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Is Seeing-In a Transparency Effect?

Michael Newall

Abstract

Philosophers of art use the term ‘seeing-in’ to describe an important part of our experience of pictures: we often ‘see’ a picture’s subject matter ‘in’ its surface. This paper proposes that seeing-in is illuminated by a perceptual phenomenon that has received extensive attention in perceptual psychology: the perception of transparency. It is generally accepted that transparency perception is governed by laws of ‘scission’. I argue that some instances of seeing-in can be straightforwardly understood as a kind of transparency effect, and that all seeing-in is illuminated by these laws.

Introduction

Philosophers disagree on the conditions that must hold for a viewer to understand a picture, but most agree that understanding a picture usually involves the experience of seeing-in: a visual awareness of the picture’s subject matter ‘in’ the picture’s surface. This paper proposes that seeing-in is illuminated by a perceptual phenomenon that has received extensive attention in perceptual psychology: transparency perception. Some, but not all examples of seeing-in can be understood as instances of transparency perception. In the case of pictures, these examples will typically involve a visual experience of both picture surface and subject matter, so that the subject matter appears as if seen *through* the surface of the picture. This proposal is unlikely to seem initially appealing: picture surfaces are not typically physically transparent, nor do we usually report that picture surfaces appear transparent. Rather we think we perceive them as they typically are, as opaque surfaces. This part of my proposal is more subtle

than it appears in this bald formulation. Perhaps most notably, *perception* of transparency can occur in the absence of *physical* transparency, and it is this phenomenon which I argue has a role in pictorial experience. We might be more comfortable speaking of a transparency ‘illusion’, or a ‘transparency effect’ (as I do in my title). However, I will tend to follow the psychological literature on the topic in using the phrase ‘transparency perception’ in this way. Partly this is because much of my discussion is directly concerned with the psychological literature. It also reflects a fact that this literature makes plain: that perception of transparency, whether in the presence or absence of physical transparency, exhibits the same general phenomenology and is governed by the same laws. I will also consider the implications of this approach to other examples of seeing-in, including the archetypally Wollheimian instances of seeing-in. Although they are not instances of transparency perception, I argue that they are substantially illuminated by an understanding of it – and in a way that justifies a substantial revision of the current understanding of the experience of seeing-in and by extension, of our experience of pictures.

The plan of the paper is as follows. I first introduce the concept of seeing-in as it is presented by Richard Wollheim, and begin to revise his understanding of it, drawing on work by John Kulvicki. Note that seeing-in is essentially twofold for Wollheim, but that on my account it is not. In particular we shall find that some archetypal instances of seeing-in on Wollheim’s account, involving the awareness of textured paint, do not meet the definition of twofoldness I develop. I then turn to accounts of transparency perception. Transparency perception is an extensively studied topic in perceptual psychology and it is generally accepted that its

phenomenology is governed by laws of ‘scission’ that relate ‘stimulus’ properties to the experiences they can give rise to. I use a range of images to argue that all seeing-in is subject to these laws, and that certain instances of seeing-in should be understood as a kind of transparency perception. Other examples of seeing-in, those where paint texture is clearly visible, do not seem transparent. But we shall also find that the phenomenology of these examples is also different from that described by Wollheim. I call this phenomenology ‘imbrication’, for subject matter and paint seem imbricated in the same space: it is close to, if not identical with, the experience Robert Hopkins has called unitary inflected seeing-in. Like the experience outlined by Hopkins, it turns out not to be twofold. I go on to make a more detailed examination of imbrication and its relation to the phenomenon of inflection. I conclude by describing the conditions that distinguish seeing-in from other forms of transparency perception, and laying out some consequences of my analysis.¹

1. Seeing-in

Seeing-in, Wollheim held, involves a visual awareness of a surface, Y, and also, simultaneously, a visual awareness of some object, X, ‘in’ the surface.² Thus his term

¹ This article is largely consistent with my earlier work on depiction, but it substantially develops my account of pictorial experience, and as I shall indicate, revises some aspects of that account. (Michael Newall, *What is a Picture? Depiction, Realism, Abstraction* (Basingstoke: Palgrave Macmillan, 2011), esp. 33–35)

² His early account is in Richard Wollheim, *Art and Its Objects* (Cambridge: Cambridge University Press, 1980), supplementary essay 5. The later formulation is found in Richard Wollheim, *Painting as an Art* (Princeton: Princeton University Press), 1987, 46–77.

‘seeing-in’, and his talk of ‘seeing X in Y’. To describe the double awareness that seeing-in involves, Wollheim enlisted the term ‘twofoldness’. The twofold character of seeing-in contrasts with what we might call the ‘single fold’ of ordinary visual perception. In his early formulation of the concept he conceived of seeing-in as involving two separate experiences (one of the surface, and one of the object or state of affairs seen in it). He later came to understand seeing-in to be a single experience with two aspects. It is this later conception that I address here. Seeing-in can occur outside the realm of human-made artefacts or arise from an accidental marking, as when one sees a landscape in a cloud formation, or a face in an inkblot. In neither case does the visual awareness of the seen-in object preclude the simultaneous awareness of the surfaces in which they are seen. We remain, for instance, visually aware of the shape, colour, and fluid character of the inkblot, at the same time as we see in it a grotesque face. Of special interest to Wollheim, pictures can occasion seeing-in – in particular, we see in them their subject matter. That is, pictures can occasion a visual awareness of the picture surface – the flat, drawn, printed or painted surface of the picture – and a simultaneous awareness of the three-dimensional arrangement of objects that comprises the picture’s subject matter. Wollheim claimed that seeing a picture’s subject matter in its surface is a necessary condition for understanding the picture. There is significant doubt that seeing-in is involved in every instance of pictorial understanding – in particular it is now widely doubted that *trompe l’oeil* painting arouses this experience – but the idea that seeing-in usually accompanies the understanding of pictures, and ordinarily plays a role in understanding pictures, has become widespread.³

³ See, for example, Jerrold Levinson, ‘Wollheim on Pictorial Representation’, *Journal of Aesthetics and Art Criticism* 56 (1998), 227–33; and Dominic McIver Lopes,

A point about the examples of seeing-in I use: I focus exclusively on seeing-in occasioned by pictures, and not at all on seeing-in arising from natural or accidental marks. Picture-makers have extensively and systematically explored the diverse ways marks can be manipulated to occasion seeing-in. By comparison, natural and accidental markings only exercise this ability partially and unsystematically. So it is to pictures that an account of seeing-in must primarily address itself if it is to be convincing.

I will begin to develop my account of seeing-in by giving an account of just how surface and the things seen-in it appear spatially related. I draw especially on John Kulvicki's analysis here, as he brings together a range of arguments to this end.⁴ Once this relation is clarified, I go on to examine how this illuminates twofoldness and suggests a new approach to understanding seeing-in using the concept of transparency perception.

2. Relating seen-in space to actual space

Kulvicki points out that for Wollheim, each aspect of seeing-in is an 'aspect of *visual* experience, and visual experience presents things as being before one's eyes'.⁵ But how, he asks, can two things, picture and subject matter, appear to be simultaneously before one's eyes without seeming to be in some kind of

Understanding Pictures (Oxford: OUP, 1996), 49–50.

⁴ John V. Kulvicki, 'Heavenly Sight and the Nature of Seeing-In', *Journal of Aesthetics and Art Criticism* 67 (2009), 387–97, at 390–392.

⁵ *Ibid.*, 391.

spatial relationship? The fact that they both appear in a simultaneous spatial relation to the viewer implies that they must also appear as spatially related to one another. Kulvicki is specific about what that spatial relation is: ‘there is a strong sense in which depicted scenes seem to recede from the canvas.’⁶ Other considerations suggest the same idea. Kulvicki observes that Michael Podro and Dominic Lopes, among others, have elegantly described how pictures address us in our space, or invite our imagined interaction in theirs.⁷ In the famous recruiting poster, Uncle Sam, in an arresting gesture, seems to point out of the picture’s space, addressing the viewer. The handle of a knife in a Dutch still life seems to point toward us, inviting us to imagine grasping it and cutting a slice from the half-peeled fruit that seems to lie a little deeper in the picture’s space. Such observations are not new. Leon Battista Alberti, the Renaissance art theorist, described pictures as akin to windows:

I will tell what I do when I paint. First of all ... I inscribe a quadrangle of right angles, as large as I wish, which is considered to be an open window through which I see what I want to paint.⁸

Again the implication is that the subject matter seems to lie behind the picture surface. There is an exception, which will come up again toward the end of this paper: occasionally, depicted objects seem to occupy a space *in front* of the picture surface

⁶ Ibid.

⁷ Ibid., 392. Kulvicki draws on Michael Podro, *Depiction* (Yale University Press, 1998), 64, 71, 79; and Dominic McIver Lopes, *Sight and Sensibility: Evaluating Pictures* (Oxford: OUP, 2005), 1.

