

# Chapter 16

## Perception in Dreams: A Guide for Dream Engineers, a Reflection on the Role of Memory in Sensory States, and a New Counterexample to Hume’s Account of the Imagination



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**Abstract** I argue that dreams can contain perceptual elements in multifarious, heretofore unthought-of ways. I also explain the difference between dreams that contain perceptual elements, perceptual experiences that contain dream elements, and having a dream and a perceptual experience simultaneously. I then discuss two applications of the resulting view. First, I explain how my taxonomy of perception in dreams will allow “dream engineers”—who try to alter the content of people’s dreams—to accurately classify different dreams and explore creating new forms of perception in dreams. Second, I consider the consequences of the view for the role of memory in dreaming and imagination. I argue that not every element of dreams or sensory imaginations must rely on memory. The resultant view of sensory imagination provides a counterexample to Hume’s account of sensory imagination, according to which sensory imagination must be built up from faint copies of sensory impressions stored in memory.

### 16.1 Introduction

The standard philosophical account of dreaming is that it involves having sensory experiences, while asleep, that are wholly hallucinatory.<sup>1</sup> This means that there are no elements of these experiences which are such that having them amounts to

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<sup>1</sup>The standard account is articulated by, for example, Descartes (1641/1901). See also Windt who agrees that, “The traditional view in philosophy is that dreaming, in some form or another, involves the appearance of a world: phenomenologically, dreaming falls on the side of perception, illusion and hallucination rather than on the side of imagination” (2015: 251).

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perceiving the world. However, according to recent “dream engineering” research, there is good reason to think that at least some dream experiences are not of this nature: in some dreams, perception occurs. I agree. I will describe such experiences by saying that they involve “perceptual elements”. They are not wholly hallucinatory. But how should we conceive of such dreams? In what way, or ways, can perceptual elements, rather than hallucinatory elements, be present in dream experiences?

In this paper, I examine existing accounts of the sorts of perception that could occur in dreams. These are cases in which, while dreaming, we either:

1. perceive a real-world *object* and attribute a dreamt property to it, or
2. perceive a real-world *property* and attribute it to a dreamt object.

An example of (1) is a dream in which we perceive our own legs and dream that they are running, when they are merely twitching. An example of (2) is a dream in which we perceive the property of producing the sound of an alarm—the property that the clock by our bedside has—but, in our dream, experience that property as belonging to a dreamt bin-lorry which is reversing. I apply the new theory of illusion and hallucination developed in Macpherson and Batty (2016), and further elaborated in Macpherson (2020), to show how we should best characterise those sorts of experiences. According to my view, the descriptions of the cases just given do not by themselves let us identify which elements are ones that amount to veridical perception, which illusion, and which hallucination. So, I criticise an existing suggestion by Windt (2015, 2018) that cases of type (1) are, *tout court*, cases of illusory perception in dreams. I argue that the dreamt property could be illusory or hallucinatory. And I argue that in cases of type (2), the perceived property could be a case of veridical property perception or illusory property perception, depending on what other facts obtain.

I also show how we can use my new theory to predict the existence of other types of perception in dreams that we would likely not have thought of otherwise. I use my theory to uncover all of the types of perceptual elements that could be involved in dreams and explain the nature of those experiences. I show how those experiences can involve various combinations of veridical perceptual, illusory, and hallucinatory elements.

Further, I offer an account of why we have good reason to say that some of these experiences are genuinely dream experiences and not simply non-hallucinatory experiences that accompany dream experiences. I give examples that distinguish dreams that involve perceptual elements from dreams that are merely accompanied by perceptual experience. And I contrast both of these with cases in which elements of dreams are inserted into veridical perceptual experiences of the waking world.

This paper will thereby provide a guide for “dream engineers” to all the possible forms of dreams that blend veridical, illusory, and hallucinatory elements in complex and multifarious ways. The epithet “dream engineering” was introduced into the literature by Carr et al., 2020 and refers to the process of trying to alter the content of dreams by sensorily stimulating dreamers. My work can be used by dream engineers as a descriptive tool to precisely categorise instances of perception

in dreaming that they bring about. But it can also be used in an exploratory fashion. That is because I identify the full range of different types of cases of perception in dreaming that there could be, many of which people have not thought of before. So, dream engineers can use my work to explore whether, in practice, they can induce such cases in dreamers.

In the final part of this essay, I then apply these ideas to the topic of the role of memory in dreams. I consider what the presence of perceptual elements in dreams shows us about the role of memory in dreams. Just as Hume held that sensory imagination must be built up from faint copies of sensory impressions retained in memory, so too, someone might think all elements of dreams must be built up from remembered elements of things perceived. However, I argue that this view can't be right if perception can occur in dreams—for those perceived elements need not be based on things perceived in the past that are remembered; they can be based on present perception. I then go on to argue that it is plausible that just as dreams can involve perceptual elements, sensory imagination can too, and that such instances provide counterexamples to Hume's account of sensory imagination. Not all elements of sensory imagination must be built up from faint copies of sensory impressions stored in memory. Some elements of sensory imagination can be made up of present perceptual elements, and their presence in sensory imagery does not require memory to play a role.

The structure of this paper is as follows. I first outline my new theory of illusion and hallucination in Sect. 16.2. Then, in Sect. 16.3, I apply the new theory to refine, explain and predict cases of dreams with perceptual elements. In Sect. 16.4, I defend the idea that the cases under discussion are really cases of perception within dreams, rather than merely cases of perception occurring while dreaming. I compare those cases to some cases of hypnagogia and clinical hallucination that are cases of simultaneous perception and dreaming. And I also compare those cases to other cases of hypnagogia in which dreamt objects are experienced as being in the waking world. In Sect. 16.5, I discuss the role of past perceptual experiences and memory in dreaming and imagination.

## 16.2 A New Theory of Illusion and Hallucination

Common to all philosophical accounts of illusion and hallucination is the thought that illusion involves perception of the external world—albeit in the form of misperception—and hallucination involves no perception of the external world. I too take this to be what defines illusion and hallucination. However, these ideas have been subsequently unpacked and articulated in the philosophical literature in a way that illuminates only one type of illusion and hallucination. The spotlight on this one type of illusion and one type of hallucination has, I claim, blinded us to other forms of each that are possible. This is problematic for several reasons. One is that extant accounts of illusion and hallucination have failed to accurately account for cases in which perception goes awry that have been empirically discovered, often by

psychologists. (One example is failures of binding, described below.) Another is that if we allow the extant accounts of illusion and hallucination to constrain our conception of illusion or hallucination, we likely fail to consider a plethora of cases of illusion and hallucination which can be imagined a priori. Such cases can be fruitfully used to describe and explain perceptual experiences that are only just becoming objects of detailed study in the sciences, such as perceptual experience had by means of sensory substitution, by virtual or augmented reality, and, germane to the topic of this paper, when dreaming.

To explain this at greater length, I will outline the standard philosophical account of illusion and hallucination that is constraining in the way that I have just described. And then I will give my own account of these phenomena. Note that my account is not a theory of the nature of the perceptual experiences had in cases of illusion and hallucination. It is an account of what sorts of cases of illusion and hallucination there can be and in what circumstances they arise. But, in advance of doing that, I wish to set out three suppositions that I will make in this paper. First, when I use the term “perceptual experiences” I mean to refer to any of the following experiences: ones in which a subject veridically perceives the world, illusorily perceives the world, or merely hallucinates. Sometimes the term “perceptual experiences” is used in a way to exclude hallucinatory experiences, but that is not how I will use it.<sup>2</sup> At the same time, and in line with what I say in the paragraph above, I will say that veridical perception and illusion both involve perceiving the world, while hallucination does not. So, I will use “perception”, and its modally specific counterparts like “see”, as success terms, but I will not use “perceptual experience” in this way. Second, I will assume that perceptual experiences are states that can represent the world. A central feature of representational states is that the content of the states—what they represent—is variously taken to be true or false, correct or incorrect, or accurate or inaccurate. For example, if I have a perceptual experience that represents that there is a black horse in front of me, then that state will be true, correct, or accurate if there is a black horse in front of me and false, incorrect, or inaccurate if there is not a black horse in front of me. For brevity, I will speak of accurate and inaccurate representation. Third, for ease of exposition in giving examples of different sorts of experiences, I will suppose that colour is a mind-independent objective property that objects can have and that our experiences can accurately or inaccurately represent. If you do not agree, you can substitute any perceptible mind-independent property of objects that you believe exists in place of colour in my examples without loss. You might think that length or spatial position are such properties.

