Getty Museum, Los Angeles. Digital image courtesy of the Getty's Open Content Program.

Figure 3: Screenshot from *Paperboy* (Atari Games, 1984)

FIGURE 3: Screenshot from *Paperboy* (Atari Games, 1984). This screenshot falls under the "fair use" provision of section 107 of Title 17 of the United States code.

Both of those pictures are distinctively visual images: Figure 2 captures the look of some train tracks running into the distance, for instance, and Figure 3 captures the look of some people on a street. But, despite being alike in that way, the images are also evidently very different. In particular, the images seem to be very different with regards to their depictions of space.

Just intuitively, for instance, Figure 2 is pinned to a particular location at one time: it shows what things look like from one place in the depicted scene. And mental visual images are similar: while temporally extended passages of evolving mental visual imagery can show things from numerous viewpoints over a period of time, individual mental visual images that show what things look like at a unique time—"snapshot-like" ones, for short—capture what things look like from just one place.

Figure 3, by contrast, has a striking "mobility." Hockney remarks that images like Figure 3, which exploit certain techniques sometimes found in computer games, but also in Indian, Oriental, and Persian art, involve "not … a single fixed or momentary viewpoint but … many viewpoints," and that the process of viewing such pictures reflects "our physical experience of moving through the world" and visually regarding its contents.[12]

The putative differences just noted, and which will be explored in more detail in the next section, amount to differences in the *contents* of the relevant images; they reflect differences in the meanings that we grasp when we look comprehendingly at the images. But they seem to correspond to other important differences between the images. In particular, there are striking contrasts between Figures 2 and 3 that relate to their particular modes of production as *pictures*.

Pictures may be made by exploiting actual and possible projections of actual and possible scenes, using any one of a variety of distinct "projective systems." Willats provides a nice summary of the relevant notion of a projective system: "A standard text on engineering drawing … defines projection as 'the formal means adopted for representing the three-dimensional attributes of objects or arrangements on one of more planes of projection.' The projection lines or rays are imagined as coming from

[12] David Hockney, *Secret Knowledge (New and Expanded Edition): Rediscovering the Lost Techniques of the Old Masters* (London: Thames and Hudson, 2006), 204.

objects in the scene, and these rays intersect a two-dimensional plane known as the plane of projection or picture plane. The geometry of these intersections forms the geometry of the picture."[13]

Different projective systems provide different ways of capturing three-dimensional arrangements of edges on a two-dimensional surface. They may involve distinct treatments of the lines of projection and of the angles at which the lines of projection pass through the picture plane.

In some projective systems, for example, the lines of projection are parallel. "Orthogonal projection"—as commonly used in, say, architectural drawings—is a system in which the lines of projection are parallel and perpendicular to the flat picture plane. "Oblique projection" is a system in which the lines of projection are parallel but in which they are not perpendicular to the flat picture plane. One standard mark of uses of oblique projection is displayed by Figure 3; notice how that picture employs diagonal parallel lines to display receding parallel lines within the depicted scene.

By contrast, in "perspectival" projective systems the lines of projection are not parallel, but rather meet at a single point placed in front of both the projected scene and the flat picture plane. Receding parallel lines, within scenes that are projected using perspectival systems, trace lines on the picture plane that tend towards convergence at a single point on the plane: this feature is displayed by the lines which depict train tracks in Figure 2, for example. Western art since the Renaissance is chock-full of pictures that use "linear perspective"—the system in which the "picture plane" is a genuine plane rather than, say, a curved surface—more or less strictly, and the use of ordinary cameras has generated untold millions of pictures in very strict linear perspective.

Given a projective system, a scene to be projected, and a suitably situated picture plane, the lines of projection that issue from the scene may be viewed as tracing outlines on the picture plane. Those outlines correspond to potential pictures of the scene, pictures featuring outlines that are congruent to those traced on the relevant picture plane. Reversing all that, patterns of outlines within pictures may be viewed as corresponding to potential picture planes resulting from projections of potential scenes, using a given projective system.[14]

The different projective systems just outlined are capable of producing distinctively visual images featuring certain characteristic stylistic traits, ones that arise from interactions between the visual properties of the images themselves and the nature of what they represent. As noted previously, for instance, pictures in linear projection use converging lines to represent parallel edges that recede in the depicted scene, while pictures in oblique projection use parallel diagonal lines for the same purpose. But the different ways in which the pictures are produced also mean that they

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[13] Willats, *Art and Representation: New Principles in the Analysis of Pictures*, 8.