⁸ Leon Battista Alberti, *On Painting*, trans. John R. Spencer, rev. edn (New Haven, CT: Yale University Press, 1966), 55–56.

rather than behind it. One famous example is found in Caravaggio's first *Supper at Emmaus* (1601, National Gallery, London), in which the surprised apostles seem to thrust limbs and furniture right out of the picture in their surprise.⁹ Though it is rarely commented on, the effect is also evident in certain anamorphic pictures. The skull in Holbein's *The Ambassadors* (1533, National Gallery, London), for instance, when seen from the correct viewpoint, appears to weirdly float out at the viewer, its lower jaw especially appearing some distance in front of the canvas.

Kulvicki also draws on Robert Hopkins to support his position. Hopkins' remarks are of particular interest because they suggest a way in which Kulvicki's analysis can be refined. Hopkins observes that the viewer 'can point ... at marks on the [picture] surface, thereby identifying objects in the depicted space ... without having to struggle'. So 'although distinct', the experiences of real space and depicted space 'are neatly integrated'.¹⁰ The phenomenon is a familiar one. If a viewer of a Last Judgement is asked to point out where Christ is in the depicted scene, they will have no trouble doing so. They point at the picture surface as if through a window, at where Christ seems to be within the depicted space. It is the notion of pointing that allows a refinement to be made to Kulvicki's position. For when asked to point at Christ, the viewer not only points at the place Christ seems to be; in the process they point at precisely the marks on the canvas that depict Christ. Indeed, if one points at any depicted detail in a picture, one finds oneself also pointing at precisely those

⁹ Howard Hibbard, *Caravaggio* (New York: Harper & Row, 1983), 77.

¹⁰ Robert Hopkins, *Picture, Image and Experience* (Cambridge: Cambridge University Press, 1998), 196. As seen below Hopkins does not wholly endorse my position. See also Kulvicki, 'Heavenly Sight and the Nature of Seeing-In', 391.

marks that depict it. To put it another way, when the subject matter seems to appear behind the picture surface, the marks appear to overlap precisely those parts of the subject matter they depict. And in cases where subject matter appears to project in front of the picture surface, the depicted objects appear to overlap just the marks that depict them.

Let me gather together and address some objections. John Hyman doubts that picture surface and subject matter appear related as I have described. Speaking of one of Picasso's rose period paintings, *The Two Brothers* (1906, Kunstmuseum Basel), depicting a standing boy bearing a smaller boy on his back, he observes, 'the boy does not appear to me to be standing in any particular spatial relation to the painting surface.'¹¹ That seems to me plain wrong; the boy does appear oriented in some direction or another in relation to the painting's surface. In particular his body appears obliquely angled toward the picture surface, just as he appears to look out towards the viewer, his gaze meeting ours.

While that objection is easily countered, it could be seen to raise a more complex concern, which Hopkins articulates.¹² This hinges on the fact that as one moves (say, shifting from left to right) in front of a picture, one's relation to its surface shifts, but that one's perspective on the subject matter does not change. As a viewer moves around the Picasso, their spatial relation to the surface changes, but as Hopkins puts it 'no change in relation to a picture will bring new facets of the object

¹¹ John Hyman, *The Objective Eye: Color, Form and Reality in the Theory of Art* (Chicago: University of Chicago Press, 2006), 133.

¹² Robert Hopkins, 'Seeing-in and Seeming to See', *Analysis* 72 (2012), 650–659, at 656–659.

into view.’¹³ Rather, the boys still seem to face the viewer at the same angle. The trouble for my account is that when we see an object through a transparent surface, this does not occur : instead, when we move our spatial relation to *both* surface and the object seen through it changes. So, Hopkins concludes, seeing-in cannot be a species of transparency perception. However, this line of thinking makes an error, for our experience of a picture’s subject matter as we move around it changes in odd ways, some of which Hopkins does not consider. First, as Hopkins notes, the subject appears to change shape as we move. So Picasso’s boys appear to grow thin as we move to the side. Second, and crucially in this context, they appear *to turn* to face the viewer. Or to put it better, all the subject matter in the picture appears to orient itself, so that it continues to face the viewer as it did before, and without any new parts becoming visible. This aspect of our experience of pictures is not often noticed, but it is always available if we care to look for it as we move to and fro in front of pictures, especially from a close viewpoint. The effect is perhaps most obtrusive in the case of portraits whose ‘eyes follow you around the room’ – in fact a feature of all portraits in which the subject’s eyes appear to face out towards the viewer. Like the apparent narrowing of subject matter, the effect is a straightforward result of the changing pattern of light the picture presents as we move in front of it. This pattern constrains our vision, so that so far as we can make out the depicted subject matter, we experience it as compressed laterally, and re-oriented so that our apparent view of it remains unchanged. So the right response to Hopkins’ criticism is to maintain that seeing-in is here exactly akin to transparency perception, although not to perception of the subject matter as we would experience it face-to-face, but rather as we would experience it if it were to undergo the strange and unlikelike deformations of

¹³ Ibid., ‘Seeing and Seeming to See’, 657.

contraction and reorientation it appears to undergo in pictures.

Let me turn to another objection, drawn from Hyman. He observes how in the case of a ‘simple line drawing of a human figure on plain paper’ ... ‘the ink marks [can] seem to stand above the paper’s surface.’¹⁴ He observes that this is an apparent relation between the ink marks and the paper – not the subject matter, and this raises the concern that what I have been considering apparent spatial relations between subject and picture surface, are in fact apparent spatial relations between elements of the picture surface. Hyman adds that he doubts that these perceptions occur in a reliable way (‘there is no reason to suppose they must’), and notes that they can also occur in non-pictorial contexts, such as in our perception of text on a white page.¹⁵ The worry here is that if I have mistaken such a phenomenon for the one I am seeking, my claims will fail.

One might expect that the best approach to this problem lies in carefully distinguishing these phenomena from one another. But I believe the correct approach in fact draws them together. Wollheim provides the key to understanding this in his analysis of abstract painting.¹⁶ There he points out that many arrangements of non-figurative elements appear to be related in spatial ways. Lines can appear to run back and forth in space, like a wire sculpture, and shapes can appear to float in front of one another.¹⁷ Now, these spatial properties are not actually present – the painted surfaces

¹⁴ Hyman, *The Objective Eye*, 133.

¹⁵ *Ibid.*, 133–134.

¹⁶ Wollheim, *Painting as an Art*, 62.

¹⁷ Painters and critics from Kandinsky to Clement Greenberg have examined and written about these kinds of phenomena. See Newall, *What is a Picture?*, 172–176,

that give rise to them are quite flat. Moreover, it is possible to simultaneously maintain a visual awareness of this spatiality and the flatness of the painted surface.¹⁸ Wollheim thus holds that the experience of abstract painting often involves seeing-in. The same analysis can be made of Hyman's drawn lines. Seeing the black lines of ink as standing over the paper on which they are in fact inscribed is a simple instance of seeing-in. Whether this seeing-in contributes to, or detracts from the full experience of seeing-in that the artist intended to afford, it is an experience of seeing-in nevertheless, and will answer to the account I will give of it, as much as it does Wollheim's. The same can be said for Hyman's example of text. So far as letters seem to float over the surface on which they are printed, they too are instances of seeing-in. This analysis leaves my account safe, for it shows that even in Hyman's examples, there it is seeing-in that requires explanation, and not some other phenomenon.

3. Transparency perception and twofoldness

My analysis leaves us with a puzzle. The picture surface and the things we see-in appear spatially related; most often the picture surface appears in front of the subject matter. Yet, the picture surface is opaque, which seems to rule out seeing anything behind it. How can these two facts be reconciled?¹⁹ I propose to resolve this puzzle in some instances by showing that one appears *transparent*, and the other appears as if

194–195; and Michael Newall, 'Painting and Philosophy', *Philosophy Compass* 9 (2014), 225–237, for discussion of this.

¹⁸ One might reply that the lines and shapes, while apparently deployed in this new space, are unchanged – but while this can be true, it is not necessarily so. They can seem glowing, transparent, or textured for instance.

¹⁹ I thank Hans Maes for suggesting this way of presenting the problem.

seen through it. Another approach may seem attractive; let me say something about this view, and my reasons for rejecting it: this is the account of seeing-in that Kulvicki goes on to develop. Kulvicki's claim is that we are visually aware of the picture surface as opaque while simultaneously seeing through it: 'seeing-in is a perceptual state in which an opaque object is experienced as being in front of another opaque object even though neither object is obscured by the other.'²⁰ In this respect our resolutions of the puzzle directly contradict each another. The analysis that I will give shortly of examples of seeing-in can thus be seen as counter-examples to this claim in Kulvicki's account. There is also a logical objection to his approach. So far as experiencing something as opaque involves not being visually aware of anything through it, there is a contradiction at the heart of his view. Kulvicki rejects this conception of the perception of opaqueness but I find it difficult to part with.²¹

To return then to the perception of transparency: transparency perception involves the visual perception of one object through another. As Fabio Metelli puts it, 'one perceives transparency when one sees not only surfaces behind a transparent medium but also the transparent medium or object itself.'²² Transparency perception has received substantial attention in perceptual psychology. Most of this relates to the visual experience of transparency and the conditions a stimulus must satisfy in order to occasion it. It is this research that I will be referring to. Note that I am not concerned here with the neurological activities that underlie transparency perception,

²⁰ Kulvicki, 'Heavenly Sight and the Nature of Seeing-In', 394.

