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E Pur Si Move! Motion-Based Illusions, Perception and Depiction

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Can static pictures depict motion and temporal properties? This is an open question that is becoming increasingly discussed in both aesthetics and the philosophy of mind. Theorists working on this issue have mainly focused on static pictures of dynamic scenes and streaky images – such as futurists' paintings or long-exposure photographs. And yet, we could ask: if there is some success in creating an illusory impression of movement in a static image - as is the case in optical illusions of movement, such as Bridget Riley's *Fall* (1963: Tate, London), or Kitaoka's *Rotating Snakes Illusion* - is this to say that such static images depict movement? As far as I know, no one working on the depiction of motion has specifically and systematically tackled motion-based illusions nor tried to answer this question. This paper considers two cases of optical illusions of movement and concludes that one of them is involved in the depiction of movement. While the declared goal of my analysis is to answer a quite circumscribed question, it is also the occasion to tackle motion-based illusions tout court - to account for the complex visual experiences they elicit and related phenomenology. Moreover, this account has interesting consequences for theorizing depiction and pictorial experience in general. In particular, it constitutes a counterexample to resemblance theories of depiction.

Keywords: Depiction; Pictorial Experience; Perception; Depicting Movement; Illusory Motion

1. Introduction

Can static pictures depict motion and temporal properties? This is an open question that is becoming increasingly discussed in both aesthetics and the philosophy of mind. Theorists working on this issue have mainly focused on static pictures of dynamic scenes (Aasen 2020; Le Poidevin 1997, 2007; Marchetti 2022; Shardlow 2020; Young and Calabi 2018) – such as Bonheur's *The Horse Fair* (1852–5, Metropolitan Museum of Art, New York) - and streaky images – such as futurists painting (Le Poidevin 2017) or long exposure photographs (Benovsky 2012; Kulvicki 2016). And yet, we could ask: if there is some success in creating an illusory impression of movement in a static image - as it is the case in optical illusions of movement, such as Bridget Riley's *Fall* (1963: Tate, London), or Kitaoka's *Rotating Snakes Illusion* - is this to say that such static images *depict* movement? Shardlow (2020: 11) asks exactly this question in a footnote of his paper *No Time to Move* but does not give an answer. In fact, as far as I know, no one working on the depiction of motion has specifically and systematically tackled motion-based illusions nor tried to answer this question.[1]

This paper considers two cases of optical illusions of movement and concludes that one of them is involved in the depiction of movement. It is important to consider both

[1] However, two of the most recent attempts to analyze depicted motion in static images – Le Poidevin's (2007) and Aasens' (2020) - laterally consider the issue, even if only for dismissing optical illusions from their analysis. It should be noted that Elpidorou (2016) has argued that an instance of peripheral drift illusion – Kitaoka's *Fall* – is a case of seeing (and depicting) the impossible (see also footnote 20).

because the optical illusions that do not result in depiction have interesting relationships to the ones that do.

While the declared goal of my analysis is to answer a quite circumscribed question, it is also the occasion to tackle motion-based illusions *tout court* - to account for the complex visual experiences they elicit and related phenomenology. Moreover, this account has interesting consequences for theorizing depiction and pictorial experience in general. In particular, it constitutes a counterexample to resemblance theories of depiction.

Section 2 isolates the kinds of images upon which this paper focuses: Op Art's scintillating effects – exemplified by Riley's *Fall* and Leviant's *Enigma Illusion* - and peripheral drift illusions – exemplified by Kitaoka's *Rotating Snakes*.[2] Section 3 defines depiction, pictorial experience and pictorial content, and argues for considering both *Fall/Enigma* and *Rotating Snakes* as proper pictures, eliciting pictorial experiences. Section 4 then argues that illusory movement is seen *on* the surface, and not *in* the picture in the case of *Fall* (4.1) but that things are different for *Rotating Snakes*: here we see motion going on *in* the pictorial space (4.2). In light of this analysis I then argue, in section 5, that motion can actually be depicted in some static images via the illusory motion exploited by peripheral drift illusions. In the last two sections, I then spell out different consequences my account has for the depiction of (and through) illusory effects (section 6) and for resemblance theories of depiction (section 7).

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[2] You can see *Fall* here: https://www.tate.org.uk/art/artworks/riley-fall-t00616; an instance of *The Enigma Illusion* here: https://www.pnas.org/doi/10.1073/pnas.0510236103; and *Rotating Snakes* here: https://www.ritsumei.ac.jp/~akitaoka/rotsnakee.html.

2. Two Optical Illusions of Movement: Op Art Scintillating Effects and Peripheral Drift Illusions

In the philosophical literature, scholars refer to two main classes of motion illusions in which the illusory motion is observed without any type of motion in the stimulus: (a) Op Art's scintillating phenomena (often defined as visual tension) - as seen in Riley's *Fall* and in the *Enigma Illusion* - and (b) peripheral drift illusions, in which illusory motion appears in a constant direction guided by patterns - exemplified by the *Rotating Snakes Illusion*.[3]

From 1961 to 1964 the English painter Bridget Riley, one of the foremost proponents of Op Art, worked with the contrast of black and white, occasionally introducing tonal scales of grey. One of her best-known works of this period is the painting *Fall*, where, 'a single perpendicular curve is repeated to create a field of varying optical frequencies' (Gallery label, Tate). One of the main illusory effects in *Fall* is the experience of a sensed scintillation, seen as a shimmering or a chaotic vibration elicited by the pattern depicted. A similar effect of illusory motion is visible in another Op-art work: Leviant's *Enigma Illusion*, where the concentric purple rings appear to fill with intense streaming motion.

The second case of optical illusion of movement I consider in this paper is Kitaoka's *Rotating Snakes Illusion* (see also Kitaoka 2017 and Kitaoka & Ashida 2003). This famous image is the paradigmatic and most compelling example of automatically

[3] For a more nuanced taxonomy based on the psychological mechanisms underlying different motion-based illusions see Kitaoka 2017.

moving phenomena – technically called peripheral drift illusions - in which illusory motion appears in a constant direction guided by circular patterns. The observer of this image has a visual experience as of the snakes rotating – some of them clockwise, some others anticlockwise - when in fact they are stationary. When she fixes the gaze this illusory motion ceases.

Now, since these images generate illusory motion, is this to say that they *depict* motion? In what follows I argue this is the case, but only for *Rotating Snakes*, not *Fall* or *Enigma*. Thinking about the latter two, though, reveals interesting relationships with the former. I start with addressing the nature of pictorial experience and depicted properties, and with showing why we can think of both Riley's and Kitaoka's images as proper pictures, despite the fact that they may *prima facie* seem almost abstract compositions.