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<sup>2</sup>I take it to be a substantive question (that I do not answer here) to what extent hallucinatory perceptual experiences are like the perceptual experiences had when veridically perceiving the world, although of course they must to some extent subjectively seem to the subjects of experience as being similar, or to what extent they are like other mental states such as perceptual imagery.

The traditional account of illusion is that it occurs when you perceive a mind-independent object in the world in the physical space in front of you, but you misperceive one or more of its properties.<sup>3</sup>

An example of this illusion is a case in which you see a blue car but under the street lighting you have a perceptual experience as of a purple car. You see the car, but you inaccurately experience its colour. According to Smith (2002: 23) illusion occurs in “any perceptual situation in which a physical object is actually perceived, but in which that object perceptually appears other than it really is”.

The traditional account of hallucination is that it occurs when you have a perceptual experience as of an object and its properties but in virtue of doing so you do not perceive a mind-independent object and you do not experience properties that are in the physical space in front of you. It is a perceptual experience only in the sense that it seems to you as if you are perceiving an object and its properties when you are not.

An example of hallucination is a case in which you have a perceptual experience as of a blue car, but you are not thereby seeing a blue car or any other object. The reasons you could be having this experience are many and varied. You might have taken drugs, be suffering from Charles-Bonnet syndrome, or be receiving direct electrical stimulation to your visual cortex by means of an electrode.

For the purposes of elucidating my own theory of illusion and perception, first outlined in Macpherson and Batty (2016) and further developed in Macpherson (2020) I will make use of the resources of the causal theory of perception.<sup>4</sup> The causal theory of perception provides a reductive account of perception, and thus an account of perception using terminology that does not involve perceptual terms. As I will show, this will allow me to use that account to help to justify classifying certain cases as either veridical perception, illusion, or hallucination—in addition to intuition, which I will also use.

According to the causal theory of perception, a necessary and sufficient condition for perception is that you need to have an experience that closely matches what you are seeing and for this experience to be caused in the right way by that thing.<sup>5</sup> An experience matches what is seen if it represents it accurately. Different versions of the causal theory give different accounts of what it is for an experience to be caused in the right way. However, most agree that the causal connection must be of a kind that allows you to track what it is that you are perceiving across a wide variety of situations in a way that avoids luck making your experience a close match.<sup>6,7</sup>

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<sup>3</sup>In this paper I gloss over the issue of whether we perceptually experience properties, property-instances, or tropes. I simply speak as if we experience the properties that objects have, and that different objects can share, and that can be instantiated in multiple places at the same time.

<sup>4</sup>See, for example, Grice and White (1961), Lewis (1980) and Lowe (1996).

<sup>5</sup>Some versions of the causal theory would allow for unconscious perception by specifying that a non-conscious state that closely matches the world would be sufficient for perception in lieu of a conscious experience. Also, some versions of the causal theory would hold that the force of the necessity is nomological, not metaphysical. These details are not relevant for the discussion here.

<sup>6</sup>See, for example, Lewis (1980).

<sup>7</sup>Note that on this conception there can be degrees of more or less non-lucky tracking. I see no reason to think that there will be any point along that spectrum where there would be any reason to suppose that it is the point at which there is enough non-lucky tracking to neatly divide cases of

As I outlined above, I believe that the traditional accounts of illusion and hallucination are metaphysically parochial because they fail to accommodate many types of illusion and hallucination that can be identified. I will now start to outline how this is so.

According to the traditional account of illusion, when you are undergoing an illusion, you are perceiving an object, but you are misrepresenting one or more properties of the object in your experience. And, according to the traditional account of hallucination, when you hallucinate, you hallucinate both an object and all of its properties. A first case to consider, to assess whether the traditional accounts capture all of the cases of illusion and hallucination that we ought to, is the case in which we are really seeing an object, yet our experience of its properties goes awry. I think that we can—and should—distinguish between cases in which we are seeing an object and undergoing an illusion with respect to its properties and cases in which we are seeing an object and are undergoing a hallucination with respect to its properties. Let me explain.

The intuitive contrast is between:

- (a) a case in which you are sensitive to a property so that you can count as seeing it, but imperfectly so, so that the experience is not veridical and
- (b) a case in which you are not sensitive to a property so that you don't count as seeing it but, rather, as hallucinating it.

An example of (a) is a case in which you experience objects and all their visible properties accurately except for their colour, which you experience as systematically skewed. To explain further: suppose that you experience all objects to have a slightly darker colour than the actual colour that they have. This might occur for many reasons. It might be because you are wearing sunglasses or because you have developed cataracts.<sup>8</sup> Intuitively, this is a case of (mis)perception—you don't stop seeing the colours of things when you wear dark glasses or have cataracts—but you don't perceive them accurately. Hence you have an illusory experience of colour.

The intuition that I have articulated here—that this case is a case of illusion with respect to the colour properties of objects—is backed up by the causal theory of perception. The necessary and sufficient conditions for perception are fulfilled in the example. You have a closely matching experience: an experience that represents a slightly darker object than the one in front of you. Moreover, the causal connection between the colour of objects and your experience is such that your experience will allow you to track colours in a wide variety of scenes in a non-lucky manner. Thus, you perceive colours but not accurately: you have an illusion of colours.

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perception from ones of hallucination. I believe that this means that the difference between perception and hallucination will be one of degree and there will be cases in which it is simply impossible to say which is occurring—and indeed the case will be indeterminate between the two. As we will see later, as the responsiveness of dreamers to external world stimuli is highly variable, such cases may provide us exemplars of this phenomenon.

<sup>8</sup>For the sake of simplicity, I ignore the fact that colour constancy mechanisms may in fact become operative and over time may (somewhat) correct for lenses or cataracts.

An example of (b) is a case in which you experience objects and all of their visible properties accurately except for their colour, but which colour you experience them as having is totally random. Let us suppose that this is because the area V4 of your visual cortex is being stimulated by an evil scientist who does not take any steps to ensure that your experiences reflect the colours of the world in front of you, therefore, you are not responsive to which colours objects have. In these circumstances, you look at a car and experience it accurately except for the fact that you experience it as being purple when it is in fact blue. You are not tracking the colours in your environment and, thus, according to the causal theory, you do not bear the right sort of causal relation to the colours to count as perceiving them at all. You are not seeing the colours and, therefore, you are hallucinating them. Intuition, I warrant, agrees. You are not seeing the colours of things, but you are tracking everything else standardly visible. Therefore, I hold that this is a case of object perception, for you are seeing the car, combined with property hallucination, for you are not seeing the colour of the car at all—not even in an illusory fashion.<sup>9</sup>

So, the interim conclusion is that intuitively there is a distinction between property illusion and property hallucination, each of which can occur whilst you are seeing an object. And we can back up this intuition using material from the standard causal theory of perception. This is a distinction that the traditional account of illusion and hallucination elides. According to the traditional account, all such cases would be classified as illusion.

At this point, the observant reader might notice that I have not spelled out what it is for an experience to “closely match” the way the world is, as opposed to being quite dissimilar. I don’t think that this can be done, at least in a simplistic way, in terms of phenomenal similarity. The reason is that there are cases that are often, rightly, classed as ones of illusion that involve great phenomenal dissimilarity. For example, imagine the classic philosophical thought experiment in which people wear lenses in their eyes that systematically invert the colours that they experience.<sup>10</sup> When they are looking at red, they experience green, and vice versa, and similarly for yellow and blue, and all the other colours. These are cases in which the phenomenal character of the illusory colour experience is as dissimilar from its veridical colour counterpart as could be. Yet, when wearing such lenses, one is still sensitive to the colours that things have and, intuitively, one is still seeing the colours through the inverting lenses, thus this is plausibly a case of illusion.