²¹ Ibid., 392–94.

²² Fabio Metelli, 'The Perception of Transparency', *Scientific American* 230 (1974), 90–98, at 91.

although a literature on this does exist. I will draw especially on Metelli's widely cited article on the topic, which I have already quoted from, as well as on more recent research. I will say more on transparency perception later; for now let me mention three points that will be relevant to my discussion.

First, transparency perception should be distinguished from physical transparency. A substance is physically transparent if light can be transmitted through it.²³ Crucially for my proposal, transparency perception can occur without the presence of physical transparency.²⁴ Metelli is clear on this point, and it is worth noting that most of the experiments done on transparency perception since Metelli's article do not use physically transparent surfaces as stimuli, but rather arrangements of coloured shapes that we are apt to perceive as transparent. (See, for a similar example, figure 1.) This is an important point for my proposal, because pictures (of course) are not generally physically transparent.

Second, in case there is any doubt, transparency perception is a species of ordinary seeing. Many visible things are physically transparent – and we are capable of perceiving them as such, that is we see through them to whatever lies behind them. Water and mist are obvious examples in the natural world, and coloured glass and

²³ This is Metelli's definition (*ibid.*). It should be added that the transmitted light is not scattered, as it is with translucent materials such as frosted glass.

²⁴ *Ibid.* The reverse is also true: physical transparency need not give rise to the perception of transparency in a viewer. Metelli points out that a physically transparent film laid in the middle of an opaque field of undifferentiated colour will not appear transparent.

plastics are often prominent examples among manufactured things. Transparency perception helps us understand and so negotiate our physical environment, and it is an ability that most likely evolved in our distant pre-human ancestors.²⁵ The perceptual psychologist Patrick Cavanagh points out an even more common example of transparency perception, although one that occurs without the presence of physical transparency: shadows are perceived as transparent. That is, the perception of a shadowed surface is ordinarily akin to seeing its surface through a dark film.²⁶

Third, like seeing-in, the perception of transparency involves a kind of twofold experience. Wollheim's twofoldness involves the simultaneous visual awareness of two different things, such that one appears 'in' the other. It thus readily functions as a synonym for seeing-in. I make use of a different conception of twofoldness, that draws on the analysis of the previous section, and replaces the 'in' with the requirements of overlapping and visibility that I discussed there. Let me propose this definition:

²⁵ There are studies of transparency perception in animals (this is where neurological work on the topic is done). E.g. R. J. Snowden et al., 'The Response of Area MT and V1 Neurons to Transparent Motion', *Journal of Neuroscience* 11 (1991), 2768–2785, considers transparency perception in monkeys; R. J. A. van Wezel et al., 'Responses of Complex Cells in Area 17 of the Cat to Bi-vectorial Transparent Motion', *Vision Research*, 36 (1996), 2805–2813 treats transparency perception in cats.

²⁶ Patrick Cavanagh, 'The Artist as Neuroscientist', *Nature* 434 (2005), 301–307.

A visual experience is twofold if and only if it is an experience of objects overlapping in which both overlapping and overlapped parts of the objects are simultaneously perceived.

Note that ‘perception’ includes veridical and non-veridical perception: perception of any or all of these objects may not be counterfactually dependent on their actual presence before the viewer’s eyes.²⁷

It may seem I have said too much here. The ‘only if’ is justified by my earlier analysis; but what about the ‘if’? Does this experience of overlapping without occlusion suffice for twofoldness? It may seem that something is missing – a closer sense of connectedness between surface and subject matter. I will say much about this later, where I analyse under the label of ‘imbrication’. But we will see there that the experience of imbrication does not involve an experience of overlapping, and so far as overlapping is a necessary condition for twofoldness, it must be set apart from twofoldness. Moreover, we shall see shortly that the examples of seeing-in that are twofold do not necessarily involve anything more than the experience of overlapping without occlusion. So the above definition will stand.

Keep in mind that on this account twofoldness can no longer be taken as a synonym for seeing-in, for two reasons. As I have said, we will see that some seeing-in is not twofold in this sense. But equally this account of twofoldness also describes transparency perception: we see the overlapped object through the transparent

²⁷ David Lewis, ‘Veridical Hallucination and Prosthetic Vision’, *Australasian Journal of Philosophy* 58 (1980), 239–249.

overlapping object, giving us a simultaneous visual awareness of both. (fig. 1)²⁸ So twofoldness, in my sense, is thus a feature of both some seeing-in, and transparency perception.



Figure 1. Perceptual transparency

4. Laws of scission

Let me now turn to transparency perception. According to Metelli, perception of transparent colours (both achromatic – that is, black, white and grey – and chromatic) is governed by a law of scission:

With the perception of transparency the stimulus color splits into two different colors, which are called the scission colors. One of the scission colors goes to the transparent layer and the other to the surface of the figure below. ... there is a simple relation between the stimulus and the

²⁸ This figure is intended to show one transparent surface overlapping an opaque surface, but some observers have told me that they see it as *two* transparent surfaces, through which the white ground can be seen. This would be an example of double transparency, which I discuss in section 7 (iv).

scission colors: when a pair of scission colors are mixed, they re-create the stimulus color.²⁹

Figure 2 shows examples for achromatic colours. (i) and (ii) each give the impression of one transparent square overlapping another. In the areas of overlap, whose colours I indicate by *c*, one surface appears as if seen through another, that is, we perceive colour *a* seen through colour *b* (or vice versa).

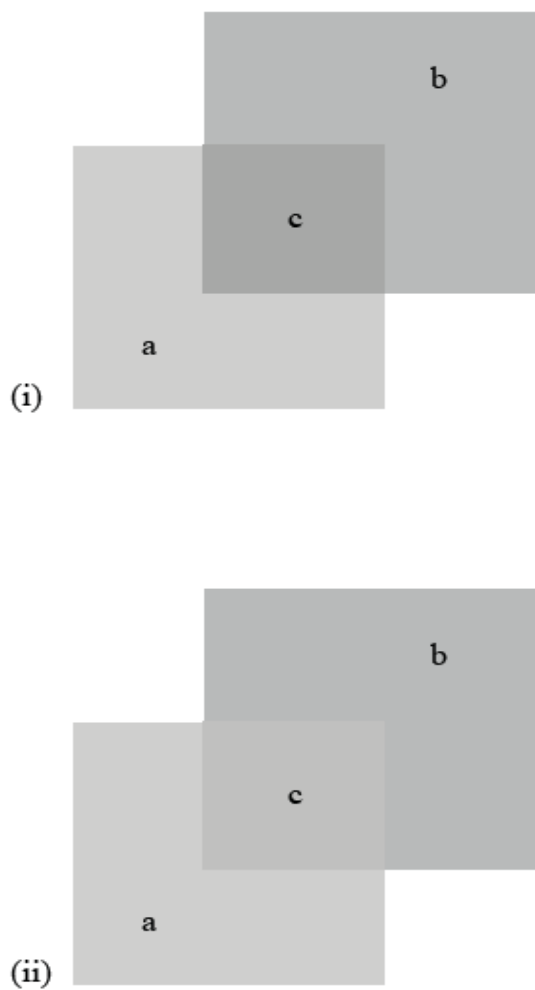


Figure 2. Achromatic transparency.