3. Depiction, Pictorial Experience and Optical Illusions of Movement

What does it mean for something to be depicted? And, in particular, what does it mean for properties to be depicted? While there is disagreement on how to define depiction – how to define what makes pictorial representations specially pictorial[4] - a consensus seems to have gathered around the idea of defining pictorial experience as seeing-in: when we face a picture, we *see* the picture's subject *in* a marked surface (Wollheim 1987).[5] Seeing-in is distinguished by a feature Wollheim called 'twofoldness': a viewer

[4] See Hyman and Bantinaki 2017 for a review of the different theories of depiction.

[5] Wollheim thought the *sui generis* perceptual experience of seeing-in, characterized by what he called twofoldness, to be what defines pictorial representations as specially pictorial. Some have

looking at a picture undergoes a 'twofold' experience: on one hand, she is visually aware of the flat surface of the picture; on the other, she discerns the subject matter of the picture. Wollheim called the first of these aspects of seeing-in the 'configurational' aspect, and the second the 'recognitional' aspect. In what follows, I will refer to the three-dimensional scene-representing experience elicited by a 2D, pictorial surface as the experience of "pictorial space" - following standard usage in art history, aesthetics, and cognitive science (Wölfflin 1929; Pirenne 1970; Kubovy 1986; Rogers 1995, 2003; Koenderink 1998; Hecht et al. 2003; Thompson et al. 2011, ch. 12; on this see Briscoe 2016). Pictorial space - I maintain following the work of psychologists such as Cutting (2003) and Niederée and Heyer (2003) - comes about via how our visual systems work. This resonates not only with Wollheim's original idea, but also with a number of contemporary seeing-in theorists (see for example Matthen, 2005; Nanay, 2011; Ferretti 2018) to whom pictures somehow evoke perceptual states like those evoked by the depicted objects: part of what it is to be a picture is to be the kind of thing that is apt for bringing about such states. The depictive content - which consists in the properties a picture represents the world as having - is interpreted in perceptualist terms: what is properly *depicted* in a picture has to do with what may be perceived by means of it. Along these lines, I assume here that our experience of seeing something in a picture is a

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criticized this view and built an altogether different theory of depiction (see again Hyman and Bantinaki 2017) while some others have built on Wollheim's intuition and tried to develop it in different directions. In what follows I want to remain neutral on this issue: I do not focus on a single theory of depiction, but rather on our engagement with pictures more generally – on pictorial experience aka picture perception.

perceptual experience - seeing-in really is seeing the depicted object in a certain way, namely, in the picture – where a perceptual experience is a mental state that consists in perceptually attributing properties to the perceived scene. In these terms, the depictive content of a picture - what is seen in it - is constituted by the properties our visual experience attributes to the pictorial scene. In particular, I take that a property x is depicted in a picture P if the observer O has the visual experience (or forms visual representations)[6] as of x when looking at S in P. If a property is experienced as a property of the recognitional fold – if it is *seen-in* the apparent 3D space of the picture, that is, in the pictorial space – then we could legitimately say that this property is *depicted* in that image.

Before proceeding, a further clarification on how I understand seeing-in as a species of seeing to be taken.[7] In fact, the most commonsensical use of 'see' arguably derives from a causal theory of perception, and the problem in the pictorial case is that many depicted items cannot cause anything.[8] In this paper, I maintain - following Newall

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[6] I want to emphasize that even if I talk in terms of 'visual' or 'perceptual representations' I am open to these claims being cashed out in anti-representationalist terms (perceptual states "presenting" or "being sensitive to" or "tracking" some properties).

[7] Thanks to an anonymous referee for pressing me to be clearer on this issue.

[8] Note that, building on Wollheim, some theories of depiction claim that 'see' should be taken literally for some pictures – for example, and famously, Walton (1984) thinks we literally see through photographs - and other theories for a lot more kinds of pictures (e.g. Lopes 1996). In what follows, as it will soon be clear (see below), I maintain that 'see' in all cases of pictorial experiences should be taken as the veridical seeing of the picture and the non-veridical seeing

(2011) who builds on Wollheim - that seeing S in P involves the experiences of seeing S and P – typically, the veridical experience of seeing P and non-veridical experience of seeing S (id. 41).[9] With Newall and after Lewis (1988), I define seeing S as veridical if and only if S is present before the subject's eyes, and seeing S is counterfactually dependent on the presence of S before the subject's eyes. It follows that seeing S is non-veridical just in case S is not present before the subject's eyes, or, if S is present, when this relation of counterfactual dependence does not hold. In the case of pictures there is some item, not S but P, present before the subject's eyes on which the non-veridical seeing of S counterfactually depends. Seeing S is thus dependent on the presence of some other item, P, before the subject's eyes, such that if P were not so present then seeing S would not occur. In sum, I understand the experience of seeing pictures as the perceptual experience of seeing-in, which is a *sui generis* kind of seeing involving the veridical experience of a surface - P - and the non-veridical experience of an apparent pictorial space populated by depicted objects – S.

One may wonder, though, whether this Wollheimian view about depicted objects and properties can also apply to what *prima facie* seems an abstract image – such as Riley's or Kitaoka's. I think that it can. In fact, in the philosophy of art, Wollheim has broached the idea that abstract painting has depictive content. 'Abstract art,' he writes, 'tends to

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of what is depicted. I then deal in some more detail with the issue of photographic images later on: see section 6.

[9] See also Voltolini (2015), who has a similar take and argues that the correct way to understand the recognitional fold is as 'a kind of *illusory seeing-as,* a *knowingly* non-veridical seeing the picture's vehicle as a certain item' (id. 151).

be an art that is at once representational and abstract. Most abstract paintings display images: or, to put it another way, the experience we are required to have in front of them is certainly one that involves attention to the marked surface but it is also one that involves an awareness of depth' (1987: 62). As an example, he gives Hans Hoffman's abstract painting *Pompeii* (1959: Tate Gallery, London): 'manifestly this painting requires that we see some planes of colour in front of other planes, or that we see something in its surface. And this is true despite the fact that we shall be able to say only in the most general terms what it is that we see in the surface' (1987: 62). In general, for Wollheim, abstract paintings are distinguished from non-abstract paintings by how we conceptualize those things we see in them. With non-abstract painting 'we use "boy", "dancer", "torso" ', that is, 'figurative concepts'. With abstract painting we use ' "irregular solid", "sphere", "space" ... ', that is, 'abstract concepts' [ibid]. Voltolini too acknowledges the pictorial nature of abstract paintings, and writes

