SEEING HOW TO MOVE:
VISUALLY GUIDED ACTION AND THE ‘DIRECTIVE’ CONTENT OF VISUAL EXPERIENCE

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On leaving a room, you reach out and switch off the light. Why did you reach out to the switch? Because you wanted to turn the light off and believed that pressing the switch would turn it off. Why did you move your hand to *that* place to switch it off? You moved you hand to *that* place because that is where you saw the switch to be.

This explanation of why you moved your hand to the place you did appeals to your visual awareness of the location of the switch: you saw where the switch was (or appeared to be)[1] and moved your hand to that place. Had the switch appeared to be somewhere else, you would have moved your hand to a different place. This action of switching off the light is an example of a visually-guided action – an object directed action that is guided by visual awareness of the object. A great many of our actions are visually guided. How should we explain them? In particular, what is the connection between our visual awareness of an object and an action in virtue of which it’s correct to say that the action is guided by our visual awareness – in virtue of which it is a visually-guided action?

According to the standard account of intentional action, we can explain an intentional action in terms of the agent’s reasons for performing it (where an agent’s reasons consist of her beliefs, desires, and other pro-attitudes). For example, I want to turn off the light, believe that pressing the switch will do so, and so form the intention to press the switch.[2] My action of pressing the switch – and so my switching off the light – is intentional if and only if it is appropriately caused by my intention to press it. How does the *visually-guided* action of pressing the switch fit into this picture? Here is one suggestion: I want to turn off the light, believe that pressing the switch will turn it off, and so form the intention to press the switch. In order to carry out my intention to press the switch I must move my hand to where the switch is. This is where my visual awareness of the switch comes in: given that I intend to press the switch and can see that the switch is at particular place (*that* – visually presented – place) I form the intention to move my hand to *that* place, an intention I carry out by moving my hand to where the switch is. Vision guides my action, on this account, by helping to determine the content of my intention to act.[3] The problem with this suggestion is that forming such an intention to act is not sufficient to explain visually guided actions. To see why we need a more detailed characterisation of visually-guided actions than I have so far given.

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[1] From now on I will drop this qualification and assume that experiences are veridical.

[2] Although I doubt that intentions can be reduced to beliefs and desires, in talking of intentions I am not committed to anything more than the view that an intention functions as an all-out desire, and I remain neutral on the question of the nature and role of intentions in intentional action.

[3] It might be claimed, further, that vision can only guide my action in this way because visual experiences represent locations in the same way that my intentions represent locations. Peacocke suggests that, when asked to direct the beam of a spotlight onto a particular tree he can see, an “explicit statement of a subject’s practical reasoning” would be as follows:

> The subject forms an intention with the content (1).
> (1) I will move my arm in the direction of that tree.
> He also knows from his perceptual experience (2).
> (2) That tree is in direction d (identified egocentrically…[on the basis of perceptual experience]).
> So he forms the intention with content (3).
> (3) I will move my arm in direction d.
> He can then carry out this intention without any further practical reasoning. (Peacocke, *A Study of Concepts*, p.94)

In reaching to the switch, my awareness of the location of the switch determines where I reach; but not every action whose endpoint is determined by where I see something to be is a visually guided action. Visually guided actions have characteristic properties that non-visually guided actions lack. These characteristic properties are apparent if we contrast a paradigmatic visually-guided action – that of reaching out to pick up an object – with a similar object-directed action that is not visually guided. When we reach out to pick up an object that we can see, we adjust our hand in anticipation of grasping it. As we reach, we progressively open our fingers and we close them around the object when we have reached it; the pattern of grasping is such that the aperture of our grip is always largest at the same point of the reaching movement and is reliably correlated with the object's size. As we reach, we move our wrist and shape our fingers to grip the object in a way that gives maximum stability to our grasp given the object's shape and its typical use (normally, for example, we grasp spoons and forks by their handles). When we grasp the object we scale the force of our grip in order to lift the object without its slipping from our grasp.[4] These movements and adjustments are made consistently and fluidly during our reaching and are appropriate to the object; they are (or at least seem to be) determined by our visual awareness of the object and its properties. The resulting movement has a characteristic kinematic 'shape'. Prima facie, the movement has this shape in virtue of some relation between it and our visual experience of the object.

Whatever exactly that relation is, it is easily disrupted. It is disrupted if, for example, you see an object before you reach, but cannot see it *as* you reach (this is particularly true if there is also a brief delay between the time you see it and the time you reach for it).[5] In such cases you will, in all likelihood, still be able to pick up the object, but the kinematics of your movement will be different: your movement will be slower and will have a more curvilinear trajectory; the pattern of your hand opening and closing and the way you shape your hand will be different; and your movement will be less consistent and less fluid than it would have been had you seen the object as you moved.[6] The resulting movement will lack the kinematic 'shape' of a visually-guided reaching.

Reaching whilst looking and reaching *having* looked are both actions that are guided, in some sense, by visual awareness – in both cases, for example, where you reach is determined by where the object is seen to be – but the resulting movements have different properties, and do so in virtue of standing in different relations to visual experience. When I talk of visually-guided actions in this paper, I mean only actions of the first kind. Of course, not all visually-guided actions involve the same type of movement, but all visually-guided actions involve movements that are related to visual experience in the same way. This gives us a way to individuate visually-guided actions: they are whichever actions involve movements that are related to visual experience in the way that the paradigmatic visually-guided reaching movements I have described are related to visual experience.