So, I think that the notion of a close match should be spelled out as occurring when there is counterfactual dependence of the content of the illusory experiences, that are had in a specified set of illusory conditions (such as when wearing inverting lenses), upon the way the world is. The content must alter in some non-lucky

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<sup>9</sup>Someone might object that if one misperceives the colour of things then one will inevitably misperceive other properties of things, and so you could not possibly accurately experience all other visible properties of objects. If you are inclined to agree, then I would simply ask you to imagine accurately seeing as many of the visible properties of things that is possible compatible with misperceiving their colour or shape.

<sup>10</sup>See Block (1990).

systematic fashion that reflects differences in the object or property that one is perceiving. The content that such experiences have will allow one to make some correct judgments about what you are seeing, if you possess the appropriate concepts, and if you take your experiences at face value. For example, in the case of wearing inverted colour lenses, you will be able to make accurate relative judgments that one colour is more similar to a second than it is to a third because of the content that your experiences will have. Spelling out this idea in full generalisation goes beyond the scope of this work, but see Macpherson and Batty (2016) and Macpherson (2020) for further details.

I will now explain why there are still further categories of illusion and hallucination that the traditional account of these phenomena does not account for. In order to do so, it is helpful to set out the cases just discussed in a table.

Table 16.1 sets out the cases of veridical perception, illusion, and hallucination that I have discussed thus far when considering the case of an experience of an object, *o*, having a property, *p*. (Thus, I make the simplifying assumption, merely for purposes of ease of exposition, that we are considering experiences that represent only one property. I don't suppose that there could be such experiences, and nothing turns on making such a supposition.) Veridical perception, standardly conceived, is perception of an object, *o*, together with veridical perception of one of *o*'s properties, *p*, experienced as belonging to *o*. It is represented in the top left white cell that has a tick in it. The traditional illusion case is represented in the cell below that: perception of an object, *o*, together with illusory perception of one of *o*'s properties, *p*, experienced as belonging to *o*. Hallucination, standardly conceived, is hallucination of an object, *o*, qua object, together with hallucination of a property, *p*, experienced as belonging to *o*. It is represented in the bottom right cell. The new

**Table 16.1** Initial summary of some cases of perception, illusion, and hallucination

Experience as of an object, <i>o</i> , having a property, <i>p</i>		
	Perception of <i>o</i>	Hallucinatory experience of <i>o</i>
Veridical perception of one of <i>o</i> 's properties, <i>p</i> , experienced as belonging to <i>o</i>	✓ Veridical	?
Illusory perception of one of <i>o</i> 's properties, <i>p</i> , experienced as belonging to <i>o</i>	✓ Traditional Illusion (what I call Property Illusion)	?
Hallucination of a property, <i>p</i> , experienced as belonging to <i>o</i>	✓ Property Hallucination	✓ Traditional Hallucination



case I have introduced in my reasoning above is the case of perception of an object, *o*, and hallucination of a property, *p*, experienced as belonging to *o*—as represented in the bottom left white cell.

Such a table immediately prompts consideration of whether there could be cases of hallucination of an object and either veridical or illusory perception of one of *o*'s properties, *p*, experienced as belonging to *o*. I think that there can be, but in order to explain how that could be so, I need to first consider some other cases.

Given that my reasoning so far has led me to say that there can be both illusory and hallucinatory experience of properties had whilst seeing an object, one might wonder whether the case of perception of an object ought to be really carved up into two sub-types: veridical perception of an object and illusory perception of an object. I think that it should. Let me explain.

Recall that my account of veridical and illusory property perception turned on the idea that, while in both cases there is a suitable causal relation between the experience and the environment, the difference between them is that, if one possesses the appropriate concepts, and if one takes the content of one's experience at face value, in the case of veridical property perception one will be able to form wholly accurate judgments about the property, while in illusion some judgments about the property will be false. We can apply a similar idea to object perception.

Consider the fact that I can be a better or worse object detector. If I'm a perfect object detector then I will detect objects when and only when there are some present. Of course, I—like everyone else—am not a perfect object detector: I make some mistakes. Now consider someone who has systematically skewed object perception. For example, suppose that that person systematically experiences two objects as being present for every object that is present. In other words, the person has double vision.

Most of us have double vision when we look at an object that is close to and between our eyes, such as a finger. We are not typically tempted to think that there are two objects present in that case because each apparent finger looks a bit transparent, and we know of the effect. But imagine an idealised version of double vision that occurs in a person whenever objects are in their visual field and in which opaque objects are experienced by the person as opaque. One might think that their experience of one of the objects amounts to perception of the object and their experience of the other does not. However, a problem with that view is that there would be no way to determine which is which in cases where the apparent objects are experienced as equidistant from the position of the actual object and otherwise qualitatively identically. Therefore, it is more plausible to say that the experience of each object amounts to perception of the object: the person is seeing the object twice, as Lowe (1996: 109) suggests.

Considerations based on the causal theory of perception support this conclusion. In double vision there is a causal relation between the experience and the environment that, in a non-lucky fashion, leads to a systematic skewing of the experience of objects. Moreover, if one possessed the appropriate concepts and took that experience at face-value, one would form many incorrect judgments as to the number of objects present. One would judge that there were twice as many objects present as

there really were. (Of course, if one knew that one was subject to double vision then one would not, all things considered, make the judgment that there were twice as many objects present as there really were. But that is beside the point and illustrates the reason to say that we need to consider the judgment that one would make if one took the content of the experience at face value.) One would also be able to form some correct judgments about the number of objects present, taking one's experience at face value. For example, one would be able to correctly judge that there are some objects present, when there were. One would be able to correctly judge that there are twice as many objects in one location compared to another when there were (because if there were two objects in a first location and four in a second location then one would experience four at the first location and eight at the second). And there are other examples that one can conceive of. Thus, I hold that there can be illusory object perception—double vision being just one example.

This result means that we can expand the table of possible kinds of veridical perception, illusion, and hallucination as is illustrated in Table 16.2.

In cases where we systematically track the objects in our environment, but in a skewed manner, such as in double vision, then we are perceiving, but misperceiving the objects in our environment. We are having an illusion with respect to the objects qua objects. And this sort of case can be distinguished from that of veridical perception of an object, qua object—as reflected in the additional column added to the table.

Undergoing an illusory experience of an object need not entail also having an illusion of the properties of the object. For example, one of the experienced objects in double vision may be experienced to have only the properties that the object does have. And certainly, it will be possible to see some of the properties of the object that one is seeing twice, such as its colour and shape. Thus, as indicated in the top white centre cell of the table, there can be instances of illusory experience of an

**Table 16.2** Further cases of perception, illusion and hallucination

<b>Experience as of an object, o, having a property, p</b>			
	Veridical perception of o	Illusory experience of o	Hallucinatory experience of o
Veridical perception of one of o's properties, p, experienced as belonging to o	✓ Veridical	✓	?
Illusory perception of one of o's properties, p, experienced as belonging to o	✓ Traditional Illusion (what I call Property Illusion)	✓	?
Hallucination of a property, p, experienced as belonging to o	✓ Property Hallucination	✓	✓ Traditional Hallucination

object qua object and veridical perception of its properties. There can also be cases, as indicated in the cell below that one, of illusory experience of an object qua object and illusory perception of one of its properties. One example would be experiencing double vision whilst wearing dark glasses so that one saw the colours of objects as systematically darker than they are. And there can also be cases of illusory experience of an object qua object and hallucination of one of its properties. One can see this by combining the scenarios of double vision and the case in which the colours one sees objects having is random because that element of experience is caused by the whim of an evil scientist.