> some so-called abstract paintings are *eo ipso* figurative insofar as some items can be discerned in them, or at least in parts of them. In some (if not most) abstract paintings we can at least trace figure/ ground relationships between items effectively located in a space that is not our actual space, the space where we locate the picture's vehicle: an apparent or pictorial space. Accordingly, these paintings somehow present a scene where particular items interact, as standard figurative images paradigmatically do. (2015: 4).[10]

[10] Also for Newall abstract art is a form of depiction. Newall's idea is that 'abstract painting can occasion the non-veridical seeing of a wide range of properties, but that it always excludes the

By the standard just articulated, it seems that both Op art images - *Fall* and *Enigma* – and *Rotating Snakes* are proper pictures. When facing Riley's *Fall* we see the parallel repetition of a single perpendicular curve. Though in the upper part a gentle relaxed swing prevails, the curve is rapidly compressed towards the bottom of the painting. While no properly figurative items can be discerned here, the way in which the lines are depicted generates an impression of depth and the definition of a pictorial space in which the lines themselves are situated. In fact, rather than seeing these lines and their undulations as occurring on the flat plane of the canvas, we readily interpret them as curving in depth, inside the pictorial space - an apparent three-dimensional space clearly detached from the ecological one we inhabit, and which is seen-in the surface. Also, *Enigma* can be seen as properly pictorial. This pattern of black radial lines on a white background intercepted by three bicolored annuli and a central disk can in fact be seen as a series of geometrical elements inhabiting an apparent space. The black radial lines converge toward the centre of the picture, far away into the pictorial space, and the three chromatic rings and the central disk are seen in front of the lines; in addition, the rings seen in perspective appear to be of approximately the same size, but gradually receding from the observer and the picture plane. Seeing *Fall* and *Enigma* in this way, I argue, is seeing them pictorially, as proper pictures eliciting seeing-in experiences; I also claim that this represents a common, consistent and robust way in which we experience these images.

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recognition of volumetric form' (2011: 174). This means that abstractions can be thought of as frustrating the mechanisms of volumetric form perception, but they nonetheless elicit seeing-in.

A similar, and even more compelling, story can be told about our second case, Kitaoka's *Rotating Snakes*. In this image a series of concentric circular patterns is seen. The six central patterns are seen in front of other 12 series of circular patterns which are themselves seen behind the 6 central ones. This already establishes a spatial relation between different items and an apparent depth which defines a pictorial space. But there is more. In fact, each circular pattern is itself constituted by a series of concentric circular patterns – individual circular snakes – which are progressively smaller as they reach the center of each figure; as a consequence, these are seen as receding far away inside the pictorial space, until a black circle appears - too far, too deep into pictorial space, where there is no more light our eyes can catch. Furthermore, as the title of the image indicates and as Kitaoka acknowledges, the circular patterns can be seen as figurative: they can be seen as pictorially represented snakes, though stylized. But, and importantly, seeing the individual circular patterns as snakes is not necessary for seeing the image as a picture: as argued before, *Rotating Snakes* elicit a seeing-in experience, where a pictorial space is seen inside a marked surface, even if what we are seeing-in are only a series of geometrical patterns.

Fall, *Enigma* and *Rotating Snakes* are proper pictures, eliciting appropriate seeing-in experiences. Now, are these pictures actual depictions of motion? In order to answer, we first need to understand what is being seen to move when we experience them.

4. Perceiving Optical Illusions of Movement

As these images elicit very complex perceptual experiences, it is not clear what is being seen to move in *Fall, Enigma* and *Rotating Snakes*. In this section I argue we have to consider and analyze the two cases differently: firstly, I show that when seeing Op art's scintillating phenomena we perceive motion *on* the surface, as a property of an

hallucinated superimposed additional layer (4.1); then, I argue that when seeing peripheral drift illusions, such as the *Rotating Snakes*, we perceive motion *in* the surface, as a property of the depicted snakes (4.2).

4.1 Seeing Motion *on* the Surface: Op Art's Effects

Riley said of *Fall*: 'I try to organise a field of visual energy which accumulates until it reaches maximum tension' (Tate Label). Indeed, when seeing *Fall*, the observer experiences a scintillation, seen as a shimmering or a chaotic vibration that seems to be detached from the pattern depicted. In fact, Riley's *Fall* employs the *MacKay Illusion* (MacKay 1957), where simple patterns of regular or repetitive stimuli, such as radial lines (called MacKay Rays), induce the perception of a circular shimmering or illusory motion. As it happens with *Fall*, also in the case of the *MacKay Illusion* the observer sees a wave-like movement perpendicular to the lines inducing the scintillations.

In what follows, I try to show that *Fall* and similar images are to be considered in the same category as other illusions that have been traditionally deemed difficult to define, and that have recently been thought to be more closer to hallucinations than proper illusions, such as the *Hermann Grid Illusion*.[11] Here, pale grey patches appear at the intersections of the white channels formed by a grid of closely spaced black squares. It should in fact be noted that the appearance of these pale grey patches - exactly as the scintillations of *Fall* - is a phenomenon which is difficult to classify: 'it is not clear what kind of non-veridical experience one is having - illusory or hallucinatory. Is one

[11] You can see an instance of the Hermann Grid Illusion here: https://en.wikipedia.org/wiki/Grid_illusion.

inaccurately seeing parts of the white lines as having the property of greyness at their intersections - thus undergoing an illusion? Or is one hallucinating grey patches at those intersections, due to the interaction of the grid with one's visual system?' (MacPherson and Batty 2016: 267-268). A convincing classification and description of the phenomenon comes from Brewer (2010), who usefully categorizes the *Hermann Grid* as a case of hallucination; specifically, he thinks it is as a case of 'mixed perceptual cum hallucinatory experience' where 'we see the grid of black squares as a mind-independent direct object of perception supplemented by a systematic hallucination introspectively indistinguishable from seeing light grey patches at the intersections of the white channels between these black squares' (id: 115).[12]

A similar effect is, I think, the *BBC Wallboard Illusion*.[13] This illusion has its origin as a chance observation on the wallboard of a BBC studio: the broadcasting staff had been annoyed by illusory shadows running up and down blank strips between columns of parallel lines. This is a moving version of the *Hermann Grid*: in place of stationary light grey patches we see rapidly moving shadowy patches; it is a case of perceiving a mind-independent object (the grid) supplemented with a systematic hallucination of superimposed moving shadowy patches.