In order to explain visually-guided actions we must give some account of the relation between an action and visual experience in virtue of which that action is a visually-guided action. Consider again

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The subject can act on the basis of seeing the tree because his visual experience represents spatial properties in the way required by his intention to move.

[4] For a summary of the empirical support for this claim, see Jeannerod, *Cognitive Neuroscience*, sec. 2.3.1.

[5] There is some disagreement as to whether a lack of visual feedback during reaching is alone sufficient to disrupt the relation (compare Jakobson and Goodale 1991, and Hu et al. 1999), but all agree that lack of feedback together with a two-second delay before reaching *is* sufficient.

[6] Goodale comments that "normal visuomotor programs [are] not implemented during" such reaching (p.1170 in Goodale et.al. 1994. See also Milner and Goodale, sec 6.5).

the suggestion that vision guides action by helping to determine the content of an intention to act. According to this suggestion, an action is visually guided if it produced by an intention to move in a certain way that is based on – and perhaps shares content with – the subject's visual experience of an object. It's relatively straightforward to show that intentions based on visual experience are not sufficient to explain visually-guided action.

Suppose that we ask someone to pick up a coin that they can see on the desk in front of them. Consider two different cases: in the first case, we allow the subject to look at the coin as she picks it up; in the second case, we insist that she closes her eyes before she picks up the coin. Although in both cases the she succeeds in picking up the coin, the way she moves – as we have seen – will be different: only in the first case will her action be a visually-guided action. Is the difference a difference in the subject's intentions?

We can suppose that our subject is willing, and has exactly the same motivations in both cases. In both cases she forms an intention to pick up the coin, perhaps of the form 'I intend to pick up that (visually presented) coin'. Whatever exactly the content of her intention, there's no reason to think that it differs across the two cases. What about her beliefs? The subject's visual experience, before she closes her eyes, is the same in both cases: in both cases she sees the coin, its location, its size, shape, and so on. Whatever beliefs about the coin she forms in the first case she can form in the second case too; so, again, there's no reason to think her beliefs about the coin differ across the two cases.[7] Therefore, whatever practical reasoning the subject engages in and whatever further intentions concerning how to move that she forms in the first case, she can engage in the same reasoning and form the same intentions in the second case too. Since any intentions to move that subject forms in the first case she can form in the second case, and since she has the same motivations in both cases, we cannot explain why the way she moves in picking up the coin the first case is different to the ways she moves in the second case in terms of differences in her intentions.[8] There is nothing unusual or abnormal about this example and therefore the conclusion generalises: it is not possible to explain visually-guided actions in terms of the agent's intentions to act. It follows that the standard account of intentional action cannot explain visually-guided actions.

This conclusion shouldn't be very surprising. In seeking to explain visually guided actions we are seeking to explain how vision guides the *way* we move in carrying out our intentions to act – the *way* we move in reaching out to pick up a coin, for example. In reaching to pick up a coin my intention is simply to pick up the coin. I don't have any intentions to move in a specific way. If vision guides my action – guides the way I move – it must do so in some direct way that is not mediated by intentions. The problem is, then, to explain how vision guides *the way* we move when acting. The problem of explaining the *way* someone moves when they perform an action is not unique to the explanation of visually-guided actions; it's a general problem for action explanation. Suppose, for example, that someone intentionally ties their shoelaces.[9] In carrying out their intention to tie them, they perform certain hand movements – they move their hands in just the way required for shoelace tying. In the same way that we can ask, of someone who performs the visually-guided action of picking up a coin, why they moved their hand to *that* place or in *that* way, so we can ask why someone moved their hands in *that* way in performing the action of tying their shoelaces.

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[7] I am assuming that if a two-second delay is in fact necessary to disrupt a visually-guided action it will not make any difference to what beliefs the subject can (and does) form in the second case.

[8] It might be objected that, because her eyes are closed, the subject cannot form 'corrective' intentions after she has started to move. Although the example doesn't rule out this explanation, it's very implausible to think we form such intentions, or that such intentions explain the changes in the subject's movements across the two cases.

[9] I am assuming this is something most people can do without looking; if you doubt that, then substitute some other kind of semi-skilled action for which it is true.

It's plausible that when someone first learns to tie shoelaces they are taught a sequence of individual movements that, when performed in the correct order, results in tied laces. During this learning period, tying shoelaces presumably requires the subject to follow a plan to perform these movements in sequence, with each movement specifically intended as a means to the end of having tied laces. If that's right, then we can go some way to explaining the way someone moves their hands in trying their shoelaces by appeal to their intention to perform each of the movements in the sequence. However, once the subject has learnt how to tie shoelaces they no longer need to follow a planned sequence of movements: tying shoelaces is something that they can just do – that is, they can tie them without intending to do anything as a means to having them tied. For someone who has learnt how to tie shoelaces it is not plausible to think that we can explain the way they move their hands by appealing to their intentions to move them: they lack the relevant intentions.

In the case of a visually guided action we cannot explain how visual experience guides the way someone moves in performing the action by appeal to the subject's intentions to act; in the case of a non-visually guided action – such as shoelace tying – we cannot explain the way someone moves their hands in terms of their intentions to act. These examples make explicit what is true of action in general. When someone acts, they move their body in a certain way, but we cannot explain the way they move by appealing either to their intention to perform the action or by appeal to their intentions to perform certain bodily movements as a means to performing the action. The standard account of intentional action does not explain the way someone moves in performing an intentional action; therefore, there is a general problem in explaining the way we move our bodies in acting, and the problem of explaining how vision can guide action is an instance of this general problem.