This law of scission tells us that, so far as each of these diagrams do occasion this perception, the mixture of colours *a* and *b* is colour *c*. It will be apparent that this

²⁹ Metelli, 'The Perception of Transparency', 93.

formula holds in different ways in (i) and (ii), for while a and b are the same tone in both diagrams, c is not. In (i), c is darker than both a and b , and in (ii), c is a tone midway between a and b . Different kinds of mixture are thus operative in each of these diagrams. For this reason it will be better to talk of laws (rather than a single law) of scission. In (i) c is a subtractive mixture of a and b ; in (ii), c is a fusion mixture of a and b . Both kinds of mixture can produce the effect of transparency, and both correspond with instances of transparency perception in the natural world.³⁰ Fusion mixture can be observed when a disc with segments of different colours is spun so that these ‘component’ colours appear to blend or ‘fuse’ into a single colour that occupies a midpoint between the tone and chroma of the component colours. This corresponds to the transparency observed when something is seen through a haze or fog. Subtractive mixture is familiar from the superimposition of coloured filters or gels. Light passing through a coloured filter has components subtracted from it. A filter will subtract brightness, and may also subtract aspects of hue (a red filter, for instance, will tend to subtract those wavelengths that fall outside those that give rise to the perception of redness. This corresponds to the effects of transparency when shadows overlap. It is widely accepted in the literature on transparency that the same two kinds of mixture – fusion and subtractive mixture – will also produce chromatic

³⁰ Metelli’s focus is on fusion mixture. Others have stressed subtractive mixture. (J. Beck, ‘Additive and Subtractive Mixture in Color Transparency’, *Perception and Psychophysics* 23 (1978), 265–67; J. Beck, K. Prazdny and R. Ivry, ‘The Perception of Transparency with Achromatic Colors’, *Perception and Psychophysics* 35 (1984), 407–22.)

transparency perception.³¹ It has more recently been found that other, related changes in colour can also achieve transparency effects.³²

A similar law applies to the perception of texture. Takeo Watanabe and Cavanagh point out that ‘we see textures overlapped wherever there are transparent ... structures interposed between the viewer and a background surface.’³³ They observe that, like colour transparency, we can often perceive this overlap not as a new composite texture, but as one texture seen through the other: ‘We are able to decompose one texture from another even if parts of them are overlapped.’³⁴ Figure 3 shows an example of texture transparency. Texture is schematically indicated by dashes. Where the two textures interpenetrate, we do not tend to see a new composite texture; rather we see one texture through the other. Texture transparency can thus be understood to accord with a similar law of scission, in that the mixture of the texture

³¹ Michael D’Zmura et al., ‘Color Transparency’, *Perception* 26 (1997), 471–92, at 471–72.

³² These are described by D’Zmura et al. Fusion can be understood as a convergence to a point in colour space between the overlapping colours; however, ‘the point to which colors converge can vary over a wide range and still lead to the perception of transparency.’ (478) Subtractive mixture can be understood as a particular kind of ‘translation’ in a direction in colour space involving a decrease in luminance; but this decrease ‘is not necessary for the perception of transparency. Translation in any direction of color space will work.’ (477)

³³ Takeo Watanabe and Patrick Cavanagh, ‘Texture Laciness: The Texture Equivalent of Transparency?’, *Perception* 25 (1996), 293–303, at 293.

³⁴ *Ibid.*

used to depict the overlap is a composite of the two textures used to depict the non-overlapping areas.

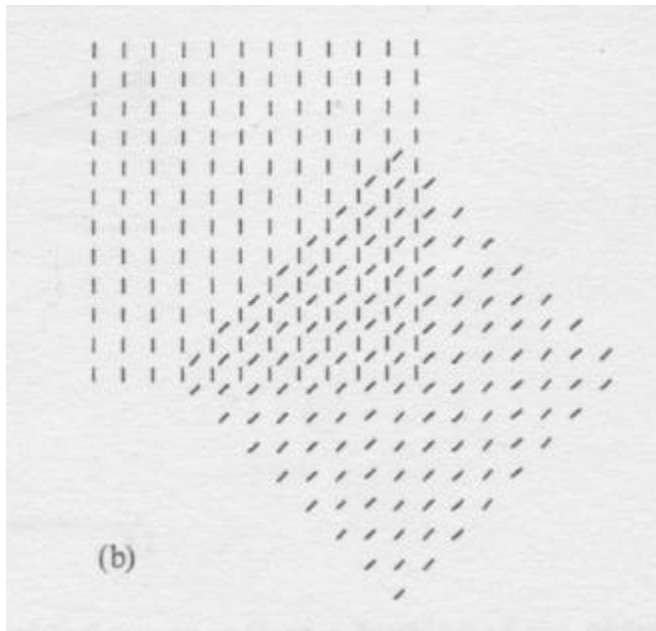


Figure 3. Texture transparency. Watanabe and Cavanagh, p. 294, fig. 1. (b).

Note that these conditions are not the only ones necessary to arouse perception of transparency. Metelli, for instance, also identifies certain ‘figural’ conditions for perceptual transparency which hold in the above examples.³⁵ I will not dwell on these here. The kinds of examples I discuss below differ from the geometrical ‘mosaics’ Metelli (and most others) use to study the topic, so the figural conditions he proposes are not readily applicable. Nevertheless I allow that further conditions beyond those laws I have discussed may need to be fulfilled to establish the perception of transparency in the examples I will examine.

Before moving on let me address a concern philosophers may have about the treatment of colour here. For Metelli, stimulus colours are the ‘original’ colours of his

³⁵ Metelli, ‘The Perception of Transparency’, 92–93.

mosaics.³⁶ They are properties of surfaces such as luminance under particular illumination. This suggests that he identifies them with objective properties. However, scission colours are, in the case of Metelli's mosaics and in other cases I will consider, subjective effects. This is apt to make philosophers uneasy: for how can any mixture of subjective effects be expected to give rise to something that accords with an objective measure, such as luminance? Although it is tempting to present the law of scission in more philosophically robust terms, I will not do so here, for this concern about its formulation can, with care, be put to one side. That is to say, in this context, the distinction between subjective and objective is not especially important. I say this for two reasons. First, objective properties, such as luminance, under certain constraints and with particular exceptions, will relatively reliably produce certain subjective effects (such as the perception of lightness and darkness) that accord with the objective state of affairs. Second, subjective colour effects can be compared to these veridical perceptions, and where a match occurs, we can consider the colours as having the same luminance.

Both these points are implicit in Metelli's approach. Regarding the first point, Metelli allows that colours, including under certain circumstances stimulus colours, can be perceived truthfully. In particular, the stimulus colour can be perceived when transparency is *not* perceived (I will return to this point in the next section).³⁷ Turning to the second point, we have seen that with the mosaics that Metelli and others use, the scission colours cannot be objectively measured, since they are subjective phenomena. But these colours can for the most part be reliably matched with coloured

³⁶ Ibid., 93.

³⁷ Ibid., 91.

objects that *do* lend themselves to objective measurement, and the law of scission can be confirmed in this way. So in figure 2 (i), under a given illumination, the brightnesses of *a*, *b* and *c* can be readily measured objectively. However, the brightnesses of the scission colours, being subjective, cannot be so measured. Nevertheless the diagram can be used to measure these colours in another way, since viewers can assess whether tone *c* produces an impression of transparency in which tone *a* appears to be seen through tone *b* (or vice versa). In this way the viewer can assess whether the colours of the subjective scission effect match the objectively measurable tones *a* and *b*. Obviously, this easy movement between thinking of colour as objective and as subjective relies on an assumption that the objective and subjective are here closely linked. If that assumption is right, and I think it is in this context, the ambiguous approach that we find in Metelli and others will be harmless, or largely so.

5. Application to seeing-in and other pictorial experience

I propose that certain instances of seeing-in can be understood as a kind of transparency perception governed by laws of scission. In these cases,

when seeing *X* in a surface, *Y*, the visible properties of *Y* are experienced as separated into two sets of scission properties. One set of properties is attributed to *Y*, and the other to *X*.

It will also be useful to apply this to the *sections* of the picture surface:

The visible properties of a section, S, of the surface are separated into one set of properties that is attributed to the part of X seen in S, and another set of properties that is attributed to S.

In both cases, scission accords with the rules that govern transparency perception. So the scission properties, subjected to the appropriate kinds of mixture described in the previous section, will re-create the stimulus properties.

Let me first be clear about some implications of this. My proposal contradicts the idea that we do not perceive picture surfaces as transparent: while we do not always perceive the picture surface as transparent (as I will discuss shortly) in some cases we do. This goes against our common sense notion of pictures – that they are not experienced like, say, coloured or textured panes of glass. It also goes against Kulvicki's explicit avowal: that we are aware not only of the picture surface, but of its colour, and indeed, opacity. Let me also be clear about where the idea of the scission of properties sits in relation to Kulvicki and Wollheim. Kulvicki holds, and I take it that Wollheim implies, that we can remain visually aware of the visible properties of the picture surface *as belonging to the surface* while seeing-in it the subject matter. My account contradicts that: we will still see those properties, but some will appear as belonging to the subject matter rather than the picture surface. I have not yet said anything about just how these properties are divided – which go to the subject matter and which remain with the picture surface. We shall see shortly they can be divided in a variety of ways.

I should also make a proviso here, for my proposal does allow one way in which we can perceive a picture surface as transparent, and also be visually aware of the picture surface as being an opaque surface having the properties it does in fact have. This occurs when the awarenesses are not simultaneous, but *alternate*. That is, the full awareness of the picture surface will *alternate* with the awareness of the surface as transparent. Metelli allows for such an alternating awareness in transparency perception: ‘if the region of superimposition [is isolated] (even if it is just by the attitude of the observer), then only the [stimulus] color is perceived.’³⁸ So too, if we isolate the picture surface, by covering all except a patch of paint, or by moving in very closely, or ‘even if it is just by the attitude of the observer’ my proposal allows that we can have a visual awareness of the picture surface as coloured and opaque.³⁹ So rather than saying that we are never visually aware of the picture surface as opaque (where my transparency claim applies), I hold that we cannot at the same time be visually aware of the picture surface as opaque, and be aware of the subject matter.