There is room for further expansion of Table 16.2 when we start to consider a variety of cases involving perception of more than one object. Such cases may seem *recherché* and in the purview only of the punctilious philosopher. However, as we will see when we begin to consider dreaming, this is not the case. One can appreciate these additional cases of illusion and hallucination by first reflecting on the particular wording in the cells in the first column. In the first cell of that column are cases in which there is perception of one of *o*'s properties, *p*, experienced as belonging to *o*. And thus far, we have seen that this can be combined with either veridical perception of *o* or illusory perception of *o*. We can reflect on whether there could be a case of veridical perception of another object's property, *p*, experienced as belonging to *o*. I believe that there could be.

Suppose that every time you see an object in the centre of the right-hand side of your visual field you perceive it accurately. Suppose too that every time you see an object in the centre of the left-hand side of your visual field you perceive it accurately except for its colour. And suppose that the colour that you experience that object to have is always the colour of the object at the centre of the right-hand side of your visual field. In such a case, you will be suitably causally sensitive to the left-hand object and its visible properties, bar its colour to count as perceiving them. You will also be suitably causally sensitive to the right-hand object and its visible properties, including its colour. And at the same time, in your experience, the colour of the right-hand object will be systematically attributed to the left-hand object creating an illusory experience. You are veridically perceiving the colour property of one object and also attributing that colour to another object. We can imagine such a case happening when you are veridically perceiving the objects qua objects—so that you experience one object as being present for every one object that really is present. But we can also imagine a variant of this case, one in which you also have double vision, so that you experience two objects as being present for every one that is really present. In that case you would be illusorily perceiving the objects qua objects, as well as attributing the colour of one of the perceived objects to the other. These cases are represented by the cells with ticks in them in the additional row that we can add to the bottom of Table 16.2 to yield Table 16.3.

Real-life examples of such cases are to be found in the empirical psychological literature on “failure of binding”, also known as “illusory conjunctions”. The paradigm case involves briefly presenting two objects that have different properties to a subject. For example, a subject might be shown a green square next to a red circle. Subjects often report having an experience that does not accurately reflect the scene but instead experiencing a red square next to a green circle. See Triesman and Schmidt (1982).

**Table 16.3** Further cases of perception, illusion and hallucination

<b>Experience as of an object, o, having a property, p</b>			
	Veridical perception of o	Illusory experience of o	Hallucinatory experience of o
Veridical perception of one of o's properties, p, experienced as belonging to o	✓ Veridical	✓	?
Illusory perception of one of o's properties, p, experienced as belonging to o	✓ Traditional Illusion (what I call Property Illusion)	✓	?
Hallucination of a property, p, experienced as belonging to o	✓ Property Hallucination	✓	✓ Traditional Hallucination
Veridical perception of another object's property, p, experienced as belonging to o	✓	✓	?

What of the bottom right cell in Table 16.3? Could there be such cases—cases of hallucination of an object and veridical perception of another object's property experienced as belonging to the hallucinated object? Yes. For example, suppose that at certain times you randomly visually hallucinate an object at the centre of your visual field. At other times, you experience nothing. When you so hallucinate, none of the properties that you experience the object as having are dependent on the objects in front of you in your environment, except one. The colour of the object that you hallucinate is determined by the colour of whatever surface is actually in front of you at the centre of your visual field. In this case, your hallucination of the object is not sensitive to whether there is an object in front of you, for you have experiences as of objects at random. But your experience matches perfectly and is sensitive to the colour of the object at the centre of your visual field—whilst you are hallucinating. Thus, you hallucinate an object, but you veridically perceive the colour property in front of you and attribute it to the hallucinated object.

With this case established, I can now explain how there could be instances represented by the top right white cell and the one below it in Table 16.3. In order to accept that there are such cases one must accept a claim about the nature of hallucinatory experience that not everyone would be willing to assent to: that it can represent particular individuals, such as a particular object, place, or person, as opposed to an object, place or person that just looks like that thing and may or may not be. I will simply assume this claim about what hallucinatory experience can represent to be true for the purposes of this paper. However, I do find that claim quite plausible. Evidence for it comes from dreams in which people report having visual experiences of particular objects, people, and places—particularly ones in which they

claim to have visual experiences of a particular person who lacks the characteristic look that the person has in real life. For example, someone might report visually dreaming of David Attenborough, as David Attenborough, even though he has transmogrified into the form of a large spider. If such reports are accurate, they would entail that the person was not simply reporting having a dream of someone who looks like David Attenborough. Of course, such evidence is not conclusive, and one could give other interpretations of it. For example, one could claim that the content that pertains to David Attenborough exists only in thought not in experience. In general, it is exceptionally difficult to establish what the content of experience is—see Macpherson and Hawley (2011). This is why I say that I am simply going to assume the claim that hallucinatory experience can represent particular individuals.

With that caveat in mind, the following case illustrates the possibility of veridical perception of a perceived object's property experienced as belonging to that object, which is itself hallucinated. Suppose that at certain times you randomly visually hallucinate an object at the centre of your visual field. At other times, you experience nothing. When you so hallucinate, none of the properties that you experience the object as having are dependent on the objects in front of you in your environment, except one: the colour of the object that you hallucinate is determined by the colour of whatever surface is actually in front of you at the centre of your visual field. Suppose further that, in these circumstances, on one occasion when you hallucinate, you hallucinate Michelangelo's David. Moreover, by chance, the object that lies in front of you in your environment is Michelangelo's David. You perceive the whiteness of the marble that constitutes Michelangelo's David and attribute that colour to the hallucinated object: Michelangelo's David. This is a case in which there is veridical perception of one of an object's properties that is experienced as belonging to that object which is, however, hallucinated.

The version of the case that involves illusory perception of one of the object's properties, experienced as belonging to that object which is hallucinated, can be easily thought of by amending the case so that in the above scenario one is wearing dark glasses and hence having an illusory experience of the colour of Michelangelo's David.

With these cases established, I have now shown how each of the cases in Table 16.3 can exist. Table 16.3 can be expanded still further by thinking of variants of the cases described in the final row of Table 16.3. Doing so yields Table 16.4. I will leave readers to fill in the details of these extra cases for themselves, which they should have the resources to do by considering variants of the cases that I have discussed above. And I will outline some of them below when I consider how this framework helps us conceive of different dream experiences.

This is a brief overview of my new theory of illusion and hallucination. It is a theory of what sorts of cases of illusion and hallucination there can be and in what circumstances they arise. It is not a theory of the nature of the perceptual experiences had in cases of illusion and hallucination. The theory is compatible with one holding a sense-datum theory, an adverbialist account, or a representationalist account. Whether it is compatible with holding a naïve-realist account I leave it for the reader to adjudicate. In any case, according to my account of illusion and hallucination there are many more types of possible illusions and hallucinations than

**Table 16.4** Further cases of perception, illusion and hallucination

<b>Experience as of an object, o, having a property, p</b>			
	Veridical perception of o	Illusory experience of o	Hallucinatory experience of o
Veridical perception of one of o's properties, p, experienced as belonging to o	✓ Veridical	✓	✓
Illusory perception of one of o's properties, p, experienced as belonging to o	✓ Traditional Illusion (what I call Property Illusion)	✓	✓
Hallucination of a property, p, experienced as belonging to o	✓ Property Hallucination	✓	✓ Traditional Hallucination
Veridical perception/illusory perception/hallucination of another object's property, p, veridically perceived/illusorily perceived/hallucinated as belonging to o	✓	✓	✓

have heretofore been considered, and philosophers of perception ought to ensure that their theories of the nature of perceptual experience can accommodate them all.

With this framework of different sorts of veridical, illusory, and hallucinatory experience now outlined, I turn to consider the nature of dream experiences that have been posited to involve perceptual elements.

### 16.3 Dreams with Perceptual Elements

Dreams are conscious mental episodes that occur when we are asleep that involve apparent sensory awareness of an unreal—dreamt—world.<sup>11,12</sup> As mentioned in the introduction, the standard account of dreams is that they involve perceptual experiences that are wholly hallucinatory.