One way to respond to this problem would be to simply deny that it is a *philosophical* problem (many responses to the problem of explaining visually guided actions conclude, in effect, that there is no philosophical account to be given of how vision guides action). Although such a denial might seem plausible in the visual case, it is not a plausible response to the general problem. Some actions we know how to perform immediately, and without doing anything else as a means to doing them.[10] When someone learns to tie their shoelaces they acquire a capacity – the capacity to tie shoelaces – and in virtue of that they know how to tie shoelaces; in acquiring this capacity they extend the range of the things they can just do. Someone who knows how to tie shoelaces knows how to move in order to tie them; their intention to tie their shoelaces together with the fact that they know how to tie shoelaces explains their moving in the way the do.[11] But – it might be argued – there's nothing further to be said about why someone moves in the way they do. We might want to explain what the acquisition or the possession of a capacity to perform an action consists in, but such an explanation will be psychological rather than philosophical. What's true of shoelace tying is true of visually-guided actions. You cannot pick up something that you can see unless you know how to pick it up, but that is just to say that you can't carry out your intention to pick something up unless you have the capacity to do so. Having that capacity requires some visual capacity, but the question of how vision enables you to pick up what you can see is a psychological rather than a philosophical question.

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[10] If a basic action (A) is an action performed by the agent which is such that there is no other action (B) performed by the agent as a means to performing (A), then we can think of acquiring the capacity to, e.g. tie shoelaces, as extending the range of actions that are basic for an agent. This kind of response then amounts to the claim that no further philosophical account can be given of *how* an agent performs a basic action. (refs. basic action literature).

[11] As Davidson says "An agent always knows how he moves his body when, in acting intentionally, he moves his body, in the sense that there is some description of the movement under which he knows he makes it. Such descriptions are…apt to be trivial and unrevealing… So, if I tie my shoelaces, here is a description of my movements: I move my body in just the way required to tie my shoelaces." (Davidson, p.51).

What's wrong with the response that it's not a philosophical problem? What reason is there for thinking that explaining the way we move in acting is a philosophical problem? It is simply the thought that we must perform our actions.

In acting on an intention, we don't simply find ourselves having done something. If I know how to tie shoelaces then I can carry out an intention to tie them without any further reasoning, but in carrying out my intention I don't just find myself with tied laces; something happens between my forming the intention to tie my shoelaces now, and my shoelaces being tied. What happens is that my hands move in a certain way, but I don't just find my hands moving: *I* move them. I move them in such a way as to tie my shoelaces. What's true of tying shoelaces is true of actions generally. In acting our bodies move, but our bodies don't just move: *we* move them. As Kent Bach says, "[a]n action isn't just done – it is done in some way or other, and the agent has something to do with that. Even when a person forms an intention to do something immediately, thereby initiating the action, the rest of the action doesn't just happen by itself, riding on the crest of the momentum generated by the intention. The rest of the action has to be performed… After all, an action can be performed in different ways, with different degrees of skill, control, effort, and attention."[12] Performing an action is something we do, and explaining how we do something is a philosophical rather than merely a psychological problem; and it's something that the standard account of intentional action leaves out.

To claim that we move our body when we perform an action is not to claim either that we form intentions to move, or that we have to deliberate about how to move. Neither is it to claim that moving our bodies requires attending to how we move: moving usually requires little or no attention. But it does require explanation. How do we explain the way we move in performing actions? This response is *not* supported by the thought that many of our everyday visually guided actions are performed automatically – that is, quickly and without attention or deliberation.[13] When I catch a ball or return a tennis serve my movement is automatic. Having seen the ball and decided to catch or hit it, I need pay no attention to *how* I move in catching or hitting it. I do not, for example, have to think about where the ball is in relation to my hands or racquet and then adjust my hands or racquet accordingly. But that just shows that practical reasoning is not involved in performing such actions and that they can be performed effortlessly and without attention; it doesn't follow either that the visual information about the ball that I use in hitting it is non-conscious, or that my actions are non-conscious.[14]

We just need one case of performance to show that the standard view needs to be supplemented.

Explaining the way we move our bodies in acting is explaining what it is to perform an action.

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[12] Bach, 'A representational theory of action', pp. 363-4.

[13] It seems natural to describe the way I perform a visually guided action as 'automatic': having decided to pick up a cup my reaching out to pick it up is automatic. The very same is true of shoelace tying: having decided to tie my shoelaces (and knowing how to) my tying them is automatic. These actions are both automatic in the same sense, but not in a sense that entails that they are done unconsciously or without awareness.

[14] Of course, nobody denies that information about the ball utilised by the various sub-personal processes involved in returning a tennis serve is non-conscious.

What is it to perform an action? Performing an action consists, in part, in moving our bodies in carrying out our intentions. We can't explain the way we move by appeal to our intentions, so what does explain the way we move our bodies? We can get some idea of what is required to explain the way we move our bodies by considering cases in which someone attempts to perform an action, but fails.