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[12] For Brewer, similar cases of perceptual cum hallucinatory experiences are afterimages. In the next subsection I will take into consideration a particular illusion involving afterimages which is closely related to our discussion: the *Waterfall illusion*, a case of motion aftereffect.

[13] You can see an instance of the BBC Wallboard illusion here: https://www.scientificamerican.com/article/view-amazing-images-that-seem-to-move/.

Op artist Isia Leviant unknowingly combined the BBC wallboard illusion and the MacKay Illusion in the now classic *Enigma illusion* (Leviant 1996). The main illusory effect in the *Enigma* occurs during fixation of the center of the static image. Then, the concentric purple rings appear to fill with intense streaming motion – a perceived illusory motion that can occur in either direction, clockwise or counterclockwise - characterized by a traveling wave or some subtle motion on the annuli that may not be described in more detail by the observer. Sometimes the observers call it 'a feeling of motion' (see Hamburger 2017), while others, like Hamburger, suggestively describes the experience as 'quite intense streaming motion […] perceived on the different annuli. It is characterized by a traveling wave or some subtle motion on the annuli' (2017: 496). As Hamburger's report indicates, this streaming motion is seen *on*, or better, *over*, the surface, as motion of something that is superimposed on the surface of the image. If my analysis is correct, *Enigma* can be characterized as the moving versions of the *Hermann Grid*: we have to consider it in the perceptual cum hallucinatory experience category delineated by Brewer. But, as the illusory motion seen in the BBC Wallboard and Enigma is phenomenologically similar to the scintillating effect of Riley's *Fall* and of the MacKay Illusion, the same applies, by extension, to them: in all these cases we perceive a

mind-independent object supplemented with a systematic hallucination of a superimposed moving layer.[14, 15]

If we look at the *Enigma illusion* more carefully, we will notice another important illusory effect involving motion: the painted radiating black and white lines appear to vibrate – an effect that is more evident, as we will see, in the MacKay illusion the painting exploits. I think this effect – the visible vibrations of the lines - needs to be tackled together with other kinds of illusion in which, or so I argue in the next subsection, what is seen to be moving is not an hallucinatory superimposed layer, but the pictorial content itself. In these cases we experience motion *in* the surface, not on it.

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[14] In line with what I have argued so far, Riley describes the visual research that oriented the realization of another painting of her, *Current* (1964: MoMA) – which is a development of *Fall* (and exploits the same effect) - as the tentative of activating the space between the surface of the picture and the eye of the observer: 'I wanted' she said, 'the space between the picture plane and the spectator to be active'.

[15] While I think that Brewer's description is the correct one and that it can teach us something about the illusions I am considering, he does not say much about this kind of experience (nor he claims to). What we need is a more detailed account to address the issues at hand. I suggest a way to improve Brewer's account: I propose to analyze these phenomena in terms of "transparency effect" (Metelli 1974; Newall 2015); the superimposed layer is transparent – we can see through it the depicted pattern that originates it in the case of *Fall*, or the white background onto which the shadowy patches stands in the case of the BBC wallboard illusion. A more detailed analysis of this aspect of our experience, while extremely interesting, is outside the scope of this paper.

4.2 Seeing Motion *in* the Surface: Peripheral Drift Illusions

Another set of illusions that elicit the experience of motion to be the motion of the depicted object and not of something else are peripheral drift illusions, like Kitaoka's *Rotating Snakes*, or so I argue. In what follows, I claim that these images are examples in which the motion is part of the recognitional fold of our pictorial experience: motion is experienced as a property of the depicted objects, rotating snakes. In fact, phenomenologically, the motion seen in *Rotating Snakes* does not appear to be detached from the patterns depicted, as a different transparent layer, but it is seen as the movement of the patterns themselves, which are perceived as rotating.[16]

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[16] Recent data from psychological studies show that there are three reasons for thinking that the illusory motion seen in snakes is a property attributed to the circular patterns. While psychological mechanisms underlying the illusory phenomena of the Rotating Snakes are yet to be clearly understood, vision scientists seem to agree that multiple important facts about the visual system are at work in this illusion: difference in the rate at which neurons adapt in the black vs. blue regions, and in the white vs. yellow regions; decomposition of the image by the visual system at different scales; and, finally, the fact that large scale global motions, like disk rotations, have their own separate detectors at a secondary stage of processing within the visual system, detectors which are very sensitive and a small amount of illusory motion at many different places in the disk can cause the entire disk to rotate (Backus & Oruç 2005; see also Lombrozo 2014's interview to Backus for NPR; see also Kitaoka 2017). Psychological studies seem to reinforce the phenomenological description I provided: the illusory motion processed by the visual system is not an uninstantiated property, or a property attributed to a different layer, but it is a property which is attributed by the experience to the circular patterns themselves. It is not a detached sense of motion, because it is the way in which the snakes

A different reading that seems to be in contrast with the one I have just put forward has recently been given for peripheral drift illusions. It can be found in the debate on temporal experience, where *Rotating Snakes* appears, *en passant*, as the exemplification of an idea put forward by LePoidevin (2007) and successively elaborated by Arstila (2018): the idea of the existence of pure motion phenomenology. This is the idea that motion can be part of the phenomenology of perceptual experience in the form of pure motion: we can have an experience of movement without an experience whose contents are temporally spread and include an object at different locations at different times.[17] Arstila writes: 'The waterfall illusion demonstrates that this [pure phenomenology] holds in the case of motion: we do not need to see an object changing its location in a continuous manner as a function of time in order to have experiences of motion. Other well-known motion illusions corroborate the claim. In the rotating snake illusion, for example, a stationary stimulus brings about an experience of movement' (2018: 295). These authors (for LePoidevin see 2007:138) compare the experience of *Rotating Snakes* with that of the waterfall illusion, a motion aftereffect experienced after watching a stimulus moving in one direction for some time, and then looking at a stationary scene; the stationary scene appears to have movement (in the opposite

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themselves are designed that elicits the (at least) three different mechanisms of our visual system responsible for the illusory motion phenomenology.