<sup>11</sup> Many contemporary researchers think that not every conscious episode that occurs when asleep is a dream. They take there to be states of conscious sleep thinking or contentless sleep experiences that are not dreams. See, for example, Windt et al. (2016) and Alcaraz-Sanchez et al. (2022).

<sup>12</sup> Dreams typically involve other non-sensory elements: mental states that are, or subjectively seem like, thoughts, beliefs, desires, emotions, and other non-sensory mental states. Rightly, the nature of these elements of dreams is increasingly being investigated. However, I set these other elements aside for they are not relevant for my purposes in this paper.

(Note that this standard account of dreams has been challenged by some.<sup>13</sup> An influential conception of the sensory aspects of dreaming is that they are instances of sensory imagination.<sup>14</sup> One way in which this idea can be further elucidated is to insist that this view is an alternative to the view that the sensory aspects of dreams are hallucinations. The idea here is that sensory imagination is distinct from hallucination. Dreams are instances of sensory imagination that are mistaken for being perceptual experiences. A different way to further elucidate this idea is to understand it as being compatible with the view that dreams involve sensory hallucinations. We can see how this view is possible by reflecting on the fact that some accounts of hallucinations are that they just are sensory imaginings—ones which seem to the subject of the experiences as if they were perceptual experiences. (See Macpherson (2013)). My own view is that there isn't a sharp dichotomy between sensory imaginings and hallucinations.<sup>15</sup> Paradigmatic instances of each are simply different in degree and not in kind. Moreover, any differences between sensory states which some describe as cases of imagery mistaken for perception, and some describe as hallucination are vanishingly small. Thus, I will assume for the rest of this essay that dreaming does involve hallucination.)

A wholly hallucinatory dream might consist in you dreaming that you are seeing the Wallace Monument when you are not: you are in fact tucked up in bed in Glasgow, far from the monument's location in Stirling and seeing nothing. However, contrary to the standard account of dreams, there is reason to believe that sometimes non-hallucinatory perceptual elements are present in some dreams, in addition to the hallucinatory elements. Windt (2015: chaps. 5 and 8) and Carr et al. (2020) provide a detailed overview of, and references to, the contemporary scientific evidence that dreams can involve perceptual elements. In short, studies have found correlations between stimuli presented to people who are dreaming, such as sounds and flashes and sprays of water on the skin, and subsequent reports of those stimuli in their dreams. These correlations are explained by positing that perception of these stimuli is occurring during dreaming. Although Windt notes that, "the frequency of incorporation and the effect on dream content are highly variable and hard to predict" (2015: 359), nonetheless, taken together, she argues that these studies provide evidence that perception of stimuli occurs during dreaming and the stimuli feature in the conscious experiences dreamers have. I will assume in the rest of this paper that she, and the many psychologists that she cites, are correct in thinking this to be true.

Within the recent philosophical literature, two different cases of perceptual elements manifesting themselves in dreams have been discussed:

1. You perceive a real-world object, which you experience in your dream, yet in the dream the object is experienced as having properties that are dreamt. (See Windt (2015, 2018)).

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<sup>13</sup> See, for example, Ichikawa (2008: 519) and Malcolm (1959/1962: 4).

<sup>14</sup> A full list of philosophers who have articulated this idea is given in Whiteley (2021: 2113, footnote 1).

<sup>15</sup> This view is also shared by Windt (2015, chap. 6).

2. You perceive a real-world object's property, which you experience in your dream, yet in the dream the property is experienced as belonging to a merely dreamt object. (See Macpherson, 2012).

My new theory of illusion and hallucination accommodates these two kinds of cases of perception within dreaming. Indeed, it can be used to distinguish more finely between different types of each of these cases. It can also give an account of how these cases arise. Moreover, it can predict that there could be a wide variety of other cases. I will now explain this in detail.

I begin by considering an example of case (1). Let us suppose that you proprioceptively perceive your real-world legs that are twitching while you are dreaming. However, although your legs are twitching as you lie in bed, you don't experience your legs as twitching in your dream. You experience your legs in your dream as running fast. This is one of the cases that Windt discusses. She is particularly focused on perception of the body while dreaming as there is more empirical evidence of perception of the body occurring during dreaming, in the form of correlations between stimuli applied to dreaming people's limbs and their subsequent dream reports, than any other form of perception, such as seeing or hearing.

Windt claims that in the sort of case under discussion, "bodily experiences in dreams are not hallucinatory but illusory or distorted perceptions of the sleeping body" (2015: 386). Why does she make the claim that the experiences are illusory and not hallucinatory? I believe that it is because she conceives of illusion and hallucination in accordance with the traditional model. She thinks that you are perceiving your legs and representing a property of your legs that they do not have—their running—in your dream experience. As we know, your legs are in fact twitching. According to the traditional account of illusion and hallucination, all such cases are cases of illusion.

In contrast to this, my theory would predict that there are two sorts of cases in which you perceive your legs, and incorrectly represent them as running when they are in fact only twitching. There could be cases of (1a) property illusion and there could be cases of (1b) property hallucination. Cases of *property illusion* would occur in conditions in which you are systematically tracking the twitching of your legs in a non-lucky but skewed fashion. For example, perhaps in your dream you systematically represent your legs as running when they are twitching, or, perhaps the rate of twitch in your legs corresponds to how you experience your legs in your dream: as walking when they are slowly twitching to running when they are quickly twitching. But there could also be cases of *property hallucination*. These would occur in conditions in which, say, your legs were actually twitching, but you represent your legs as running in your dream, but also in conditions in which you are not systematically tracking the actual twitching of your legs in a non-lucky fashion. For example, perhaps when your legs twitch you are likely to represent them in your



**Table 16.5** Plotting dream experiences among cases of perception, illusion and hallucination

Experience as of an object, o, having a property, p			
	Veridical perception of o	Illusory experience of o	Hallucinatory experience of o
Veridical perception of one of o's properties, p, experienced as belonging to o	✓ (3) Veridical	✓ (4)	✓(7)
Illusory perception of one of o's properties, p, experienced as belonging to o	✓ (1a) Traditional Illusion (what I call Property Illusion)	✓ (5)	✓(8)
Hallucination of a property, p, experienced as belonging to o	✓ (1b) Property Perception	✓(6)	✓(9) Traditional Hallucination
Veridical perception/illusory perception/hallucination of another object's property, p, veridically perceived/illusorily perceived/hallucinated as belonging to o	✓ (2a*, 2b*, ...)	✓ (2a**, 2b**, ...)	✓ (2a, b, ...)

dreams, but what you represent them as doing in your dreams, such as running, walking, sitting, or crossing, is random.<sup>16</sup>

These two different cases—cases of property illusion and property hallucination both had while perceiving an object (your legs in the examples under discussion)—are represented in Table 16.5 in the cells labelled (1a) and (1b).

The empirical research that Windt cites, concerning the relation between what is happening in the body and what is subsequently dreamt suggest that, as a matter of fact, both cases—cases of property illusion and property hallucination—occur. Windt (2018: 2577) says, “that there is a high degree of variation across dreams and different sleep stages in the degree of causal coupling between dream imagery, sensory input, and outward motor activity” (and she goes on to outline the evidence in

<sup>16</sup>One might wonder in such a case why we are still entitled to the idea that we are perceiving our legs, qua objects of experience, if we are only hallucinating that they have a certain property. Our entitlement could be grounded in the fact, if it obtains, that we represent our legs in our dreams when they are twitching, so that we can count as being sensitive to the presence of our legs when they so twitch. Or it could be grounded in a sensitivity that we might have to some other property of our legs. I discuss this issue further in section five below. However, there, I also make the case that when we identify some cases as being ones of property hallucination rather than property illusion, this may indeed undermine the idea that we are perceiving the relevant object.

detail, which I will not repeat here). Those cases, in which bodily occurrences systematically cause dreams with appropriately related content in a non-lucky fashion, are cases of property illusion, and cases in which that systematicity is lacking are cases of property hallucination. My theory of illusion and hallucination predicts that there could be such cases, explains which cases count as perception via the idea of non-lucky systematic tracking, and hence explains how cases of illusion and hallucination differ.