Metelli notes the existence of ‘limiting cases’ of transparency, and these will also prove to have pictorial counterparts. He states: ‘If all the color goes to the transparent layer, it becomes opaque. If all the color goes to the underlying surface, then the transparent layer becomes invisible. Transparency is perceived only when

³⁸ Ibid.

³⁹ This bears comparison with Gombrich’s idea of picture perception as alternating between awareness of the picture surface and awareness of the subject matter. (E. H. Gombrich, *Art and Illusion: A Study in the Psychology of Pictorial Representation* (London: Phaidon Press, 1960), 3–6.)

there is a distribution of the stimulus color to both the transparent layer and the opaque layer.⁴⁰ In the first pictorial counterpart, *no* properties are attributed to the subject matter; the surface remains opaque in its appearance, not just intermittently, as discussed above, but permanently, and so neither seeing-in nor pictorial understanding occur. This is therefore a kind of pictorial failure; we would merely see the surface as it actually is. In the second pictorial counterpart, *all* the picture surface's visible properties are attributed to the subject matter, and the viewer loses all visual awareness of the picture surface. The picture surface will seem to have something of the quality of a clear pane of non-reflecting glass through which the subject matter is seen. These are further examples where our experience is not twofold. However, I will talk about the latter case in detail since it is predicted by my account, and because some pictures do occasion this experience. Instances of these include pictures that tend to occasion a mistaken belief in the viewer that they are in fact in the presence of the subject matter, such as some *trompe l'oeil*. As Dominic Lopes notes, '*trompe l'oeil* demonstrates that what it is like to see an object in a picture need not be discontinuous with what it is like to see that object in plain sight.'⁴¹ Other kinds of pictures can also preclude visual awareness of the picture surface *per se*. Certain Dutch and Flemish paintings (such as those of Jan van Eyck) have a facture that can be imperceptible to ordinary vision, and the same can be true of colour photographs with a fine grain. These do not tend to deceive us (we know they are in fact a flat, manufactured surface), but especially at a distance they can preclude *visual* awareness of their surface.⁴²

⁴⁰ Metelli, 'The Perception of Transparency', 94.

⁴¹ Lopes, *Understanding Pictures*, 49.

⁴² For further discussion of such pictures, see Newall, *What is a Picture?*, 25–26.

Let me start my examples by considering in detail one such case, the reproduction of the photographic image of a glass of milk that features on various Penguin Modern Classics editions of Anthony Burgess's novel *A Clockwork Orange*.⁴³ The milk is depicted by a white, or slightly grey colour. Here my claim is that this colour is wholly attributed to the subject matter – the milk – which appears as if a little behind the picture surface. While we have this experience, the picture surface appears as if it lacks all its colour properties. It appears, one might say, transparent to the point of invisibility. Note that we do not see different colours when we alternate between a visual awareness of only the picture surface, and a visual awareness that incorporates the subject matter. Rather, we attribute the same colour to different objects – we experience the white colour as belonging to the picture surface in the first instance, and in the second instance, to the subject matter's surface, to the milk.

The difference between these two experiences can be directly compared. Versions of the cover include in the design a strip of white above or below the photograph. In all cases this white is a similar (sometimes slightly brighter) colour to that which depicts the milk, but it has no depictive content; we see it only as a feature of the surface of the cover design.⁴⁴ Compare this to the white colour we see the milk

⁴³ At the time of writing, covers of these editions can be readily found on the internet. See for instance, www.goodreads.com/book/show/6392169-a-clockwork-orange (accessed 20 October 2014), which shows an edition from 2000.

⁴⁴ Let me put aside the possibility that it is seen as floating above the surface, along the lines suggested by Hyman's remarks (discussed in section 2).

as having. In these two cases, we experience much the same colour, but attribute it to a different object. My claim is that when visually aware of the milk, we have no visual awareness of the white as belonging to the picture surface, as we do when we examine the white stripes of the cover design. Rather, the white colour appears pushed back a little way into the virtual space of the picture, attached to the surface of the milk rather than the book cover.

It could be objected that we do retain an awareness of the surface as white and opaque. I would agree with this, but with the crucial qualification that this awareness is not at that moment part of one's *visual* experience. Consider here the glass depicted in the photograph through which the milk is seen. Where it is free of reflections, it is quite invisible: we have no visual awareness of its surface. I suggest that our visual experience of the subject matter through the picture surface is comparable to the visual experience of seeing the milk through the glass. We seem to see the milk through the picture surface just as we seem to see it through the surface of the glass. What is markedly different in the experiences of these things is not part of the visual phenomenology, but of other kinds of awareness. We know of the presence of both surfaces (through various contextual cues, our prior experiences and so on); we are aware of what kinds of surfaces they are and where they are; but in neither case do we have a visual awareness of the surface.

6. Case studies

I now turn to examples of seeing-in, starting with relatively straightforward cases, and progressing to more complex and challenging examples for my proposal. As I have

mentioned, these include instances of twofold perception and transparency, and the non-twofold perception I call imbrication.

(i) A glossy photograph

This example, and the next, are both instances of twofoldness and transparency. The flat, glossy surface of a photograph, or of other pictures, such as the book cover, will under certain viewing conditions have a reflective shine to part of the surface, through which one can nevertheless make out the picture's subject matter. The effect of such partial reflection is no longer like looking through non-reflective transparent glass, but usually like looking through a white veil or mist. Here, the colour associated with the reflection is typically attributed to the picture surface, while the other colours are attributed to the subject matter. Partially reflected light will produce a fusion mixture between its colours and those of the reflective surface (since it involves the mixture of light). So this example straightforwardly accords with a law of scission, for a fusion mixture of the scission colours will here recreate the stimulus colour.

(ii) A sepia photograph

I take it that a sepia toned photograph, despite its colouration will usually *not* occasion the experience of yellowish subject matter. Perhaps I am wrong about this, and people typically do find sepia photos as occasioning experiences of yellow things.⁴⁵ But so far as this is the case, sepia photographs would then instead fall under the previous category of picture, doing no damage to my overall approach. Assuming I am right, then, sepia photographs afford an experience that can be likened to that of seeing the subject matter through a filter-like device that translates all the hues into

⁴⁵ Hopkins' discussion of his concept of 'separation' in *Picture, Image and Experience* suggests that he thinks I am indeed wrong about this (e.g., at 128.).

corresponding shades of yellow. Here the picture surface's hue (that is, yellow) is attributed to the picture surface, while the surface's tonal properties are attributed to subject matter. This example also straightforwardly accords with the laws of scission, for a subtractive mixture of yellow with an appropriate variety of white, black and grey tonal properties will result in the variety of yellowish tones that actually characterise the picture surface.

(iii) Paintings with visible brushstrokes.

This is a more complex case, but it is also a crucial one for my proposal, since the experience of paintings with visibly impasted brushwork is a typical Wollheimian example of seeing-in.

My account here has two parts. The first is my transparency proposal. This applies to only a few unusual paintings, and to sections of rather more paintings. In these cases we experience the brushstrokes' colours as belonging to the subject matter, while their textures are attributed to the picture surface. Seeing-in here involves an awareness of the brushstrokes covering the picture surface as transparent textures through which the colours of the subject matter are seen. The experience, visually, is like seeing the subject matter through textured glass.

I think it is clear that we do experience certain parts of some pictures in this way. The effect is readily observed when the subject matter is not itself textured. For instance, when a clear blue sky is painted with visibly discernible blue brushstrokes, the blue of the sky appears as if seen through a textured, but otherwise perfectly transparent surface. Occasionally the entire surface of a painting can promote this textural scission. Those with a thick, broadly brushed undercoat and a thinly painted

picture over the top can achieve this effect. The effect is most clearly seen in a context, somewhat outside painting, where it is achieved systematically: in certain kinds of mass produced prints, such as the ‘oilette’ postcards published by Raphael Tuck & Sons in the early twentieth century. These are reproductions of paintings, printed on card embossed with a brushstroke pattern. The embossed pattern of brushstrokes gives the impression of a transparent texture through which the subject matter of the reproduced painting is seen.⁴⁶

However, most paintings do not afford such experiences. The brushwork in many paintings, such as Rembrandt’s *Self-Portrait as the Apostle Paul* (1661, Rijksmuseum, Amsterdam), to take an example where the effect is readily apparent, appears for the most part not as a transparent surface, but as closely imbricated with the subject matter it depicts. The second part of my analysis is addressed to this. Watanabe and Cavanagh, in their work on the perception of texture transparency, identify conditions under which scission does and does not occur.⁴⁷ Of interest here, when elements of overlapping textures line up with one another and are of the same size, scission tends to be resisted, and the viewer instead is more likely to perceive a single composite texture at the area of overlap. In figure 4, the left hand diagram

⁴⁶ Photographic reproductions of oilettes only produce this effect if they are made in raking light, so that the embossing is apparent. The website www.edinphoto.org.uk (accessed 20 October 2014) has an example, showing an oilette of Charles E. Flower’s *Castle and National Gallery, Edinburgh*.