[14] Kulvicki uses this correspondence to develop an account of the fundamental contents of pictures in linear perspective that is rather different to the more general view of visual images being developed here: he identifies their contents with the class of all of those possible scenes whose projections to a point, going via a picture plane, would trace on the plane the outlines involved in the relevant picture. This implies, to my mind problematically, that the most basic meaning that belongs to, say, Figure 2 does not determine that the photo represents a scene that recedes in space rather than a wholly flat surface; because, for any three-dimensional scene that would produce a given picture plane using linear perspective, some two-dimensional scene would also produce the same picture plane using linear perspective. See chapter three from John Kulvicki, *On Images: Their Structure and Content* (Oxford: Oxford University Press, 2006).

amount to imagistic explorations of radically different modes of spatially perspectival representation, as we will now see.

6. Space

Strict uses of linear perspective result in pictures that, in line with snapshot-like mental visual images, show what things look like from a single location. For one of the characteristic features of linear perspective is that the lines that are traced on the picture plane, by the relevant lines of projection, are all orientated towards a single point. The resulting image consequently provides an encapsulation of an arrangement of edges that are visible from a single location that looks out onto the depicted scene. And this is something that we tend to appreciate when we view those pictures, and which leads us to regard them as possessing a spatial "fixedness."

But now consider images that have been created using projective systems in which the lines of projection are parallel to each other and hence do not converge at a single point—Figure 3, for example. In these cases, the figures traced on the picture plane by parallel lines of projection that are relatively close to each other will approximate the figures that would have been traced on the picture plane by lines of projection that converged at a suitably situated location. More generally, relatively circumscribed portions of the resulting image are naturally interpreted as showing how things look from one place. While suitably small portions of images like Figure 3 are naturally interpreted in that fashion, though, the images as a whole are not naturally interpreted as showing how things look from just one perspective.

Imagine a possible situation that Figure 3 might be used to capture, through an employment of oblique projection. Consider the parallel lines of projection that lead out from the nearby edges of items corresponding to what is shown on the far left of Figure 3. Contrast them with analogous lines of projection leading out from nearby edges corresponding to what is shown on Figure 3's far right.

The figures traced on the picture plane by those pairs of contrasting lines of projection do not approximate the figures that would have been traced on the plane by a bunch of lines of projection converging on a single point looking onto the depicted scene. Rather, the lines leading out from the items shown on the far right of Figure 3 approximate those that converge upon a *different* place to the ones leading out from the items shown on the image's far left. And those different places are at a constant distance from, and are similarly orientated towards, those different assemblages of items. Spatially disparate portions of visual images like Figure 3 are thus naturally interpreted as showing how things look from different places that bear regular spatial relationships to the items displayed in the images.

Uses of linear perspective lead, then, to visual images that are pinned to one spot, and which are thus similar in certain important respects to the mental visual images that commonly feature in our imaginings. By contrast, uses of orthogonal and oblique projection generate visual images that have the metaphorical mobility noted by Hockney, and which is a phenomenon that does not seem to have a counterpart within the mental realm of snapshot-like mental visual images. For, as our eyes roam over the surfaces of images like Figure 3—a process which exploits the status of those visual images as external objects of sight—we are treated to views of the depicted items from a changing series of spatially distinct viewpoints, ones whose spatial relationships mirror aspects of the spatial relationships being traced by our gazes.

Uses of different projective systems may thus yield distinctively visual images whose contents are of strikingly different sorts. In particular, they may result in visual images whose contents explore different sorts of spatially perspectival possibilities. Pictures using strict linear perspective, that are pinned to a single location, are somewhat akin to momentary visual experiences, and to snapshot-like mental visual images. But pictures generated using, say, oblique projection show things as looking numerous different ways from numerous different places, which puts them at a distance from momentary visual experiences and from snapshot-like mental visual images, but which places them nearer to—although, as we will see in the next section, not right alongside—our mobile visual explorations of the world.