[17] On pure motion phenomenology and its implications see also Prosser (2016: 124).

direction to the moving stimulus that one previously watched).[18] Describing the experience of the waterfall illusion in terms of pure motion seems to bear close resemblance to the way philosophers of perception have described this phenomenon: in terms of an uninstantiated property (see Dretske 2000: 163-164; Johnston 2004: 144) which, similar to visual blurs, is simply presented as *there is movement going on* (Pautz 2010: 303).[19] But, if we think about *Rotating Snakes* in these terms, as an experience of motion detached from any object perceived, as a form of pure motion - as Arstila and LePoidevin seem to do - then we are bound to describe the motion experienced in this image as a property detached from the patterns depicted, as an experience of motion not tied to anything in particular. But this way of analyzing *Rotating Snakes* is wrong. In fact, contrary to what both Arstila and Le Poidevin seem to think, our phenomenology (and even psychology, see footnote 16 above) indicate that in *Rotating Snakes* the motion seen in the periphery is experienced as the motion of the depicted objects seen in the picture. The snakes really seem to move. While illusory, this motion is not "pure" in the sense intended by these authors, but it is accompanied by

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[18] See https://www.illusionsindex.org/ir/waterfall-illusion or https://www.youtube.com/watch?v=oNhcpOIQCNs&ab_channel=special4k4 for visual examples.

[19] On Pautz view, the relevant content of your blurry/motion experience is in a sense nonpredicational, like 'it's raining.' I want to note here that Brewer's has an interesting and different view of the waterfall illusion: he suggests considering it as a 'systematic conjunction of degraded acquaintance and hallucinatory superposition' (2011: 117). See also Calabi (ms) for a critical review and for an original position on these matters.

the sensation that the snakes are actually rotating. While their account works for the waterfall illusion, it does not do justice to the experience of *Rotating Snakes*.[20] My account, in contrast, does.

Before proceeding to the second view, it should be made clearer the relation of motion experience in *Rotating Snakes* to the kind of motion which seems to lay transparently over objects – like in Riley's *Fall* - as this seems like it could be the same phenomenon, or at least a similar one. It is not, though, as my discussion I believe has shown: if in *Fall* motion is detached from the objects, or the shapes, depicted – the motion experienced is the motion of a superimposed and detached hallucinated layer - in *Rotating Snakes* motion is perceived as the motion of depicted objects – it is experienced as the motion of the circular patterns and of the objects they depict, that is, rotating snakes. In sum, experiencing the motion in *Rotating Snakes* is not a case of pure motion, a sensation detached from the depicted objects. When the gaze is wandering, scanning the image, and the motion is experienced, it is seen as the motion of actual patterns, circular disk, aka rotating snakes.

Armed with these analyses and distinctions, we can come back to our initial question: are these images actual depictions of motion? In the next section I try to give an answer.

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[20] There is another, somewhat related, view about peripheral drift illusions: Elpidorou (2016: 17) claims that seeing peripheral drift illusions is seeing the impossible. Even if the position was correct – and I am not sure it is, but this will be the subject of another paper - it would not affect the overall claim I support. It would only entail that the content of such pictures could be contradictory.

5. Depicting Motion?

For something to be depicted, it should be perceived as a feature of the pictorial content – of the items that populates the pictorial space of an image and that are seen-in the surface. In the case of Op Art's scintillating effects – whose motion, as I showed in 4.1, is experienced as movement of an hallucinated transparent superimposed layer – the hallucinated motion does not get to influence the pictorial content: we see the vehicle as static, we see the pictorial content seen-in the vehicle as static, and we see a superimposed moving layer. In these pictures, motion is not seen as motion of the pictorial content: hence, it is not depicted. What is interesting about *Fall*, *Current* or *Enigma*, though, is that perceiving these pictures results in a special kind of pictorial experience, or so I would like to suggest. When we are faced with these images we undergo a *sui generis* pictorial experience: we do not experience only two folds, as in ordinary pictorial experiences, but three - (i) we have the perceptual experience of the marked surface; (ii) we have the perceptual experience of the static scene seen in the picture; (iii) we have an additional (hallucinatory) experience of a superimposed, and transparent, moving layer. I suggest that in order to correctly describe the experience these pictures elicit we should use the term *threefoldness*, not mere twofoldness.[21]

A different account has to be given for peripheral drift illusions. In the case of *Rotating Snakes*, as I have argued in 4.2, we experience motion in the periphery as a property of

[21] Note that what I am proposing here is a different use of *threfoldness* than the 'neo-husserlians' depiction theorists adopt: for them, the third fold is the image subject (see for example Nanay 2016); for me, it is the hallucinated superimposed layer.

the snakes. But, since seeing the snakes is to see the pictorial content, when seeing the picture we experience motion as a feature of the (peripherical) pictorial content – as a property of the depicted objects. Hence, in this peculiar static image, motion is really *depicted*. I do not think this is a case of *sui generis* pictorial experience, as the experience of Op Art's pictures are: here we do not see anything more than different rotating snakes in a marked surface; we see a surface and we see something in it – snakes - which are perceived as rotating or as static depending on the focus of our gaze: no more experiential folds are needed in the explanation.

This is a new way to think about how a still image might depict motion. In fact, as I pointed out in the introduction, while theorists working on the problem of the depiction of motion in static images have mainly focused on static pictures of dynamic scenes or streaky images, no one has until now acknowledged the fact that illusory motion can be exploited in order to depict movement in static images. And, even if we agree that certain static images can, in some sense, depict motion and temporal properties through static devices – e.g. streaks, long exposure, motion lines or postural cues - none of these other means elicit motion-like phenomenology. *Rotating Snakes*, on the contrary, depict motion because the patterns depicted are experienced as rotating, and the rotation is visible. This image depicts motion because it shows motion, via the exploitation of illusory effects.

With this account in hand, in what remains of this paper I try to spell out a few consequences and to draw some conclusions. In section 6 I consider the case of pictures that depict pictures eliciting illusory effects. While the topic of depictions *of depictions* is

not something people talk about much, even in philosophy of picture perception[22], thinking about instances of pictures which contains – inside their three-dimensional pictorial space – depictions eliciting illusory effects has repercussions on both the issue of depicting motion in particular, and on depiction theories in general. Finally, in section 7, I show that the conclusions drawn in this paper represents a problem for resemblance theories of depiction.

6. Depicting Illusory Motion?

Let's say I depict a room with a Riley on the far wall. We look at the depiction, and see what I called hallucinatory effects. Are they seen on the surface of the depiction, or on the surface of the depicted Riley? If they are seen on the surface of the depicted Riley, this is a case where they are part of the depictive content and, hence, (illusory) motion is depicted. But this leads to another question: are they hallucinatory in this case? Does this painting depict a painting that is generating illusory patterns, or does it depict one that actually has those patterns? How would we decide this issue?[23] In order to answer, let's take one of the numerous photographs of Riley standing in front of one of her paintings - for instance, David Newell-Smith's *Bridget Riley: Doesn't Handle the Paint* (The Observer, 25 May 1969).[24] By looking at the photograph, we can see how the figure

[22] Exceptions are Kulvicki (2006, ch. 3) and Newall (2011, ch. 5).