⁴⁷ Watanabe and Cavanagh, ‘Texture Laciness’.

shows this phenomenon, while the diagram on the right shows that the oblique orientation of the elements increases the impression of transparency.⁴⁸

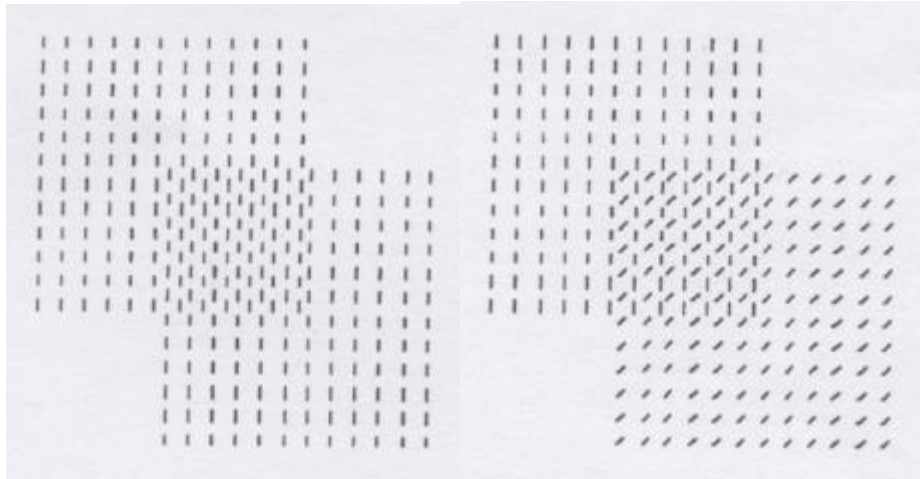


Figure 4. Watanabe and Cavanagh, details from fig. 5, p. 296.

The relation of the embossed brushstrokes of the oilette with the depicted textures of its subject matter satisfies Watanabe and Cavanagh's conditions for scission. The embossed brushstrokes, readily apparent, especially in raking light, are much larger than the depicted textural elements (clumps of foliage, puffs of cloud, in a typical Tuck & Sons image), and rather than being oriented the same way, they cut across them. Accordingly, we tend to experience the textures of the embossed brushstrokes as belonging to a transparent surface, through which the finer textures of the subject matter itself are seen. The painting of a patch of blue sky or a smooth surface allows a similar analysis, since the texture of the painting is wholly unrelated to the lack of texture the subject matter.

But in Rembrandt's painting, the brushstrokes, in terms of size, shape and orientation, often function as equivalents for the textures of the depicted subject

⁴⁸ Ibid., 294–97.

matter. They do not reproduce the texture of the subject matter in any exacting way – indeed they remain recognizably the textures of brushstrokes – but they often present a comparable ‘grain’, running in the same direction as the textures of the subject matter. Most prominently, the long curving folds of the turban Rembrandt wears are depicted with long curving brushstrokes. The brushstrokes also follow sags and creases of Rembrandt’s face, and curls of his hair are traced with similarly curling lines of paints. At the same time that the paint’s texture is used in this way, Rembrandt also manipulates tone to depict textures. This is done in the familiar way that other kinds of forms are modelled using tone: illuminated parts of the texture are rendered using a lighter tone, and shaded parts in a darker tone. Now, a critical point: to a significant degree the marks used to lay down these areas of tone and the textural marks I have discussed are the same marks. That is, in the process of creating the patterns of tone that depict textural qualities, Rembrandt lays down these textural marks.

Watanabe and Cavanagh’s work suggests that we should not be surprised to find that this combination of techniques acts to resist textural scission. Where tone and texture are laid down in the same strokes, as we see in those sections of Rembrandt’s self-portrait that I have mentioned, the elements of the depicted texture and actual texture will be similar in size and orientation, and so they are attributed to a single surface, that of the subject matter.⁴⁹ Here the textures of the paint appear

⁴⁹ There is also an important disanalogy between the textural transparency described by Watanabe and Cavanagh, and our perception of the Rembrandt. In fig. 4, we do not tend to see the composite texture as belonging to one of the two squares; rather it appears to belong to a third surface. But with the Rembrandt, the composite texture

imbricated with the subject matter in its own space. This creates the appearance of a composite texture, comprised of the texture that the picture is depicted as having through the manipulation of tone, and the texture of the paint, which we also attribute to the depicted surface.⁵⁰ More needs to be said about what the experience of imbrication is like, and how it relates to the experience of the individual components. I return to these questions in the next section. For now, note that this experience is *not* twofold on the account I have given. There is no appearance of overlapping of one object by another; instead we perceive their visible properties as combined in a single object.

does not give us a visual awareness of such a third surface that is neither the surface of the picture nor that of the subject matter. In this case we have an awareness of only the single composite texture, and we experience this as occupying the space of the subject matter. This is partly related to the fact that picture surface and subject matter appear to precisely overlap. Hence the composite texture we perceive in a Rembrandt does not sit side by side its components as in fig 4.; rather it entirely incorporates them. That still leaves the question of why we should see this composite texture as within the picture space, rather than (say) on the picture surface. I will leave this detail unexplained here, as I don't see that Watanabe and Cavanagh's account – developed to account for rather simpler perceptions of texture (in particular, perceptions of flat textured surfaces rather than volumetric textured surfaces), provides the resources to explain this. I thank Hans Maes for raising this issue.

⁵⁰ It is worth adding that this gives the painting a sense of physical presence that it would not otherwise have. (A photograph of a similar subject lit with similarly dramatic, raking light, would not give the same sense of presence as Rembrandt's painting.)

To sum up, for paintings with textured brushwork, my proposal is that seeing-in involves either an experience of transparency, or of imbrication. Different parts of the same painting may sustain different kinds of experience. (Perhaps the more summarily painted parts of Rembrandt's self-portrait, such as the background, act in the first way.) Note that this analysis is testable: where the elements of paint texture are oriented in the same direction and of the same size as elements of tonally depicted texture, it predicts that imbrication will be experienced. Where these conditions do not hold, it predicts that a transparency effect will occur. I would encourage the reader who wants further evidence to seek out paintings herself to test in this way.

(iv) Pictures that are physically transparent

Before returning to imbrication in the next section, let me address two other kinds of pictures that provide challenges for my account. The first of these are pictures that are physically transparent. Stained glass windows provide the most obvious examples, but I will avoid using these, since they are usually designed so that things are not clearly visible on the other side of it (not least through the common use of translucent glass rather than, or alongside, transparent glass). So take instead a pane of coloured glass, on to which is printed in a dark transparent ink a photographic image. One could think of it as a physically transparent version of the sepia photograph I discussed above. If this glass is set into a window frame, we will be able to see things through it, and perhaps with a little concentration we will be able to maintain a visual awareness of the scene on the other side of the glass, while it continues to function as a picture – that is, while we are also simultaneously aware of the depicted subject matter and the coloured glass. The worry here is how a picture surface can appear transparent, when it is already *physically* transparent and perceived as such.

This example can be successfully tackled once one understands that psychological accounts of transparency perception allow for the perception of what we may call multiple transparency. So, in double transparency, we will perceive objects as overlapping, without any occlusion occurring (fig. 5).⁵¹ In such cases a more complex scission occurs, the stimulus colour being divided between three surfaces where the three surfaces overlap.



Figure 5. Double transparency

This allows an easy solution to the problem – and one that rings true with our experiences of pictures on transparent surfaces. The scission into three parts comes out as follows: (i) we remain aware of features of the glass such as its hue and reflective shine; (ii) as with the sepia photograph, we are aware of the depicted subject matter, attributing to it the tonal values of the ink; and (iii) we see the scene

⁵¹ The artist and educator Josef Albers also explored such double transparency effects (Josef Albers, *Interaction of Color, New Complete Edition*, 2 vols. (New Haven, CT: Yale University Press, 2009), vol. 2, plates to section X-1.

behind the glass. Each of these three awareness occurs simultaneously. So the glass and depicted subject matter will both appear as transparent, and through them both we will see the scene outside.⁵² The subject matter will typically appear behind the glass, and the scene visible through the glass will typically appear behind the subject matter.