When we act on an intention to do something we attempt or try to move our bodies in a certain way. Normally we succeed, and our body moves in the way we were trying to move it; sometimes, however, we fail and our body doesn't move in that way. Whether or not we succeed in moving, there is some fact as to how we were trying to move: when we succeed, we were trying to move in just the way we actually did move; when we fail, we were trying to move in the way we would have moved it had we not failed. John Searle describes a patient of William James's who has had his arm anaesthetised. The patient is asked to raise his arm, but his eyes are closed and, unknown to him, his arm is held to prevent it moving. When he opens his eyes he is surprised to find that his arm hasn't moved.[15] Searle says that 'the patient's experience is one of trying but failing to raise his arm'.[16] There is a fact about the way this patient was trying to move whether or not he actually moved that way: he was trying to move in the way that, had his arm not being anaesthetised, he would have moved. Furthermore, the patient knew how he was trying to move. Because his body didn't actually move, his knowledge could not consist in his being aware of his bodily moving. What is true of the anaesthetised patient is true generally. Whenever someone performs an action they try to move their body in a certain way; there is a fact about, and they are aware of, the way that they are trying to move, whether or not their body actually moves in that way.

Searle explains these features of action by appealing to mental episodes he calls 'intentions-in-action' which he distinguishes from states he calls 'prior intentions'.[17] Prior intentions are those decisions to act which typically result from deliberation; they are the intentions which feature in the standard account of intentional action. Such intentions are formed prior to acting and are, like beliefs, standing or dispositional states. An *intention-in-action* is the intention I have when I am actually performing the action and whose conditions of satisfaction concern how my body moves. An intention-in-action is an event rather than a standing state and is the content of an experience of acting.[18] The simple action of raising your arm, according to Searle, typically involves two components: the experience of raising your arm and the physical movement of your arm going up (p.87). The experience of raising your arm has intentional content: it represents the movement of your arm; not just that your arm goes up 'but that it goes up in a certain way and at a certain speed, etc.' (p.93). The experience normally brings about or causes the bodily movement it represents, and therefore the action of raising your arm comprises the experience of acting together with the movement represented and brought about by the experience. When I perform an action, Searle says, “the intention is *in the action*” (p.84).[19] If your arm goes up without a corresponding experience of raising it then you didn’t raise your arm, your arm just went up. Intentions-in-action function to represent and bring about the bodily movements which constitute an action. On Searle’s account, then, the way someone is trying to move when they perform an action is determined by the content of their intention in action; and their knowledge of how they are trying to move in performing an action is grounded in their experience of acting.[20]

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[15] Tony Marcel reports that Ian Waterman who, as a result of a peripheral neuropathy, was deprived of all proprioceptive experience and bodily sensation beneath the neck and is unaware (without vision) of the disposition of his limbs and body, nonetheless knows that he has acted. Marcel, 'The sense of agency,' p. 71.

[16] *Intentionality*, p.88 (subsequent page refs are to this). Searle cannot mean that the patient experiences or is aware of his failure to move in the same way that he is aware of his trying to move, rather that he is aware of trying to move, and that he has failed to do so. .

[17] What Searle calls 'intentions in action' are similar to the content of what Kent Bach calls 'executive representations', and what O'Shaughnessy and Peacocke call 'tryings'. Although the details of their accounts differ, all these writers are characterizing states which play the same role in action explanation.

[18] 'the experience of acting is a conscious experience with an Intentional content, and the intention in action just is the Intentional component, regardless of whether it is contained in any conscious experience of acting. Sometimes one performs intentional actions without any conscious experience of doing so' (pp.91-2). See also Searle's Replies, p. 298.

I am going to call the mental episodes that have the functional role of generating bodily movements in the way I have described (following Bach) “executive representations”. It is difficult to find a term that does not have associations that I want to avoid. One natural term would be “trying”, but that is associated with volitional theories of action that many think objectionable. What I am calling “executive representations” are functionally similar to Searle’s intentions-in-action, but the use of that terminology suggests a connection with proximal intentions that I want to avoid. Searle’s other term – “experience of acting” – is appropriate, but suggests a connection with proprioception – a form of perception.

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[section giving more details of the contents of experiences of acting]

I have introduced executive representations to play an explanatory role. Therefore, we can individuate the content of executive representations in terms of the type of bodily movement that they normally produce; the type of bodily movement that they produce when the subjects action control system is working properly. Two such executive representations will be of the same kind only if they represent the same type of movement: only if they would normally produce the same type of bodily movement.

Executive representations represent changes in properties of the body – they represent bodily movements. The content is dynamic.

Imagined action are simulations of real actions. They are the same except for the fact that they don’t actually produce movements – they are non-exectuive.

The difficulty of a real task affects the time it takes to perform it; the same is true of the imaginary performance of the task. The kind of arm movements subjects imagine performing in acting on objects are the same as those they would actually perform (Jeannerod, MC, p, 26-8).

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[19] “we say of a prior intention that the agent acts on his intention, or that he carries out his intention, or that he tries to carry it out; but in general we can’t say such a thing of intentions in action because the intention in action just is the Intentional [representational] content of the action.” (p.84).

[20] ‘we ought to allow ourselves to be struck by the implications of the fact that at any point in a man’s conscious life he knows without observation the answer to the question, “What are you now doing?”… Even in a case in where a man is mistaken about what the results of his efforts are he still knows what he is trying to do… the knowledge of what one is doing in this sense,… characteristically derives from the fact that a conscious experience of acting involves consciousness of the conditions of satisfaction of that experience.’ p. 90. Although experiences of acting play a role here, the issue is not quite a straightforward as Searle suggests; see Peacocke ‘Action: Awareness, Ownership, Knowledge’.

All this makes it plausible that motor imagery involves representations with the same content as executive representations. The difference lies in the fact that executive representations are executive – they normally produce movements – whereas motor imagery is not.

I imagine in great detail playing a piece of piano music in a quite particular way; I imagine from the inside making the very movements I would be making in the imagined state of affairs.