[23] Thanks to John Kulvicki for rising these questions.

[24] You can see the photograph here: https://www.theguardian.com/theobserver/2019/may/18/observer-archive-bridget-riley-25-may-1969.

of Riley herself forces the depicted painting on the background and, with it, also the superimposed hallucinatory layer, that seems to be seen inside the pictorial space: both the painting itself and the illusory motion it evokes are seen beside the point where Riley is standing. If this is right, the hallucinated layer is seen as an effect elicited by the depicted painting, and not by the abstract lines on the photograph's surface which constitute it. Since the effect of Riley's depicted painting is still seen as a transparent hallucinatory superimposed layer, clearly detached from the depicted painting itself even if seen inside the pictorial space, I think that what the photograph depicts is a painting that is generating illusory patterns: after all, we do still see the illusory motion as detached from the depicted painting. The difference with the original case is that here we would have a pictorial experience of the transparent layer, which is hallucinated *inside* the pictorial space: these photographs are cases where an image properly depicts an illusory effect; the hallucinated layer, in this case, is part of the depictive content of the photograph.

A *précis* on (photographic) pictorial space - and what (and how) we see in it - is needed here, since this photograph is such a complicated case.[25] In section 3 I have spelled out the notion of pictorial space and of seeing-in I am endorsing in this paper: seeing S in P involves the veridical experience of seeing P and non-veridical experience of seeing S. The case I am considering here is complicated and involves a photograph of a painting generating motion-based illusions: we are in this case undergoing the non-veridical experience of seeing Riley's painting via the photograph. While non-veridical, the visual experience of the apparent (purely visual) painting which is seen inside the depicted

[25] Thanks to an anonymous referee for pressing me to be clearer on this point.

(photographed) pictorial space is really to be understood as the experience of *seeing* the painting *in* the depicted space, and this depicted version of *Fall* is then used to let the observer undergo the very same motion-based illusion – the hallucination of a moving additional layer - which is itself now experienced inside the apparent pictorial space. At this experiential level, I maintain, photographs and handmade pictures work in the same way: through both kinds of images we experience an apparent pictorial space populated by depicted objects; we *see* depicted objects *in* marked surfaces. In the particular case at hand, Riley's photograph, among these depicted objects there is one of her paintings, *Fall*, and an hallucinated moving layer elicited by the depicted *Fall*. But things would not be different in the case of a painting of Riley's photographs (or of Riley's *Fall* itself), provided that it is so well done that it elicits the very same motion-illusory effects as the photograph I used as an example. In both the photograph and the painting we would see – we would have a non-veridical visual experience of – a pictorial space and of the visual objects populating it; among these depicted objects there are the depicted *Fall* and the hallucinated depicted layer prompted by it. What could possibly change between the photograph and the handmade picture is the way we interpret what we see in them. In fact, things get even more complicated if we take similar cases concerning other illusions, such as the *Hermann Grid* or its moving cousin, the *BBC Wallboard illusion*. Let's consider the latter. Imagine a photograph of the BBC studio with the walls covered with the *BBC Wallboard* patterns. In this case we would see the walls of the studio, and on these walls we would see the illusory patches running up and down. In this sense, the moving patches would be seen on the surface of the depicted wallboard, and not on the surface of the photograph; they would be part of the depictive content of the picture. But what then would the photograph depict? An illusory effect, or real shadows? I think there can be room for interpreting them both ways: they can be

seen as both illusory patches and real shadows. The way they are interpreted could then depend on different factors. For example, it could depend on what the artist intended to depict – is he trying to reproduce what was going on in the studio where the BBC wallboard was first noticed, hence trying to depict an illusory effect, or is he trying to exploit an illusory motion effect in order to depict real shadows? Or on how much the observer is skilled in recognizing illusory motion and how prone to individuate them as such, or not – that is, from habits and background knowledge driving different interpretations. Another important factor contributing to the disambiguation could be the communicative context into which these pictures are received – if, let's say, the viewer lives in a community where illusory motion is always used as a means for depicting shadows, then she will be more prone to interpret the patches as depicting shadows. And so on. In other words, what we take the moving patches that we see in the picture to be in these cases is indeterminate. They become determinate after the observer's interpretation.

To better understand this point, I here need to make a further distinction in order to specify what "interpreting what we see in a picture" means in this context. A picture, I maintain, involves not only (i) a vehicle and (ii) what we see in it, but also (iii) a picture's subject, conceived of as what that picture is about. Indeed, as the ambiguity in interpretating the hallucinatory effects in the cases I am analyzing makes plainly evident, we definitely need a distinction not only between (i) and (ii) but also between (ii) and (iii), because the second and the third elements clearly differ. For one and the same picture may be, or is indeed, about different things, even if what is seen in it remains the same. In the literature on depiction, this distinction is usually made in order to point out the fact that what is seen-in the picture can be now about a certain

particular, now about another, and the third element corresponds to what we take what we see in the picture to be about.[26] There are indeed cases in which one goes on seeing the very same item in one and the same picture, even if the picture's subject is each time different. For example, as Voltolini (2018) notes, in Raphael's *The School of Athens* (1509–1511), one sees, among other things, a long-bearded old man pointing upwards and take him to be either Plato – and this was probably Raphael's intention – or Leonardo da Vinci - who according to many was the model that Raphael had in mind while painting his masterpiece. One may now wonder whether, since the case I am considering – a photograph of the BBC studio - is a photographic image, there really is such a space for interpretation: is not the extraction of what the photograph refers to determined by what was in front of the camera when the photograph was taken, by the causal link between the actual scene and the resulting picture? Generally, I think, photographs are more rigid in the designation of the subject matter, exactly because of the causal relationship between what was in front of the photograph and the resulting

[26] This is a distinction theorists of depiction often make, even if they use different terms: apart from the (i) vehicle, Husserl (2006) and neo-husserlians – like Wiesing (2010), Nanay (2016, 2018) and Eldridge (2017) – distinguish between (ii) *image object* and (iii) *image subject*; Kulvicki (2006) between (ii) *bare-bone content* and (iii) *fleshed-out content*, Lopes (1996) between (ii) *content recognition* and (iii) *subject recognition*; Hopkins (1998) between (ii) *seeing-in content* and (iii) *depictive content*; Hyman (2008) between (ii) *internal subjects* and (iii) *external subjects*. In this sense, I take "interpreting what we see in a picture" to be the cognitive process of deciding what we take what we see in the picture – i.e. (ii) - to be about – i.e. (iii).

image (see for example Newall 2011 for a useful way of thinking about the different standard of correctness of handmade pictures – regulated by authorial intention - and photographs – regulated by causal dependence). And yet, I think there are cases where the interpretation can be more elastic: in some instances, even photographers can indicate which content to choose between ambiguous interpretations and give indications about how to interpret what we see in the image; for example, in the case at hand, just by naming the photograph of the BBC studio *A Weird Motion-illusion on a BBC Studio Wall* to be published on a blog on illusion, or, alternatively, *Moving Shadows in My Office* we would be prone to interpret the moving patches differently – as an illusory effect in the first case, as shadows in the second.