A point to note: this experience, and the visual experience figure 5 occasions, are no longer twofold. In these experiences three (rather than two) visible surfaces appear to overlap without occlusion. That is, on the account I have developed, they are threefold. More could be said about threefold experiences, and perhaps experiences with further folds too. A Wollheimian might object that an account that requires such multiple folds is at a disadvantage on account of this apparent profligacy. I think the reverse is the case, for the Wollheimian will encounter a similar challenge herself: in the case of pictures that depict other pictures. Such pictures may require that the viewer (i) sees in the picture surface the depicted picture's surface, and (ii) sees in that depicted surface the subject matter the depicted picture depicts. Since seeing-in for Wollheim involves simultaneous awareness of picture surface and subject matter, it follows that in such examples one must have an awareness of three elements simultaneously: picture surface, depicted picture surface, and depicted picture's subject matter – i.e. one must have a threefold awareness (a conclusion I

⁵² Another possibility, especially if there are objects only just behind the glass, is that these may appear to be in front of the subject matter. My expectation, drawn from analysis in (v), is that where a physically opaque object seems to lie in front of the subject matter, the opaque object will appear transparent and the subject matter will appear opaque.

would also, roughly, endorse). That makes the Wollheimian no better off than me in this respect.

(v) Pictures depicting subject matter that appears to project from the picture surface

My examples so far have dealt with subject matter that appears to lie behind the picture surface. But as I have mentioned, subject matter can also appear to project from a picture's surface. How does transparency figure in our experience of such pictures? I have an elegant response to this question. Let me use as an example a chalk drawing by the pavement artist Julian Beever, *Pre-Modernist and Post-Modernist*.⁵³ Working on a paved mall, Beever uses anamorphic projection techniques to give the impression that a large rectangle of bricks has been removed from the pavement. The missing bricks are drawn so they appear assembled in a nearby stack, reminiscent of Carl Andre's infamous Minimalist sculpture *Equivalent VIII*. Standing at precisely the right viewpoint the depicted bricks appear to sit atop the surface on which they are in fact drawn, and one might get the uncanny sense that Andre, or some errant council workers, have been labouring here. But though its technique is *trompe l'oeil* in this sense, as a chalk drawing it is unlikely to genuinely 'trick the eye'. Indeed, as is generally the case with pavement drawings, one can readily discern traces of the pavement beneath the drawing: both the furrows between the pavers, and their rough surface texture remain visible throughout the chalk drawing.

⁵³ Photographic documentation is on Beever's website, <http://www.julianbeever.net> (accessed 20 October 2014).

Part of the experience this work occasions is now familiar: where the gap in the pavement is depicted, the actual pavement (that is, the picture surface) appears transparent. Viewing photographic documentation of the work, one especially remains aware of the furrows in the pavement, which, chalked over for the most part, take on a faint transparent presence, through which appears the sandy space depicted beneath the pavement. It is the other part of the chalk drawing, that depicting the bricks, which provides the answer to my question: here one sees the pavement surface *through* the depicted pile of bricks. The depicted bricks have a ghostly, almost glassy presence through which features of the actual pavement, especially the grid of the furrows between the bricks, remain dimly visible. So, my proposal needs a simple adjustment when subject matter appears to project from the picture surface. In these cases, rather than seeing the subject matter through the seemingly transparent picture surface, we see the surface through the seemingly transparent subject matter.⁵⁴

7. Imbrication and inflection

I return now to the experience of imbrication, to clarify the phenomenon, and to outline how it relates to a similar concept, inflection, which has attracted some attention in the philosophical literature on pictures. I have used the term imbrication to indicate the appearance of a picture's subject matter when textural features of brushwork are attributed to the surface of the subject matter rather than the picture. As

⁵⁴ There are further cases for which I have developed treatments in terms of transparency and imbrication, but limitations of space preclude discussing them here. These include pictures in a 'flat' style, such as some Post-Impressionist, Romanesque and Byzantine painting, and – a complex case – pictures using hatching or crosshatching. I hope to present this material elsewhere.

I have said, these elements of actual texture then appear ‘imbricated’ with the textural features of the subject matter depicted by tonal modelling.

What is the experiential character of imbrication? I have claimed that it is an experience of composite texture, drawing the idea from Watanabe and Cavanagh. But what does such an experience amount to? Watanabe and Cavanagh’s work provides less guidance here – they imply that experience of composite textures is possible, but they do not give a description of it. So let me venture a description myself. Consider an example: the depiction by a painter of hair. Often a painter will not attempt to depict hairs individually. Instead she follows the general direction of the hair with the brush, giving a texture that gives some suggestion of individual hairs (through the texture left by the bristles of the brush), their length (through the length of brushstrokes) and their shape (which the brushstrokes and bristle marks follow). At the same time, the painter varies the tones of these brushstrokes. Partly this tonal variation models the general volumes that the hair fills, much as other forms are depicted using tone. But it also serves to depict features of the hair’s texture: darker tones mark the shadows where locks of hair separate from one another, and lighter tones indicate where the light catches it.

We experience these not as two textures – the actual texture of the paint, and the texture represented by tonal variation – but as a single texture, the texture of the depicted hair. It seems to me that this apparent texture is produced according to the following rule, or one much like it. Consider texture as a raised pattern that is applied to an object’s surface. Two such patterns – call these component textures – can be applied one over the top of the other, and the result will be a third texture. I suggest

that we experience the composite texture as a single texture that is the outcome of such a process. There must be a similarity in size and orientation of the marks for a composite texture to be perceived, so it follows that the experience of the composite will tend to be a strengthened version of its components. That is, a visible multiplication of textural elements will occur, and where individual textural elements overlap, they will appear to fuse and obtrude further. This seems a good account of the experience that the use of texture in painting hair yields. The texture of the paint enriches the texture depicted using tone: more fibres seem visible, and the sense of relief is accentuated.

One may ask, how does our experience of such a composite texture allow us to distinguish the separate contributions of real texture, and tonal modelling? My account allows that while we apprehend the texture as a single texture, we can recognize aspects of the composite texture as having the texture of paint rather than that of the subject matter. The texture of the brushstrokes needs to satisfy Watanabe and Cavanagh's conditions of orientation and size, but otherwise does not need to be much like the actual texture of the depicted subject for imbrication to occur. So in contributing to the experience of the composite texture, it also retains its visibly brushstroked appearance. That is to say, the subject matter appears to take on textural properties of the paint (an effect that aligns imbrication with inflection, as will be clear below).

Note too, that as I have discussed in section 5, this experience can alternate with a visual awareness of the medium as medium, but in doing so the viewer loses awareness of the subject matter. In this case we see the paint's tonal and textural

properties as they in fact are. Together these points allow for a rather richer experience of a painting than might at first be apparent on my account. For instance: if we visually fasten on to a brushstroke, and step back, we can retain the awareness of the brushstroke's texture as our awareness of its association with the surface ebbs, and it appears to become imbricated with the subject matter.

Imbrication bears a close relation to inflection. Inflection describes the experience of a picture in which a picture's subject matter is inflected with qualities of the medium. For Hopkins, inflection occurs when 'what is seen in a surface includes properties a full characterization of which needs to make reference to that surface's design (conceived as such).'⁵⁵ With typical analytic cautiousness Hopkins claims only that there is at least one example of inflection (in Rembrandt's pen and ink drawing *Jan Cornelisz Sylvius*, c. 1646, British Museum, London). But it is clear that there are a great many more instances than this. Michael Podro, on whom Hopkins draws, finds an example of in Veronese's *Unfaithfulness* (c. 1575, National Gallery, London), observing that 'the sense of the brush across the heavy weave canvas intimates the physical immanence of the woman's back.'⁵⁶ The woman's skin appears to take on qualities of the painted surface which inflects the sense of form that Veronese achieves through the more standard means of tonal modelling. On the basis of this,

⁵⁵ Robert Hopkins, 'Inflected Pictorial Experience: Its Treatment and Significance', in Catharine Abell and Katerina Bantinaki (eds), *Philosophical Perspectives on Depiction* (Oxford: OUP, 2010), 151–180, at 158.

⁵⁶ Podro, *Depiction*, 13.

imbrication may seem to be the same thing as inflection, or at least a kind of inflection, and I would be comfortable with the later interpretation.⁵⁷

However, Hopkins argues that inflection presents two challenges for what he calls divisive accounts of seeing-in, of which mine is, in a sense, an example.⁵⁸ I will show how my approach escapes these challenges, but first I will need to explain the distinction Hopkins has made between divisive and unitary accounts of seeing-in.⁵⁹ All accounts of seeing-in will make a distinction of content: between the experience of the picture surface and the subject matter seen-in it. However there is a question, as Hopkins puts it, of ‘whether the distinction between the two dimensions of content in pictorial experience is taken to correspond to any further divide in its nature’.⁶⁰

Divisive accounts hold that it does; unitary accounts maintain that it does not. My account is part divisive and part unitary. It is divisive in so far as it analyses seeing-in in terms of transparency perception: for that implies that we could, at least conceivably, experience the two components independently of one another. However inflection (at least in the guise of imbrication) plays no part in this experience. It is

⁵⁷ Podro’s and Hopkins’ treatments of inflection are not limited to texture; they also extend to the sense of motion brushmarks can have.