I now turn to consider case (2), in which you perceive a real-world object's property and attribute the property to a merely dreamt object. The example cited in Macpherson (2012) is one in which you perceive a property of your alarm—the property of producing a ringing sound—whilst you are asleep and dreaming, but in your dream, instead of experiencing that property as belonging to your alarm, you experience it as belonging to an object that you are merely dreaming of—say a reversing lorry. In fact, drawing on my theory of illusion and hallucination, we can distinguish two different cases of this sort. There could be a case (2a) in which you accurately perceive the property—you accurately perceive the real-world property of producing a ringing—and there could be a case (2b) in which you perceive the property of producing a ringing but in a systematically distorted way so that you count as having an illusion of the property. For example, you might systematically experience the producing of the ringing in your dream as being a quieter ringing than the real-world ringing.

In both (2a) and (2b), you will be tracking the property of producing the sound in a non-lucky manner—either in a non-distorted form leading to veridical property perception or in a systematically skewed fashion leading to illusory property perception. At the same time your dreaming experience of the lorry, qua object, would not be tracking any real-world object in a non-lucky fashion: thus explaining why it is hallucinatory with respect to that object, qua object. Moreover, the other feature of the case—the attribution in experience of the veridically or illusorily perceived property to the hallucinated lorry—is itself a hallucinatory element of the experience. The property of producing a ringing sound that is attributed to the lorry does not track any property of the lorry, so the attributive element of the content of the experience is hallucinatory, even if the property so attributed is veridically or illusory perceived.<sup>17</sup> These cases, (2a) and (2b), are versions of case (2) that have also been plotted in Table 16.5.

Now, by focusing on the other sorts of mixed cases of veridical perception, illusion, and hallucination that exist according to my theory of illusion and hallucination, we can start to predict that there could be other sorts of dreams that involve mixed veridical perceptual, illusory, and hallucinatory phenomena. To begin,

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<sup>17</sup>One might wonder how it would be possible to attribute a property of one object to another in a non-hallucinatory fashion. That would be possible, for example, if the object whose property you perceive has that property because the object that you attribute the property to has that property. This would be an unusual form of indirect perception. One example of that is indirectly seeing a white house in virtue of seeing it on a television screen. In virtue of seeing a portion of the screen as white, you attribute that property to the house, but the screen only has that property because the house is indeed white.

consider cases in which in our dream we veridically perceive an object, qua object, and veridically perceive one of its properties as belonging to that object. Call these cases of type (3). They are represented in Table 16.5. We can now imagine cases that are both an instance of (1a) or (1b) and an instance of (3). For example, suppose you experience that you are running in a dream because your legs are twitching fast, and you are perceptually sensitive to the speed of their twitching. This could be the case previously described as an example of (1a) in which you are veridically perceiving your legs, qua objects, and experiencing your legs as having the property of running fast, which they do not have, in an illusory fashion. At the same time you might veridically experience your legs as having the property of being hot because you are perceiving your legs and the property that they actually have of being hot. This case would not only be one of type (1a) but also of type (3). Another example involves a mixture of type (1b) and (3). Consider the following scenario: you are dreaming that you are standing in a supermarket. You hallucinate the shop around you. At the same time, you also auditorily perceive your alarm and you veridically perceive its property of producing a ringing sound, however, you also experience the alarm as having the property of being on the dreamt shop shelf behind you. In this case, you veridically perceive the alarm and its property of producing the ringing sound, so, in that respect, it is a case of type (3), but, there is another feature of the case—you attribute a dreamt property to the alarm—a property that it does not actually have. You experience the alarm as being on the dreamt shop shelf behind you at, say, standing head-height. But the alarm does not have this property. It is on your bedside table to the side of you and at sleeping head-height. It is not on a shop shelf. In this respect, the case is also of type (1b): you are hallucinating a property (or several) and attributing it (or them) to an object that you are perceiving (qua object). In summary, the case is one in which you perceive an object, qua object, and you both veridically perceive one or more of its properties and hallucinate it to have one or more properties. I will return to consider this important case in the next section.

For each of cases (3), (1a), and (1b)—cases that involve veridical object perception, qua objects—one can predict variants of them that instead involve illusory object perception qua objects, in which you dream of two objects for every one that you are perceiving. Call these cases (4), (5), and (6), respectively, and see them marked in Table 16.5.

Further, one can predict variants of cases (3) and (1a)—variants in which you have a hallucinatory dream experience of an object, and at the same time, by coincidence, that object is beside you while you are dreaming, and you actually perceive one of that object's properties, and you attribute that property to the hallucinated object in a veridical or illusory fashion. For example, in your dream you might hallucinate your alarm clock but then actually hear your alarm clock producing a sound and attribute the property of producing a ringing sound to the hallucinated alarm clock. Such cases could come in veridical perceptual property and illusory perceptual property variants, yielding cases (7) and (8), which are also indicated in Table 16.5. There could not be an equivalent counterpart of case (1b), for such a case would simply be hallucination of an object and its property—which amounts to the traditional conception of dreaming that does not involve perception at all.

Further variants of (2a, 2b, ...) can be imagined, (2a\*, 2b\*, ...) and (2a\*\*, 2b\*\*, ...) that would exemplify all the cases represented in the bottom row of the table. I leave these to the reader's imagination to fill out.

Thus, my new theory of illusion and hallucination can lead to the prediction of a whole host of mixed perceptual and hallucinatory experiences had whilst dreaming.

## 16.4 Are These Cases Really Cases of Dreaming?

One might wonder whether the cases that I have outlined in Sect. 16.3 really are all cases of perception occurring in your dreams, as I have described them to be. To make the worry perspicuous, consider case that was described as involving both instance of (3) and (1b). Recall that this is a case described as being one in which you veridically perceive a real-world object and its property in your dream. At the same time, you hallucinatorily experience yourself as being in a supermarket in your dream. You visually hallucinatorily experience the shop around you. Yet, you are actually lying in bed and your alarm clock is ringing on your bedside table. You perceive your alarm and its ringing, and in your dream you auditorily experience your ringing alarm as being on the shop shelf behind you. One might ask: what is it for a case to be one of perceiving your ringing alarm in your dream, rather than a case in which you merely simultaneously dream of being in a supermarket and auditorily perceive an alarm behind you? Why should we say that the right description of the case under consideration (a mixed case of type (3) and (1b)) is one of perceiving the alarm in your dream, rather than one of merely perceiving your alarm at the same time as dreaming that you are in a supermarket?

A good answer to this question can be found by considering Windt's account of what dreams are. Windt says, "dreams occur when the phenomenal here and now is located no longer relative to a largely veridical, perceptual environment but rather relative to an alternative, largely internally generated environment, the so-called dream world, that is at best weakly constrained by external stimuli and hence hallucinatory" (2015: 522). I find this a highly plausible account of what dreaming is and will assume it to be correct in this paper.<sup>18</sup> With this in mind, note that the case under consideration contains an element that is not captured by the view that you are simply having a visual dream experience of a shop and simultaneously an auditory perception of your alarm. The element is that you experience the location of the alarm clock as being *in the dream world*: it is experienced as being in the location of the dreamt shop. The alarm is experienced not just as having the property of producing a ringing sound, but it is also experienced as having the following sorts of

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<sup>18</sup>Whether one ought to add the stipulation that one be asleep in order to define dreaming, or whether the stipulation that one's experience is at best weakly constrained by external stimuli and hence hallucinatory, is sufficient, I leave as a matter for discussion on another occasion. One might wish to add that further stipulation if one wanted to distinguish dreaming from awake hallucination that is largely unconstrained by the world.

properties: being in the dreamt shop, being on the dreamt shop shelf behind you, being, say, at the same height as your dreamt head position. These properties relate the alarm to elements of the dream world and “bind” the alarm experience to the space of the dream world, as I will now explain further.