A similar problem arises for Kitaoka's snakes. In fact, I have argued that the snakes are depicted as moving. But, when positioned inside a depicted room, there is another option: they are depicted as evoking illusory impressions of motion. As with the previous question: what would decide which of these interpretations is correct? As with the previous case, I think we need to insist that the content is indeterminate: the observer would need to sort out a determinate content from the two competing readings based on different factors that drive their interpretation – interpretative visual habits, background knowledge, authorial intention, communicative context, and so on.

Until now little has been said in the literature about the depiction of illusory effects.[27] Yet, this seems like an area in which more work can (and should) be done, both for

[27] An exception is Newall (2010), who talks about the depiction of and through subjective effects – among which he tackles shape illusions such as the *Café Wallboard*.

uncovering ways in which different properties – temporal, spatial, chromatic – can be depicted through illusory effects and for understanding and drawing the theoretical consequences that these peculiar depictive strategies have for various theories of perception, depiction and pictorial experience. In fact, in the next and final section, I argue that depiction through illusory motion poses a threat to resemblance theories of depiction.

7. A Worry for Resemblance Accounts of Depiction

Experiential accounts of depiction can easily accommodate my proposal. Of course, the original version of the seeing-in theory (Wollheim 1987) and its contemporary developments, such as Nanay's (2011), are a natural framework for my proposal, which is built around the notion of pictorial experience as seeing-in. But note that, even if I have described pictorial experience as seeing-in and as a twofold experience, my claim about depicted motion in peripheral drift illusions also works in the theoretical framework of the other main paradigm of pictorial experience, seeing-as (Gombrich 1960).[28] In fact, for the purposes of this paper, I could very well be neutral on whether we simultaneously represent surface and scene properties (seeing-in) or if we oscillate between an awareness of the two (seeing-as).

Different theorists, though, have criticized loose experiential accounts of depiction - in particular Wollheim's - with the accusation of saying too little about the constraints a surface puts on the depicted objects it encodes – constraints that are supposed to more precisely define the nature of depiction (see for example Newall 2003). One alternative

[28] Recently reinvigorated by Briscoe (2018) who defends a sort of 'weak onefoldness'.

approach, which has tried to say more, and to more precisely define what these constraints are supposed to be, is represented by resemblance theories.

According to resemblance theories, pictures not only resemble their subject-matter, but depict at least partly in virtue of resembling it [Hyman 2006; Abell 2009]. Resemblance theories cannot be true unless certain resemblances between pictures and their subject-matter exist. In fact, for these theories, depicted motion relies on actual motion of the marked surface (but they don't make the claim explicitly, because they don't consider depiction of motion)[29]: that's why, as Currie (1995) pointed out, films can depict motion while static images cannot.[30] Or, for Abell, a still image 'might depict a moment in time. It may even be possible to infer from the moment depicted either what events have led up to it or what events will follow. However, such pictures are incapable of depicting events as occurring in a temporal sequence' (2010: 278).[31] But both Currie and Abell were thinking about ordinary static pictures; what about depiction of motion through peripheral drift illusions? Are resemblance theories able to account for these cases of

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[29] In particular, consider Abell's (2009) theory – which is the one I will focus on in this section. Abell does not actually specify particular respects of resemblance required for depiction of particular features. It seems reasonable to assume that actual movement would be required on such an account to depict movement on her account - what else would serve this purpose on a resemblance account? And yet, it is true that this is an assumption, albeit, I think, a reasonable one. Thanks to an anonymous referee to push me to be clearer on this issue.

[30] It could be argued, though, that film images do not actually move either. Currie has a response to this, defending a resemblance view: see his *Image and Mind*, ch. 3.

[31] See also Kulvicki 2016.

depiction? Let's take Abell's theory, which is arguably the most detailed resemblance account on the market. For Abell (2009: 217), a marked surface depicts a as P if and only if:

(1) its maker intended both that it resemble a in certain visible respects and intended that it thereby bring a as P to viewers' minds and that it do so in part because viewers recognize this intention;

(2) it resembles a in the relevant respect(s);

(3) Condition 2 holds because condition 1 does;

(4) The respect(s) in which it (counterfactually) resembles a as P jointly capture the overall appearance of a as P, so as to distinguish it from objects for which it would not ordinarily be mistaken in appearance.[32]

Is this account able to accommodate motion depiction via optical illusions (or via the depiction of illusory motion, as argued in section 6)? In order to see if that is the case, we should substitute *a* with *motion* in Abell's definition and see if *Rotating Snakes* meets the four conditions as far as depicted motion is concerned. In the case of *Rotating Snakes* condition 1 does not stand: his maker, Kitaoka, did not intend the picture to resemble the moving scene (if he did, he failed); in fact, the picture does not move. And, even if he intended it to bring motion to the viewers' minds - as can be readily evinced by visiting Kitaoka's website (see also Kitaoka and Ashida 2003; Kitaoka 2017) – he did not actually intend the picture itself – the vehicle - to actually resemble motion: in order

[32] This is a simplified version of Abell's (very detailed) conditions. See Abell (2009: 217) for the full-fledged version.

to do so, he would have needed to create a video version of the scene, and not a static picture. Condition 2 then specifies that this surface needs to resemble what it depicts in the relevant respect(s), and condition 4 that these respects jointly capture the depicted object's overall appearance, so as to distinguish it from objects for which it would not ordinarily be mistaken in appearance. In this sense, the surface of rotating snakes should need to resemble motion in the relevant respects and that these respects jointly capture the objects' motion overall appearance (so as to distinguish it from not moving objects, or objects moving differently). But, if the relevant resemblance(s) are to be found between the marked surface and the depicted object, it seems that Abell's theory cannot account for *Rotating Snakes* and the depiction of motion through illusory effects: how is a static marked surface supposed to resemble a moving depicted object in the relevant respects, if we are looking for objective resemblances between the two? Metaphysically, this sounds like an impossibility. An account that limits depiction to objective similarities between surface and depicted objects, without mentioning experiential factors and the role the visual system of the observer plays in experiencing that surface, is bound to fall short in accounting for cases such as these. In fact, in *Rotating Snakes* what is being (illusorily) seen to move are the snaky circular patterns thanks to the way they are displayed on the surface of the image; it is the way they are positioned, coloured, and structured on the configuration that elicits motion responses for the overall patterns of depicted snakes. The surface, the configuration, and the way it is designed then constrain the fact that also the snakes as depicted objects are seen to move, but this constraint is at the level of experience: in other words, if there is a resemblance as far as the motion of the patterns is concerned, this is a similarity between the way in which we experience the configuration – not the configuration *per se* - and the experienced depicted objects such configuration encodes. Abell's account

faces similar problems in accounting for the depiction of illusory effects, as the ones discussed in section 6.