7. Time

We saw in the previous section that different methods for producing distinctively visual images may yield distinctively visual images whose contents explore different perspectival possibilities with respect to space. But where does that leave another important perspectival aspect of distinctively visual images—namely, their connections to time?

Reconsider Figure 2. We naturally construe that picture as showing how things look from a single place at a single point in time. And this makes sense, given that the image employs linear perspective fairly strictly: the lines in the picture roughly correspond to the figures that would be traced on a picture plane by the lines of projection leading out from points on the edges of the items that are visible within a single scene at a single place and time.

Figure 3 is somewhat similar: it displays a single situation at one time. While the items depicted on, say, the far-right of the picture are shown from spatially distinct perspectives to those from which the items depicted on the far-left are shown, those perspectives are nonetheless simultaneous. The "mobility" of Figure 3 is consequently rather different to ordinary motion. For the changes in the spatial locations of the perspectives from which we are shown the items in Figure 3, and which we uncover over time as we move our eyes across the image occur outside of the time-frame that contains the scene shown in the image itself; it is as if we are able to move around freely in a world that has otherwise stopped.

Figure 4 below, which also uses oblique projection, is a trickier case.

FIGURE 4: Kanō Tsunenobu, *Scenes from the Tale of Genji* (1677) (Isabella Stewart Gardner Museum, Boston). This image is licensed under a Creative Commons Attribution by the Isabella Stewart Gardner Museum, Boston (https://www.gardnermuseum.org/organization/rights-reproductions)

One might be tempted to interpret Figure 4 along the pattern established by Figure 3; as showing a single scene that is frozen in time, from a series of spatially distinct perspectives. Yet that interpretation of Figure 4 is wrong.

Figure 4 shows a host of scenes from Murasaki Shikubu's 11th Century novel *The Tale of Genji*, scenes that did not occur at the same time within the novel's narrative. Appropriate spatial shifts in the perspectives from which Figure 4 shows the various scenes that it displays consequently also correspond to shifts in the temporal locations of those perspectives. Moreover, the spatial shifts in pictorial viewpoint that result when we focus upon distinct portions of Figure 4 that are separated by significant amounts of cloud do not tidily track the required spatial shifts in the focus of our gaze. The scene shown by the far-right portion of Figure 4, for instance, is not displayed by the picture from a perspective that is to the right of the one from which Figure 4 shows the scene depicted on its far-left. (The bodies of cloud separating the different bits of Figure 4 are in fact function like the frames that surround individual pictures within a comic strip.)

Different types of still pictures are thus able to realize very different sorts of possibilities for the temporally perspectival aspects of distinctively visual imagery. And, of course, distinctively visual images that evolve over time are capable of realizing further possibilities, by exploiting more or less close relationships between their own temporal properties and the temporal properties that they show things as having.

Passages of film, and of mental visual imagery, may show what things look like from a series of spatially and temporally distinct perspectives, for example. And, very often, the time occupied by our encounters with the relevant passages of visual imagery corresponds to the temporal period occupied by the scenes that the imagery displays. If I now use some mental visual imagery to imagine a duck waddling along, for instance, the time taken up by the duck's waddling in my imagination corresponds to the actual length of the passage of visual imagery.

But the ways in which visual images are produced can break that correspondence, by feeding into temporal characteristics of the meanings that the images possess. The use of slow-motion in film, for example, produces passages of visual imagery which shows what things look like from a series of temporally-evolving perspectives that occupy a much shorter period than the playback of the film itself occupies. It seems that mental visual images can perform similar tricks, too. I can, on the one hand, use mental visual imagery to imagine a duck waddling along very slowly; but I can also, by employing appropriate intentions alongside my production of mental visual images, use mental visual imagery to imagine a duck waddling at a normal pace, but in slow motion.