Macpherson (2011) and O’Callaghan (2014) have argued that cross-modal experiences come in two kinds: unbound and bound. Unbound experiences are ones in which you have two experiences in different sensory modalities at the same time, but you could have had each without the other. For example, you might simultaneously feel something cold touch your nose and you might see a red cup on your right. Plausibly, one could have each of these experiences without the other. In contrast to this case, consider the following cross-modal experience: you experience a red cup that you are seeing on your right as being the warm thing that you are feeling with your hand. In such a case you don’t just see one thing and feel one thing, rather you experience *the same one thing* as being both a red cup, and warm. This is a case of cross-modal binding: different properties detected by different sensory systems are attributed to the same object.

A similar notion of binding applies to cases of the type under consideration. Different properties—some experienced in virtue of veridical perception of the object (for example, producing a ringing) and some experienced in virtue of dreaming (for example, being on the shop shelf) are attributed to the same one object—the alarm—in experience. Moreover at least one of the dreamt properties attributed in experience to the object locates the object within the dream world, namely the property of being on the shop shelf. This, I claim, is what makes the experience one of perceiving the alarm, and its property of producing a ringing, in the dream, as opposed to simultaneously having a dreaming experience of a shop and a perceptual experience of an alarm. A modified version of this account can explain why the other cases of perception in dreams that I have outlined are cases of that type. For example, if one perceives a property of an object and attributes it in experience to a dreamt object, then the resulting experience is one of perception in dreaming so long as one also attributes a spatial location that is in the dream world to the object or the property.

Do people ever have a dream-world experience and a perceptual experience at the same time, without what is perceived being in the dream world? I will describe this sort of case by saying that it is one of having a dream-world experience and an awake-world experience at the same time. There are some reported experiences that seem to be reports of something very close to that. Hypnagogia is the transitional state of consciousness from wakefulness to sleep. Hypnagogic experiences are defined as “hallucinatory or quasi-hallucinatory events” that take place during this transition (Mavromatis, 1983: 8). Many researchers conceive of them as dreams, as summarised, approvingly and at length, by Mavromatis (1983: 150–163). Other researchers think that there are some differences between dreams and hypnagogic experiences, such as that hypnagogic experiences are more fragmented and less immersive than dreams. Either way, hypnagogic experiences are certainly very similar to dreams. Mavromatis (1983: 151) reports a subject of Davis et al. (1938: 32) nicely capturing the nature of hypnagogic experiences by saying that they are ones

that “are practically dreams but I am awake enough to catch them”. In one study, people who had hypnagogic experiences were asked how they knew they were awake and not asleep when they had the hypnagogic experiences. The most common response was that they were, “able to have ordinary perceptions at the same time” (McKellar & Simpson, 1954: 270). Some reported being able to conduct conversations while having hypnagogic experiences. One person reported, for example, the nature of the hypnagogic experience that they were having at that time, “the open-eyed image of ‘a ship in a storm’” (McKellar & Simpson, 1954: 269). Mavromatis says that the hypnagogic state, “can sometimes be a full-blown dream and that such a dream may take place while the subject retains awareness of his environment the latter claim being demonstrated ... objectively (for example, the person may respond correctly to environmental stimuli)” (1983: 168). According to these accounts, during some cases of hypnagogia, people are aware simultaneously of both the waking world and a dream or dream-like world.

In contrast to these cases, other people report that what they experience when having hypnagogic experiences is awareness of hallucinated objects inserted into the real world that they perceive. For example, one woman reported “the room being full of angels” (McKellar & Simpson, 1954: 269). These kinds of reports bear a very strong similarity to the many reports of clinical hallucinations of objects, such as are had in Parkinson’s disease, in which people experience hallucinated objects as located in a simultaneously genuinely perceived location. For example, a hallucinated cat might be experienced by a person as peeking out from behind curtains that are in the room where the person is—a room and curtains that the person (otherwise) veridically perceives. See Macpherson (2013) for further details of such cases. In these forms of hypnagogia and clinical hallucinations, hallucinated objects are experienced as being in the real, perceived, waking world. The hallucinated objects are bound to the location of the real, perceived, waking world and so experienced to be there. In this respect they are different to the previously described cases of hypnagogia in which both a waking world and a dream world are experienced at the same time. And they are the opposite of cases of dreaming of mixed type (3) and (1b) in which perceived objects and properties are inserted into the dreaming world.

## 16.5 The Role of Memory in Dreaming and Imagination

So far, I have argued that there are a wide range of possible cases of dreaming that involve either veridical or illusory perception mixed with hallucinatory elements. In this section, I consider the consequences of this view for the role of memory in dreaming and imagination.

First, I argue that memory needn’t be involved in every element of dream experience. To that end, I sketch a Humean-inspired view of dreaming, according to which all basic elements of dreams do involve memory. I argue that this view of dreaming is false. Second, using similar reasoning, I suggest that the view according to which

memory is involved in all elements of sensory imagination is not true either. This leads me to reject the Humean view of sensory imagination.

David Hume (1740/1975) held that you cannot represent something in sensory imagination unless you have previously had a sensory impression of—that is, have previously perceived—each of the basic (what he calls “simple”) elements that make up that which is represented.<sup>19</sup> However, these basic elements may be combined in sensory imagination in ways that they have not been combined in your perceptual experience. For example, suppose that you sensorily imagine a golden mountain. Hume would allow that you may have never perceived a golden mountain, but he would insist that you must have perceived golden things and mountains (or mountainous forms, or such like). On his view, when you sensorily imagine, the mind uses copies of basic elements previously perceived and then combines them (perhaps in novel ways) in sensory imagination. Sensorily imagining something, according to Hume, involves having an experience that is subjectively similar to perceiving that thing. That is because sensory imagination consists of ideas that are “faint copies” of the impressions that occur in perception.

Hume famously noted an exception to his own account, which he took to be a trivial one—one of little importance that did not undermine the general thrust of his thesis, and that can simply be set aside. It is the case of the missing shade of blue. Hume asks us to imagine that we have seen all the colours apart from one specific shade of blue. We then lay out all the other shades of colour in an order that reflects their perceived similarities and differences. If we left a gap in the ordering where the shade of blue we had never perceived would be, Hume thought that we could sensorily imagine that shade of colour by extrapolating from the very similar shades of colour around it. This seems plausible. However, following Hume, I will set aside this exception to his account.<sup>20</sup>

Hume’s view of sensory imagination gives memory a crucial role in its formation. He says that memory is the faculty by which we form our faint ideas. What we sensorily imagine is based on basic elements of past perceptual experiences. These elements of past perceptual experiences are (faintly) copied and stored in the mind—that is, they are, in some sense, remembered. I specify that they are “in some sense” remembered because the sense of remembering at play here is one that does not require a person, who is employing their sensory imagination, to experience these elements as ones that were previously perceived in the past. And nor does it require that the person remembers any particular occasion on which the basic elements were perceived (so it is not episodic memory that is at play). Nonetheless, some retention in the mind—some memory—of these basic elements occurs, in the form of faint copies of them that can go on to feature in sensory imagination.

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<sup>19</sup>The basic/simple elements are ones that cannot be broken down into any further elements or parts. Specific details of that process are left at the intuitive level.

<sup>20</sup>There are alleged counterexamples to the broader thesis of empiricism, including for example logical knowledge, mathematical knowledge, and seemingly a priori knowledge in general. My interest in this paper is not in these wider challenges to empiricism, but only in challenges concerning sensory phenomena such as dreams and sensory imagination.

In short, the Humean account of sensory imagination is that elements of former perceptual experiences are stored in memory in the form of faint copies, and they then feed into sensory imagination composing its basic elements, which may be combined in novel ways. In this sense, according to Hume's account, memory plays an essential role in all elements of sensory imagination.