What properties of a bodily movement are represented by an executive representation? An executive representation represents those properties of a bodily movement that are determined directly by the subject. Exactly what properties may be represented in their content is a matter for (empirical) investigation. For example, suppose that you move your hand to a certain position, or in a certain direction, at a certain speed; you could have moved your hand faster or slower, to a different position, or in a different direction. Those properties of your movement are plausibly represented in the content of the executive representation that produced the movement. Much of the control of movement – the systematic flexing and relaxation of muscle groups, and the detailed sequencing of movements, for example – is not determined directly by the subject; such properties of movement are therefore not represented in the content of an executive representation.

It is likely that the content of executive representations is shared by the representations involved in motor imagery – by episodes of imagining performing an action. When we imagine performing an action from the inside we imagine moving in just the way we would move were we actually to perform the action that we are imagining. For example, a piano player can imagine playing a piece of piano music; in doing so they must imagine moving their hands in the way they would move were they to actually play the piece of music. Someone who cannot play the piano cannot imagine playing the piano in this way; at most they can imagine themselves at the piano, and imagine the piano producing sounds, but that is not to imagine playing the piano. There is considerable evidence that such imaginary performances are temporally and dynamically constrained in just the way that an actual performance is constrained; and there's evidence that imaginary performances can have an impact on – can improve – subsequent non-imaginary performances. The best explanation of these connections between motor imagery and action is that the representations involved in motor imagery share content with those involved in action. The difference is that episodes of imagery, unlike executive representations, are non-executive – they don't normally produce bodily movements.

If the content of executive representations is shared with the representations involved in motor imagery, then we can discover what properties are represented in the content of executive representations by reflecting on such imagined movements: if it is possible to imagine moving in a certain way, then the properties one imagines the movement to have can be represented in the content of an executive representation.

We can explain why someone moves in the way they do in performing an action by appealing to the content of their experience of acting.

The explanation of intentional actions requires appeal to states with the function that Searle describes. I shall follow him in calling them 'experiences of acting'.

The intentional component of an experience of acting has a mind-to-world direction of fit – the direction of causation is from the experience of acting to the event. The state represents bodily movements. The bodily movements that, when everything is working normally, it produces. So we can individuate the content of the states in terms of the kinds of bodily movement that it normally produces.[21]

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Intentional actions involve experiences of acting which both represent bodily movements and determine those movements; we can explain the way someone moves in performing an action by appealing to the content of the experience of acting that produces the movement. What is true generally of intentional actions is true of visually guided actions. We can explain the way someone moves in performing a visually-guided action by appealing to the content of the experience of acting the produces the movement.

The difference between actions like shoelace tying and visually-guided actions is a difference in how the content of the relevant experience of acting is determined. In the case of shoelace tying, someone who knows how to tie shoelaces knows how to move their hands in the way required to tie shoelaces; that is, they have the capacity to form the relevant experiences of acting and so to perform the necessary movements. Knowing how to tie shoelaces may simply consist in that capacity, and must depend (in some way) on memory. In the case of a visually-guided action, someone normally knows how to, say, reach something that they can see in virtue of seeing it; they have the capacity to reach in virtue of their visual experience partly determining the content of the experience of acting that brings about their reaching movement. It is in virtue of partly determining the content of the experience of acting that their visual experience *guides* the action. Knowing how to reach something, in such cases, depends on visual experience. How does visual experience determine the content of experiences of acting? It does so, I suggest, in the most direct way possible: by sharing that content. Visual experiences represent properties that enter into the content of experiences of acting and so guide actions. The rest of this paper expands on this claim and attempts to make it plausible.

What does it mean to say that visual experiences represent properties that enter into the content of experiences of acting?

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What properties are represented? Does vision always represent action guiding properties (i.e. is it true of every object represented by a visual experience that the relevant action-guiding properties are represented for that object)? The alternative is that there is a task-dependent or attention-dependent representation of action-guiding properties. I am not committed to anything more than that.

Given what we know of the function of the visual system, this claim about the content of visual experience is plausible: vision functions to both tell us about the world, and to guide our actions. It tells us about the world by representing objects and their properties and it guides actions by representing the properties of bodily movements required to act on those objects.

What are the satisfaction conditions of the content as it features in experience? The presentational and directive content of experience. Executive states vs. directive content.

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[21] "for basic bodily action types ø the mental event of trying to ø is individuated by the fact that events of that kind tend to produce ø-ings when the subject's central control system is properly connected to his body" Peacocke, *The Realm of Reason*, p.121

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Giving correctness or truth conditions is not enough to characterise experience; we need to characterise its role too.

In perception, objects are presented to us as being some way. The representational theory of perception explains this by appealing the representational content of experience: there seems to the subject to be a vase of flowers in front of her because her visual experience represents that there is a vase of flowers in front of her. In virtue of having a visual experience of a vase of flowers, the vase of flowers actually seems to be there in front of her; her visual experience of a vase of flowers therefore phenomenologically presents or involves the vase of flowers in a way that merely thinking of or imagining a vase of flowers does not.[22] That doesn't mean that the subject of the experience necessarily accepts that things are as her experience represents them to be – she may have reasons for thinking that her experience is misleading, or that things are not that way – nonetheless, it still *seems* to her, in virtue of having the experience, that things are as her experience represents them to be. In virtue of things seeming a certain way, she has a reason for believing that things are that way: she needs no reason for believing this in addition to her perceptual experience. Perceptual experiences therefore have an epistemic authority that other states, like suppositions or imaginings, lack: for as long as she has no countervailing reasons a subject is rational in believing things are as they perceptually appear; in contrast, suppositions and imaginings can only provide reasons for believing something in the context of other beliefs. As Michael Tye says, "visual experiences are not themselves beliefs, but they are *apt* for the production of beliefs… [E]ach visual experience is the direct basis for the formation of a belief about the perceptible qualities represented by the experience."[23]