8. Subjectivity

Compare Figure 2 with the following picture:

FIGURE 5: *Old man (perhaps Tobit) reading to a seated woman* (17th Century), copy after Rembrandt van Rijn: © Victoria and Albert Museum, London. I originally reproduced this image in *Showing, Sensing, and Seeming: Distinctively Sensory Representations and Their Contents* (2013).

Like Figure 2, Figure 5 is a distinctively visual image, although they are stylistically quite different. And those stylistic differences—the sketchy nature of Figure 5 versus the detailed, more "realistic" nature of Figure 2—line up with differences in the contents of the images.

The way that Figure 5 shows as looking is much less specific than the way that Figure 2 shows things as looking: parts of Figure 5 merely provide us with information concerning aspects of the visible contours belonging to what it depicts, whereas Figure 2 supplies us with much more thoroughgoing information about contours, tonal values, and more besides. These sorts of discrepancies are commonly systematically associated with different ways of producing visual images. The ways that high-resolution color digital cameras tend to show things as looking are, in the sorts of respects just indicated, considerably more specific than the ways that linocuts tend to show things as looking, for instance.

We can better understand the precise nature of these differences in imagistic content using some of this essay's earlier ideas. According to the view sketched in section 3, the ways that distinctively visual images show things as looking amount to types of visual experiences. But one type of visual experiences may be more specific than another, in that the first type permits far less overall variation in its instances than does the second type. Correspondingly, we may understand the differences in specificity between the ways that Figures 2 and 5 show things as looking in terms of differences in the specificity of appropriate types of visual experiences.

The fact that things look to someone the way that Figure 5 shows things as looking tells us nothing about how dark the cat (depicted towards the bottom right) is which she apparently sees, for instance. By contrast, the fact that things look to someone the way that Figure 5 shows things as looking tells us a lot more about the tonal contrasts present among the things that he can see. Figure 5 is consequently neutral with regards to many tonal facts about the things that it displays, whereas Figure 2 is considerably more committal with regard to tonal matters.

These sorts of differences are also present within mental visual imagery. One mental visual image can be much less detailed than another with regards to, say, color information. I can use mental visual imagery to imagine the inside of my office at work, for example, yet the resulting mental visual images provide me with no very detailed information about the color of the carpet there, which I am unable to recall. The images' relative neutrality with regards to the carpet's color reflects the fact that the way that the image shows things as looking does not settle the precise color of the carpet, in that visual experiences in which things look that way may differ with regards to the color of the carpet that is then apparently visible, at least within certain limits; my office's carpet certainly is not neon green, for instance.

At this point, another idea introduced earlier becomes relevant. We saw in section 3 that distinctively visual images do not just single out ways for things to look in any old manner. Rather, they identify them in terms of *what is like* to have visual experiences in which things look the relevant ways. (Your understanding of Figure 1—the photo of a bike—led to you appreciate what it would be like to encounter that bike in the course of a visual experience of a certain sort, for example.) But this idea allows us to link up the differences in specificity that were just noted with a particularly important "subjective" dimension along which the informativeness of visual images may vary.

Your understanding of Figure 5 involves a grasp of the way that the picture shows things as looking, mediated by your appreciation of what it is like for things to look that way to someone. But the way that the picture shows things as looking is pretty unspecific. Your understanding of the picture consequently leads you to appreciate what it would be like to see a scene that has an assemblage of various relatively lightly specified visible features. You are aware that the apparently seen people would have a certain overall look, for example, but there is nothing in your appreciation of what the visual experiences would be like that forces them to involve an encounter with, say, a man whose gown is dark in tone rather than light.

And this contrasts with the outcome of your understanding of Figure 2. For, in that case, your awareness of the way that the picture shows things as looking takes you to an appreciation of what it would be like to see a scene featuring a much richer assemblage of more fully specified visible features. You are aware that, if you were to have a visual experience in which things looked as Figure 2 shows them as looking, significant areas of the visible scene would feature dark colors, whereas other areas of the scene—the distant buildings on the hillside, say, and the expanses of water on either side—would be much lighter in tone. Your understanding of Figure 2 thus carries you to a much more vivid appreciation of what it would be like to have visual experiences in which things look the way that the picture shows them as looking; it is, in this subjective sense, more informative about the ways that it shows things as looking than is Figure 5.[15]