Now suppose that one held a similar view of dreams. That view would be that dreams are always composed of copies of basic elements of former perceptual experiences, which are stored in memory, and that feed into dreams, perhaps combined in new ways.<sup>21</sup> If that view is true, every basic element of dream experience is reliant on memory. I will call this the "memory-reliant" view of dreams. (Note that this is not actually Hume's view of dreams, simply one inspired by his view of imagination. According to Windt (2021) Hume thinks dreams are somewhat like perception and somewhat like imagery, thus "[d]reams do not fit comfortably into Hume's attempt to draw a dichotomous distinction between impressions, including perception, and ideas, including sensory imagination".)

Should we accept the memory-reliant view of dreams? No. The view of dreams that I have articulated in Sects. 16.3 and 16.4 above, according to which a variety of perceptual elements can feature in them, tells against the memory-reliant view of dreams. When dreams contain perceptual elements, those elements are not reliant on memory. That is because they are currently being perceived. So, they can feature directly in dreams without memory playing a role. Thus, although many elements of dreams may be reliant on memory, not all will be.

Someone might object to what I have just said by claiming that perhaps the way in which perception feeds into dreams is not by directly inserting perceptual experiences into dreams, but by creating faint copies of perceptual experiences and inserting those into dreams. This objection does not work for two reasons. First, it is implausible on phenomenological grounds. When there are perceptual elements in our dreams, we don't first have a perceptual experience of the world and then experience a faint copy of that experience in our dream. We simply have the one dream experience. Second, someone might think that this phenomenological point can be overcome by saying that perhaps the perception that occurs is unconscious perception, but nonetheless, what would have been a faint copy of the perceptual experience, if we had had such a perceptual experience, is inserted into our dream. But this suggestion also fails to save the Humean-inspired memory-reliant view of dreams. This is because what it posits happening is precisely what the view insists cannot happen—there cannot be the insertion of elements into dreams that aren't first perceptually experienced. Moreover, such elements would not rely on memory of perceptual experience, for none occurs, a further point that the Humean-inspired view insists on.

In conclusion, then, I hold that not all elements of dreams rely on memory. The perceptual elements of dreams do not.

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<sup>21</sup>I do not stipulate that the copies must be faint, as Hume insists they are in the case of the copies that feed into sensory imagination.



With this idea about the role of memory in dreams in mind, return to consider the Humean view of sensory imagery. Must memory be involved in all the basic elements of sensory imagery? Hume would say yes. But I think that the answer is no, if, as is the case with dreams, perceptual elements can be inserted into sensory imagery. Let me explain why.

In Macpherson (2012), I argued that sensory imagery can be inserted into perceptual experience. Suppose that is true. Can perceptual experience be inserted into sensory imagery? Recall that in Sect. 16.4 above, I argued that there is a difference between cases in which perceptually experienced elements are inserted into a dream and cases in which dreamt elements are inserted into a waking perceived world. Cases of the former type occur when what is experienced as here and now is the dream world, determined by a largely internally generated environment, weakly constrained by external stimuli and hence hallucinatory. Cases of the latter type occur when what is experienced as here and now is the real perceived world. In a similar vein, I think that cases in which sensory imagery is inserted into perceptual experience are cases in which what is experienced as here and now is the real perceived world. But there could be cases in which perceptual elements are inserted into a world created by sensory imagery. In those cases, what is experienced as here and now is the sensorily imagined world, determined by a largely internally generated environment, weakly constrained by external stimuli.

I can see no good reason to suppose that there could not be cases in which perceptual elements are inserted into sensory imagery in a similar fashion. What would stop perceptual elements being able to enter sensory imagery? To give an example: one could be daydreaming and sensorily imagining that one is lying on a beach, when in fact one is sitting at one's desk. Then, one perceives the sound of a car that is in one's actual environment, and one attributes that sound to a visually imagined car that is in the sensorily imagined world. Cases of that type are often depicted in films, television programmes, and books. One example is the experience of Emma in Gustave Flaubert's *Madame Bovary* who is often described as living in an imaginary world of her own—but one that the real world sometimes impinges upon. Such examples suggest that this is a well-recognised phenomenon.

Cases of sensory imagining that contain perceptual elements, provide another counterexample to the Humean view of sensory imagination, in addition to the case of the missing shade of blue. The perceptual elements in sensory imagination are not faint copies of sensory impressions. The perceptual elements in sensory imagery do not rely on memory in order to be elements of sensory imagination.

To be precise: this form of counterexample to Hume's account of sensory imagery is a counterexample to the claim that all basic elements of sensory impressions must be faint copies of perceptual experiences that are stored in memory. It is a counterexample because it is a case in which some elements of sensory imagination are themselves perceptual elements. It is therefore unlike the missing shade of blue case, which is a counterexample because the sensorily imagined blue is neither a faint copy of something previously seen nor itself a perceptual element. The mind arrives at the missing shade by extrapolation from looking at different shades of blue—a process that Hume does not discuss in any detail. I imagine that Hume

might treat my new counterexample, which involves sensory imagination containing perceptual elements, much like that of the missing shade of blue in the sense that he would be happy to admit that there could be this form of exception to the rule. He would not be too disconcerted by this kind of counterexample for it does not undermine the crucial empiricist element of Hume's thought that there is nothing in the mind that is not either perception or derives from perception. What the counterexample shows instead is that sensory imagery is not just composed of faint copies of non-perceptual elements, it can also be composed of perceptual elements themselves. That is something that Hume could, and should, admit is an empirical possibility.

In summary, the insertion of perceptual elements into the contents of dreams shows that not all basic elements of dreams rely on memories of things previously perceived. Rather, dreams can contain presently experienced perceptual elements. And, if the content of sensory imagination can contain perceptual elements, as I have argued is plausible, then not all basic elements of sensory imagination rely on memories in the form of faint copies of previous perceptual experiences either. As mentioned above, dreams prove awkward for Hume's attempt to draw a dichotomous distinction between sensory impressions, such as perceptual experiences, on the one hand, and ideas, such as sensory imagination, on the other. So too, though in a slightly different fashion, do dreams and sensory imaginings that involve perceptual elements.

## 16.6 Conclusion

I have used my new theory of illusion and hallucination to refine and explain previously identified cases of perception in dreaming. I have also used it to predict new forms of perception in dreaming. I have outlined what it is to perceive something in a dream. The explanation rests on the idea that something is perceived in a dream only when one or more of the properties attributed to it bind it to the spatial location of the dream world. I have distinguished the case of perception in a dream, from cases in which one merely perceives and dreams simultaneously. Cases of hypnagogic experience provide actual instances of this (or of something very like it if one insists that hypnagogic experiences are not dreams, merely dream-like). And both of those cases were distinguished from cases of dreaming of an object and its properties and experiencing them in the waking world, as happens in other cases of hypnagogia (or of something very similar if one holds that hypnagogic states are merely dream-like), and as happens in some cases of clinical hallucinations. In these cases, something is perceived in the waking world when one or more of the properties attributed to it bind it to a spatial location of the waking world.

My account of the plethora of mixed dreaming and perceptual states will allow dream engineers to be more nuanced when empirically investigating the types of perception that occur in dreams. (Recall that dream engineers sensorily stimulate dreamers with the intention of altering the content of their dreams.) Dream

engineers ought to investigate which objects and properties are being experienced while dreaming and determine of each whether they are being veridically perceived, illusorily perceived, or hallucinated, by determining whether in having that experience we are tracking an object or property accurately, or in a distorted non-lucky fashion, or not at all. My framework for thinking of illusion and hallucination in this more fine-grained way than usual, allows for a more subtle empirical investigation of the mixed nature of sensory experience.

Finally, I have argued that perceptual elements in dreams show that not all basic elements of dream experiences must involve memory of objects and properties previously perceived. And I have argued that perceptual elements in sensory imagination show that, contra Hume, not all elements of sensory imagination must involve memory of objects and properties previously perceived either. While sensory imagination may involve faint copies of sense-impressions stored in the mind, it may also involve occurrent sensory-impressions whose insertion into sensory imagery does not require memory.

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