We cannot explain these characteristics of our perceptual experience if we suppose that experiences represent things in the same way that states like intentions, desires, and suppositions represent things. Peacocke suggests that '[p]erceptual states have specifically representational (not merely intentional) content. In this they differ from states such as imagining or wishing, which have intentional content but not representational content. In being in a state with representational content the subject of the state is thereby under the impression that the world is a certain way. Intuitively it seems essential to the entitling character of perceptual states that their content is representational.'[24] Perceptual experiences, Peacock seems to be saying, have a different kind of *content* to other intentional states. Similar considerations lead Richard Heck to say that perceptual experiences involve a distinctive kind of mental *state*: 'no one, so far as I know, has ever been so much as tempted to say that perceptions are desires, intentions, or entertainings; only beliefs are liable to be confused with perceptions. The reason is that, as different as perceptions may be from belief…there is something similar: Both purport to represent how the world is; both, we might say…have assertoric force'; he says, too, that 'perceptions are attitudes, attitudes that are *like* beliefs in so far as to be in a perceptual state is to hold an *assertive*, or *presentational*, attitude towards a certain content.'[25]

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[22] The representational theory of perception stresses the analogy between experiences and other states like belief and desire. There are different ways in which we can understand this analogy, depending on whether we view experiences as being analogous to representational states generally, or as being analogous to states that are representational in some narrower sense. In the wider sense, the contents of states like belief, desire, and intentions, count as representational because they are all states which are about or represent things. States which have representational content in this sense leave it open whether the world is the way the content of the state represents things as being. In a narrower sense, the contents of states like belief and judgement counts as representational, as does that of indicative sentences, whereas that of states like hope and desire does not. A state's content is representational, in this sense, just in case it presents something as actual, or as true. If we think of experiences as analogous to states like beliefs and judgements, then we will think of experiences as having representational content in a narrower sense, according to which experiences don't just have semantic content and refer to things, but involve taking the world actually to be the way the experience represents it as being. For further discussion, see M.G.F. Martin, 'The transparency of experience', especially pp. 387-91.

[23] Tye, *Consciousness and Persons*, pp.175-6.

[24] Peacocke, *The Realm of Reason*, p.99.

What these arguments show is that specifying correctness or truth conditions is not sufficient for characterising experience – we must also account for the presentational role of experience.

Peacocke and Heck appear to differ over whether this *presentational* character of experience is a property of an experiential state or a property of the content of the state. We might think that states are presentational in virtue of their functional role, or in virtue of the kind of content that they have; that is, the content of a state might be presentational in virtue of the state being presentational, or the state might be presentational in virtue of the content being presentational. I will call the content of a state that has the presentational role of experience *presentational content*, but in doing so I don't mean to commit myself to either view.

In fact, I think we should be sceptical of the idea that being presentational is primarily a property of states. Heck's suggestion that we should think of an experience as the holding of an attitude towards a content is implausible. When we talk of belief as an attitude, we normally mean that in believing something, I adopt an attitude – of accepting or holding true – towards the proposition believed; in virtue of adopting that attitude it's the case both that I believe the proposition, and that the proposition has a certain role in my mental economy. If I cease holding that attitude to the proposition then I no longer believe it and it no longer has that role. The same is not true of perceptual experience. A perceptual experience maintains its presentational character whether or not I accept that things are as it presents them to be, and so independently of the attitude I adopt towards its content. It is similarly implausible to think that we explain the presentational character of experience by appealing to its role in determining beliefs. If I don't accept the content of an experience then the experience won't actually determine my beliefs, but it will still have a presentational character. Of course, had I not had countervailing reasons the experience would have determined my beliefs; but it seems more plausible to think that in such circumstances the experience would have determined my beliefs *because* of its presentational character than that it has a presentational character because it would, in such circumstances, have determined my beliefs.[26]

However that may be, it is in virtue of visual experiences having presentational content that they function to provide an awareness of the world as being some way; that they ground judgement, and provide reasons, including reasons that feature in practical reasoning; and present objects in such a way that they can be objects of demonstrative judgements, and intentions. States with content that is not presentational – states like imaginings, suppositions, and intentions – do not function in this way.

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[25] p.508 and p.509. Richard Heck, "Nonconceptual content and the 'Space of Reasons'" Phil Review 2000. Heck admits that he doesn't know how to explain what it means for perceptual states to be assertoric (fn.29), but suggests that whatever account we give of the 'assertoric' content of belief will apply to experiences too. Here I disagree: I think it's plausible to think that believing that p requires the subject to take an attitude to the proposition that p (such as that of holding p true; for the reasons given in the text, the same is not true of perceptual experience. For this approach to belief see, for example, David J. Velleman, 'The Aim of Belief'.

[26] This presumably is why Heck says that the presentational character of experience "seems to me, at least, to be independent of its tendency to give rise to belief" (p.509).

A representational theory of perception should view the content of perceptual experiences as presentational if it is to accommodate the fact that, in perception, objects are presented to us as being some way; it doesn't follow from this that it should view the content of perceptual experiences as exhaustively, or only, presentational.[27] Perceptual experiences don't just present objects as being some way: they guide our object-directed actions; and that requires that they have content that is not presentational.