⁵⁸ Hopkins, ‘Inflected Pictorial Experience’, 171–179. Bence Nanay argues against Hopkins’ claim that divisive accounts may not accommodate inflection, though Nanay’s approach differs from mine. (Bence Nanay, ‘Inflected and Uninflected Experience of Pictures’, in Abell and Bantinaki (eds), *Philosophical Perspectives on Depiction*, 181–207.

⁵⁹ Robert Hopkins, ‘Inflected Pictorial Experience’, 167–171.

⁶⁰ *Ibid.*, 170.

unitary so far as it analyses seeing-in in terms of imbrication – since it is an experience of a single composite surface.

The first problem that inflection presents for divisive accounts is this. Divisive accounts imply that when inflection occurs the picture surface will feature *twice* in our experience of the picture: we will be simultaneously aware of both the picture surface itself, and of the subject matter as inflected with the properties of the picture surface. Hopkins is right to point out that this does not reflect our actual experience of pictures. As he says of the Rembrandt drawing, the ‘ink strokes do not figure twice over’ in our visual awareness.⁶¹ But as I have described, when imbrication occurs, the pictorial experience is unitary. One does not experience the texture as being of the picture surface; instead it is experienced just once, as a feature of the subject matter. Thus my account is not vulnerable to this criticism.

Hopkins’ second objection is complex, so let me extract from it that part that challenges my approach. Hopkins writes,

Anything bearing inflected properties is not just an unusual sort of entity, but one that somehow combines aspects drawn from very different orders of reality: the world of design and the world of scenes visible in design. Can Standard Visual Representation offer us *that*? Until we have a satisfactory answer, the divisive account is threatened ...⁶²

Hopkins’ concern is that it is difficult to see how the two aspects of seeing-in can be combined when a divisive account typically begins (as mine does) by stressing that they are best understood as akin to ordinary face-to-face visual experience, (Standard

⁶¹ Ibid., 171.

⁶² Ibid., 174.

Visual Representation as Hopkins calls it).

The key to answering this worry lies in being clear about what is being combined. On my account, we could consider ‘what is combined’ in two ways, and neither poses the kind of problem Hopkins raises. On one hand, we might consider that it is the component stimuli – patterns of light, distinctive of two component textures, call them X and Y. These stimuli are only drawn from ‘different orders of reality’ in that one is produced by a real texture, say X, and the other is produced not by Y, but by a tonal pattern distinctive of Y. Nothing precludes the possibility of these two patterns of light being combined into a stimulus distinctive of a composite of textures. On the other hand we might consider that it is two different experiences that are combined. My analysis of Rembrandt’s painting shows that this does indeed occur. The resultant experience of imbrication in such a painting can be understood as a combination of an awareness of paint texture and the awareness of texture occasioned by the tonal pattern. Perhaps we may say that these awarenesses are from ‘different orders of reality’ in that one is produced by a real texture and the other is produced by a flat pattern of tone. But as my analysis of Rembrandt’s painting shows, that does not preclude the combination of the two awarenesses. Thus, contra Hopkins’ concerns, an understanding of ordinary visual experience does indeed give us the resources to describe the experience of imbrication.

9. What seeing-in is

Let me now draw together my account of seeing-in and say something about its implications. I have argued that in some cases, seeing-in involves transparency perception, and in other cases it involves a perception of imbrication. More

exactly:

To see X in Y is either (a) to have a transparency perception incorporating a veridical visual awareness of Y, and a non-veridical visual awareness of X, or (b), to have a non-veridical visual awareness of X in which Y's surface appears imbricated with X's surface. In both cases the awareness of X is counterfactually dependent on the presence of Y.

I have already lingered over the different ways X and Y can be experienced, and the role of counterfactual dependence here is a straightforward matter, so let me pass over these to focus on a final issue around the perception of X, the seen-in object.⁶³ We have a visual experience of X, but X is not present. What does it mean to have an experience of an absent object?

I reject the suggestion that this experience, qua experience, is different in kind to that of ordinary face-to-face seeing. As I conceive it, there is no necessary qualitative difference between the two. The only essential point of difference is that the visual awareness of X is counterfactually dependent not on the presence of X, as it is in veridical seeing, but on the presence of the surface, Y. There are other differences, and though these do not occur in all instances, they still call for explanation. I identify two here.⁶⁴ The first arises from the fact that we typically do

⁶³ For the concept of counterfactual dependence, see Lewis, 'Veridical Hallucination and Prosthetic Vision'.

⁶⁴ I discuss these in Newall, *What is a Picture?*, 33. One might wonder if there is a third difference: that unlike face-to-face vision, pictures do not convey what Gregory

not believe we are in the presence of an object when we see it in a picture (though occasionally we may, as when we are tricked by *trompe l'oeil*). The worry here is that the non-veridical experience of seeing may not be compatible with a belief that X is truly present. Reflection on examples of ordinary seeing involving optical illusions shows that this should not be a concern. To take one example, a viewer aware of the bent stick illusion can have a non-veridical visual experience of the half-submerged stick as bent, despite simultaneously believing the stick to be straight. Seeing need not always be believing. The second difference is that a seen-in object is often experienced as having different visible properties than would be apparent to the viewer face-to-face with the object. For instance, we do not experience the subject matter in a sepia photograph as having properties of hue (at least not those which we would ordinarily see in life), and we do not experience people's faces as having quite the rough painterly textural properties that Rembrandt can give them. Although these particular experiences may be unique to pictures, examples of ordinary vision show that these *kinds* of experience – in which objects are visually experienced as having different properties to those normally available face-to-face – are not unique to pictorial experience. In situations where our ability to see is reduced, we typically

Currie calls 'egocentric information'. That is, while face-to-face vision gives us 'information about the spatial and temporal relations between the object seen and ourselves', pictorial experience does not give us information about such relations between ourselves and the subject matter. (Gregory Currie, *Image and Mind: Film, Philosophy, and Cognitive Science* (Cambridge: Cambridge University Press, 1995), 66.) It will be apparent from section 2 that I believe that pictures do in fact provide such egocentric information, at least regarding spatial relations – only that the information they provide is non-veridical.

have visual awareness of things without experiencing them as having their full gamut of usually visible properties. So, in darkness we may not be able to see hues, and in fog we may not see detail. In situations where something (say, a person) we have seen before reappears to us, but with changed properties (say, a new hairstyle, plastic surgery, etc.), we may still experience it as the same object – that is we still recognize it – but we experience it as having new properties.

I finish by briefly indicating two consequences of this revised understanding of the phenomenology of seeing-in. The first is etiological. It is reasonable to ask why instances of seeing-in happen to have the phenomenology of transparency perception. Without an explanation, this would seem a surprising coincidence. But it is not hard to lay out a plausible explanation. Suppose that such experiences are occasioned by the engagement of a single recognitional ability, an ability to perceive transparency. As we have seen, it is easy to understand how such an ability would be evolutionarily advantageous, for it would have helped our ancestors – both recent and distant pre-human – to negotiate their physical environment. Seeing-in involving twofoldness could then be understood as a ‘spandrel’, to use Stephen J. Gould and Richard Lewontin’s term, a by-product of the ability to perceive physical transparency – coupled with our capacity for non-veridical perception.⁶⁵ So it is plausible to think that the use of pictures exploits and depends upon our ability to perceive physical transparency.

⁶⁵ Stephen Jay Gould and Richard C. Lewontin, ‘The Spandrels of San Marco and the Panglossian Paradigm: A Critique of the Adaptationist Programme’, *Proceedings of the Royal Society of London, Series B*, 205 (1979), 581–98.

The second consequence might well already be clear from what I have said, but should be spelled out. We have seen that the experience of seeing-in, when it is twofold, is rightly understood as a species of well-known perception – a non-veridical transparency perception. A lingering concern may remain: that there is some circularity to this account. In explaining seeing-in partly in terms of transparency perception, one might be anxious that little has been explained, only that the burden of explanation has been shifted to the phenomenon of transparency perception, which will prove to have something rather like the old Wollheimian twofoldness at its core once subjected to proper analysis. But we are not returned to anything quite like Wollheim's twofoldness, for the account I gave at the start of section 5 clarifies the relation between surface and the object seen in it that Wollheim leaves obscure: it is the now familiar relation of overlapping without occlusion. One might still worry that if we were to begin with an idea of the stimulus colour as a picture-like surface, and to suppose that this was perceived simultaneously with the awareness of transparent bodies overlapping, that would indeed threaten a return to a Wollheimian position. But we have already seen in section 5 that Metelli rejects the possibility that veridical perception of stimulus colour and transparency perception occur simultaneously. So there is no prospect of circularity.

This means that the apparent relation between a surface and what is seen in it is no more puzzling than other kinds of visual perception that (veridically or otherwise) represent to us spatial and material properties of the kind we are apt to see on a day-to-day basis. So, in explaining seeing-in in terms of such kinds of

perception, the central philosophical problem it poses – explaining the nature of twofold experience – is solved.⁶⁶

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