Two solutions would then be viable for Abell – or for an objective resemblance theorist in general – at this point. On the one hand, she could deny that *Rotating Snakes* or the depiction of illusory effects are genuine cases of depiction. The problem with this solution though is that it explains away interesting actual cases of depictions and experienced properties in pictures for the sake of maintaining her theory in place. But shouldn't a theory come after actual cases, and not before? On the other hand, Abell could amend her theory in order to accommodate these cases. The only way this could work out would be through the substitution in the definition of *resembles* with *experienced as resembling*. But then the theory is no longer an objective resemblance theory, and depends ultimately on the kind of experienced relationship between surface and content postulated, for example, by Peacocke (1987) or Hopkins (1998).

I now consider two objections that Abell – or another resemblance theorist – could elaborate in response to my argument.[33] First, the resemblance theorist might respond that there is some less obvious resemblance on which depiction depends. The impression of movement in Kitaoka's *Snakes* requires that the eye moves relative to the picture (i.e. saccadic motion). Could resemblance theorists draw on that movement to defend their theory? I do not think they can. The problem with this objection is that saccadic motion always occurs in picture perception – and, indeed, every time we visually perceive something – but it is not the case that every time that we have saccadic

[33] Thanks to an anonymous reviewer for raising these objections.

motion we also experience illusory motion in/of the objects experienced (hopefully!). In addition, as the psychological studies mentioned in footnote 16 seem to tell us, a number of correlated factors of our visual system are responsible for the motion illusion, saccadic motion being only one among a number of other aspects. It is difficult to hold, as a consequence, that saccadic motion is *the* factor – the similarity which underpins (and explains) – the experience of illusory motion in these pictures. Rather, is just one factor among many others. The construction of our visual experiences is complex, and this is mirrored in the way our visual system elaborates pictures in general and even more pictorial patterns eliciting illusions. An experiential theory seems to be in a better position than a resemblance theory to explain depiction in general, and depiction of peculiar properties – also of properties experienced through patterns eliciting illusions, like the motion of circles designed on a static surface.

The second objection, now. The resemblance theorist could counter by asking us to consider what a picture would look like of non-moving shapes with the same occlusion and colour properties as Kitaoka's. Wouldn't it be indiscernible from Kitaoka's *Rotating Snakes*, and so give rise to exactly the same motion illusion? The resemblance theorist can then argue that Kitaoka's *Rotating Snakes* is best considered as such a picture: that is, though it happens to give rise to the impression of movement, and is even intended to, it does not depict movement. And yet, this objection seems to be somewhat stipulative. In fact, eliminating motion from the indiscernible version of *Rotating Snakes* is an *ad hoc* move: why should we consider the colour of the snakes in *Rotating Snakes* as a depicted property but not their motion? After all, both are visual properties. As I argued above, motion in *Rotating Snakes* is a property that seems to be experienced in an image exactly like the shapes and colours of the snakes - colours and shapes the

objective resemblance theorist is happy to count as depicted (and to explain, through objective resemblance, why they count as depictive). The objectors are here making an *ad hoc* move. They are explaining what we should consider as properly depictive in a picture based on the assumption of a specific theory of depiction, objective resemblance. But, as I already noted above, it is resemblance in certain respects that is supposed to explain why we see what we see in pictures, and not the other way around. Moreover, remember condition (i) of Abell's theory: the maker of the image intends both that the image resemble *a* in certain visible respects and intended that it thereby bring *a* as P to viewers' minds and that it do so in part because viewers recognize this intention. This is exactly what happens with motion in *Rotating Snakes*, it is only that the visible respects and the intentions are not relative to objective resemblances: Kitaoka's *Rotating Snakes* is even intended by its maker to be a depiction of rotating snakes, it effectively bring motion to viewers's minds, and it does so in part because the viewers recognize this intention. The objectors should then explain why we should not consider motion to be a depicted property but we have to consider as depicted other purely visual properties like colour. The burden of proof lies on them.

In sum, resemblance theories such as Abell's cannot be true unless certain resemblances between pictures and their subject-matter exists. But in *Rotating Snakes* the snakes appear to move even if nothing actually moves: resemblance theories cannot accommodate the depiction of motion in these cases. Peripheral drift illusions are a counterexample to objective resemblance theories of depiction: in some cases, static pictures can depict properties (here, motion) without actually instantiating them in their vehicles.

In conclusion, resemblance accounts have trouble accommodating the depiction of properties through the exploitation of illusory effects. On the contrary, the seeing-in theory in both its original and contemporary forms can account for these, with the caveat that the illusioned/hallucinated properties are seen-in the picture (but this is exactly what happens with the cases discussed here, as I have argued before). Seeing-in still is the more effective way to understand depiction, pictorial experience and the various ways pictures can depict properties, and one of the reasons it is so is that it is loose enough to account for all actual cases of depictions, including the depiction of properties via illusory effects.

8. Conclusion

In this paper I considered two cases of optical illusions of movement – Op art scintillating effects and peripheral drift illusions - and concluded that one of them, the latter, is involved in the depiction of movement. While Op Art scintillating effects do not directly result in depiction, they nonetheless can be involved in the depiction of motion when they are represented as being inside the pictorial space; the BBC wallboard illusion, for example, can be exploited in this way in order to depict running shadows. I also showed that both cases of optical illusions present problems for resemblance theories of depiction. Sure, more work needs to be done in this domain, since optical illusions have not had a great deal of attention from philosophers working on depiction, but I hope this paper has shown that, notwithstanding the difficulty of analysing such puzzling and complicated phenomena, spending philosophical energies in thinking about them is indeed a worthwhile project.

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