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Section on the directive content of visual experience

Experiences of acting don't present anything as actually being some way, and they don't represent the properties of an actual bodily movement. They represent the properties that a bodily movement would need to have to satisfy that content. If we think of visual experience as being representational in a way that is analogous to that of beliefs, then we should think of experiences of acting as being representational in a way that is analogous to desires or intentions.

Desires and intentions don't represent any state of affairs as actually obtaining. We should either think of them as representing states of affairs in a way that is neutral as to whether they are actual, or as representing them as non-actual. (This will depend on whether we think that the characteristic motivational properties of these states as due to properties of the states themselves or due to the content of those states.)

Don't represent a bodily movement as actually being some way, so in being in a state with that content it doesn't seem to the subject that anything actually is some way. Consequently being in a state with such content on its own gives the subject no reason to judge anything.

Not all states with directive content normally produce bodily movements (e.g. motor imagery). We need therefore to distinguish the property of a state of normally producing the bodily movement represented in the content of the state – being an executive state – from the property of the content of that state of representing a bodily movement as non-actual and in such a way as to be suiting for guiding of producing that movement.

Visual experiences don't represent the properties that can enter into the content of an experience of acting in a presentational way, but in a directive way. The content that represents those properties is 'directive' content.

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I have argued that visual experiences have two kinds of content – presentational content, in virtue of which objects are presented as being some way – and directive content which guides action by helping to determine the content of an experience of acting. The argument for this appealed to the role of visual experiences in explaining our perceptual awareness of objects and in determining how we move in acting. This distinction between different kinds of content provides a framework for explaining the dissociations between vision and action that occur in the empirical cases. There were three different kinds of case: those involving blindsight and apperceptive agnosia, those involving optic ataxia, and the everyday dissociations involving visual illusions. All three can be explained in terms of a dissociation between the two different kinds of content.

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[27] Though Heck seems to assume that it is. Anyone who argues from transparency to the truth of representationalism will think so too.

In agnosia and blindsight cases, the subject is visually unaware of objects and their properties; therefore her visual experiences lack presentational content.[28] It is in virtue of the fact that her experiences lack such content that the world is not visually presented to her as being any way: she is not visually aware of objects or their properties, and she has no basis for making judgements or forming beliefs about objects or for forming intentions to act on them. In these cases, however, she can still use visual information to guide an action. That suggests that her visual experiences still have directive content, content that can help to determine the content of her experiences of acting and so determine the way she moves in acting. Because her visual experience lacks presentational content, she cannot form intentions to act on visually presented objects, and does not spontaneously direct actions at such objects. However, when she is asked to point to an object she can form an intention, for example, to point to the object the experimenter is taking about. Such an intention is not based on the subject's visual experience, but the subject can apparently recruit the directive content of her visual experience in performing an action that satisfies the intention. The claim that the visual experience of someone with blindsight can have directive content is consistent with the subject of such experience's claim not to be visually aware of anything. Since directive content doesn't present an object as being some way, in having a visual experience with directive content the subject will not be under the impression that anything is any way, nor have any basis for judging that anything is any way.

In the case of optic ataxia, the dissociation is reversed. The subject has visual experiences with presentational, but not directive, content. In virtue of her experiences having presentational content she is aware of things as being some way, can make judgements based on her experience, and form intentions to act on visually presented objects. Her visual experience of the way the world is may be perfectly normal, and everything seem to her as it would to a normal perceiver. But her visual experience lacks directive content so, in performing an object-directed action she doesn't know how to move her body. It may be, of course, that she can work out how to move on the basis of how an object seems to her to be. That will require her to engage in practical reasoning and to form intentions to move in appropriate ways. The resultant movements will not be those of a visually-guided action. It may not always be possible for her to work out how to move in the right way to carry out her intentions. There may be properties a bodily movement must have for successful action that the subject cannot easily intend them to have: objects may not be visually presented as having the properties necessary for the subject to work out how to move.[29]

We saw that everyday dissociations involving visual illusions involved an apparent inconsistency in the content of a visual experience: an object appeared to have a property that was incompatible with the property that guided the subject's visually-guided action. We can explain this without supposing there is any inconsistency in the content of the subject's visual experience. The presentational content of the subject's experience represents the object as having a certain (in fact illusory) size; the directive content of the subject's experience represents a property of the movement required to grasp the object. Since the experience represents properties of different things – an object on one hand, and a bodily movement, on the other – there is no inconsistency.

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[28] Agnosics have some awareness, so their experience may have some residual presentational content.

[29] Goodale describes a patient – R.V. – who, when she picked up an object, 'often chose very unstable grasp points and the grasp lines often do not pass through the centre of mass of the object' (M and G, p.102). It's plausible that we don't normally perceive objects as having a centre of mass; that is, that our visual experience doesn't presentationally represent objects' centres of mass, even if it normally can have directive content that represents the properties of a grasp appropriate to an object's centre of mass.

Furthermore, since the subject's visual experience doesn't represent anything as actually having the action-guiding property, the property is not represented in a way that could be inconsistent with the property any object is represented as actually having. We can, therefore, explain the content of the subject's visual experience without supposing that it represents incompatible or inconsistent properties.