Different ways of producing distinctively visual images are often engineered to affect these levels of subjective informativeness. The amounts of detail provided by many photographic technologies often provide us with a relatively specific appreciation

[15] The sorts of differences being considered here are particularly easy to illustrate using contrasts between, for example, very bare prints and drawings—so consider many of Matisse's drawings and prints, for instance, which provide almost no coloristic or tonal information—and images that provide a great deal of coloristic and tonal information, like many modern photographs. Various practical constraints arising from publication in print mean, though, that in the text I have restricted the discussion to the consideration of differences with regards to tonal values.

of what it would be like to have visual experiences in which things look certain ways, for instance—although there the focus is commonly upon aspects of vision that are independent of binocular depth perception, such as color and texture, and which can be captured using flat pictures. Holograms and other methods for producing apparently three-dimensional distinctively visual images, by contrast, supply much more information about those subjective features of ways for things to look that result from the binocular perception of depth.

How do distinctively visual images provide us with an awareness of what it would be like to have visual experiences in which things look the ways that the images show things as looking? There is not obviously a single answer to this question that applies across all possible media—the range of potential strategies that may be employed looks set to mirror the diverse nature of distinctively visual imagery itself.

In some cases, mimicry is surely the key: Figure 2 makes us aware of aspects of what it would be like to see a scene that features certain shapes by featuring portions that are themselves suitable shapes. We are then able to move from our consciousness of what the image looks like to an awareness of, say, what the shape of various depicted telegraph poles would be like. Yet distinctively visual images cannot always do their work using mimesis. Our production of mental visual images also features an appreciation of what it is like for things to look certain ways, for example. But it is hard to believe that the jumble of neurons answering to my mental visual image of a rainbow must itself be correspondingly multicolored.

9. Conclusion

Visual images play a central role in our imaginative lives. Many of our imaginings revolve around mental visual images, for example, and different sorts of pictures have the power to lead us to different forms of imaginings. Those who are suitably skilled have the ability to capture visual imaginings in pictorial form, and, by imaginatively exploiting the representational capacities of pictures, they are also able to produce images that significantly shape both what we imagine and how we imagine it as being. This chapter has investigated various general aspects of visual imagery, with a view of arriving at a clear understanding of its nature and of the ways in which image-makers are able to exploit its distinctive character.

The total field of visual images is bewilderingly diverse and the array of methods for producing them is similarly various. But we can impose a certain amount of order on things by focusing our attentions on some, but not all, visual images. The previous discussion concentrated upon the semantically unified category of distinctively visual images—those images that show things as looking certain ways—a category that encompasses very many pictures, for instance, but also the mental visual images that are so prominent within our imaginative lives. This chapter then investigated some of the ways in which methods for producing distinctively visual images may interact with their distinctively visual meanings.

We have seen that a wide range of possibilities that are latent within the concept of distinctively visual imagery are in fact realized in imagistic form. Distinctively visual images may show things as looking numerous ways from many places, for example, both at one time and at many different times; and they may provide us with more or less information about what it would be like to see the sorts of items that they display. Furthermore, these differences in the natures of the most elementary meanings that the images possess correspond systematically to differences in the ways that the images are

produced: our intentions can affect the contents of mental visual images, for instance, and there can be sophisticated interactions between the visible properties of pictures and our most basic interpretations of them.

More generally, one important strand in the development of visual imagery is the creative exploration of diverse semantic possibilities. These developments crucially shape the ways in which visual images are used, and they shape their aesthetic and expressive qualities. The imaginative acts which pictures like Figure 2—those that are in strict linear perspective—tend to encourage are somewhat different to the ones that pictures like Figure 3—which uses oblique projection—are apt to stimulate, for instance. To investigate these differences further, however, we must develop appropriate tools for studying the fundamental layers of meanings possessed by visual images, just as linguists, logicians, philosophers and others have developed tools for studying the basic semantic properties of language. And this will surely be worthwhile: the crafting of such tools will bring us to a firmer appreciation of the special nature of a singularly valuable means of representation.

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