Notice that none of these explanations appeal to consciousness. In particular, nothing in my account supports the suggestion that blindsight is vision without consciousness, or any of the other claims about the nature of consciousness that have been made on the basis of blindsight.[30] Those claims about consciousness are motivated by the thought that it is not possible to explain the empirical dissociations other than in terms of actions guided by non-conscious visual information about objects of the same kind that is made available in conscious visual perception. I have argued that actions are not guided by information of the same kind that is made available in conscious visual perception; in fact, that actions couldn't be guided by such information. That undermines the motivation for those claims about consciousness: the question of consciousness, it turns out, is simply orthogonal to the issue of visually guided action. (I do however have something to say about it below.)

It follows, too, that we should interpret the relation between dual-stream hypothesis and visual experience in a different way to the way many philosophers have interpreted it. It is not the case that one stream determines conscious visual experiences, and the other operates below the level of consciousness; rather, one determines the presentational content of visual experiences, and the other determines the directive content to experience. Such an interpretation is consistent with the psychological characterisation of the function implemented by each stream as vision-for-perception and vision-for-action.

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Section on consciousness

What exactly is the question? It's not about reportability – it's not the right kind of content. Phenomenology? It's not about whether anything seems a certain way in having the experience (is this right if an object can seem reachable?), because it's not that kind of content.

Is there something that it is like for the subject? Plausibly, yes. We have access to the content independently of actually moving, and it's in virtue of that that we e.g. know that something is within reach. We know that something is within reach without having to try to reach it (just imagine reaching it). That makes a difference to what it is like for the subject.

A number of (much discussed) empirical cases might seem to support the claim that there's nothing philosophical to say about how visual experience guides action. This empirical evidence has been taken to show that visual experience plays no role in guiding the execution of visually guided actions. Having formed an intention to act on a visually presented object, your experience plays no role in guiding your action. Information from vision determines your movement, but it does so nonconsciously and without entering into the content of your visual experience.[31] This claim is thought to be strongly supported by a theory of visual processing known as the *dual-stream hypothesis*.

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[30] I have in mind particularly the suggestion that blindsight supports a distinction between access and phenomenal consciousness (it doesn't).

The primate visual system comprises a large number of anatomically distinct visual areas. There are many interconnections between these areas, amongst which two significant pathways – a dorsal pathway and a ventral pathway – can be distinguished.[32] The primary visual cortex (to which the majority of neurons from the retina ultimately project) makes a different contribution to each pathway so that although its destruction completely deprives 'ventral' neurons of visual input, 'dorsal' neurons remain responsive. They do so in virtue of the role played by subcortical visual areas in the dorsal, but not the ventral pathway. The different cortical and subcortical areas involved in the two pathways suggests the *dual-stream hypothesis:* the hypothesis that these two anatomically distinct pathways implement distinct and relatively functionally independent psychological processes. Strongest support for this hypothesis comes from neuropsychological studies of subjects with brain damage. The cases are relatively well known, so I shall describe them only briefly.[33]

Cortical blindness is the result of bilateral lesions in the occipital lobe of the brain involving the primary visual cortex. These lesions mean that although the eyes and optic nerve could function normally, subjects cannot see objects in their blind field. We might expect damage to the primary visual cortex to produce complete deafferentation from the retina, but some cortically blind subjects are able to respond to visual stimuli. This phenomenon has become known as blindsight.

Subjects with blindsight are not visually aware of objects presented in their blind field, and so are unable to report the presence or nature of such objects, make judgements about them, or form intentions to act on them. Their residual visual capacity can only be detected when they are placed in forced choice situations, in which they are encouraged to make a response, either by moving their eyes or by reaching or pointing, to a target object that they deny they can see.[34] They are able to discriminate and localise such objects at levels well above chance.

It seems evident, both from the fact that they deny that they can see and their inability to report the presence or nature of visually presented objects, that blindsighted subjects lack visual awareness of objects and their properties. The fact that they can successfully point or reach to objects shows that, nonetheless, they can use visual information about the location of objects to guide their actions. It seems, then, that blindsighted subjects can perform visually-guided actions in the absence of visual awareness. For this reason, John Campbell concludes that "in the case of a blindsighted subject who manages to act successfully with respect to one rather than another object in the blind field… the visual information that is being used to set the parameters of the action is not consciously available" (Campbell, p.153).[35]

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[31] By visual experience I mean a state that is conscious, and can determine the phenomenology of a subject's stream of consciousness. (check this)

[32] The dorsal pathway links the primary visual cortex through the middle temporal area to the posterior parietal lobe, and the ventral pathway which links the primary visual cortex, through area V4, to the inferotemporal region. See further…

[33] That they function relatively independently of one another was first suggested by studies of brain lesioned monkeys. This led to a distinction between a 'what' and a 'where' function: one stream – the ventral stream – functions to compute information about objects' size and shape, the other – dorsal stream – to compute information about its spatial location. The neuropsychological studies I describe below have been taken to show that the distinction should not be understood in terms of the different kinds of information computed by each stream, but the use to which the information is put. Not a 'what' stream and a 'where' stream, but 'vision for judgment' and 'vision for action'.

[34] Their intentions in such cases are presumably 'to point to the object the experimenter is talking about'; because they are unaware of objects they cannot spontaneously form intentions to act on them.

A similar dissociation between awareness and action can be found in some subjects with visual agnosia. Subjects with apperceptive agnosia are not blind, but are unable to perceive or recognise objects; they can detect visual features and have good acuity, but don't experience features as surfaces or as grouped into objects, and so cannot perceive shapes nor recognise objects.[36] One such subject, DF, suffered damage to her visual cortex following carbon monoxide poisoning. As a result she was unable to recognise everyday objects and faces, couldn't identify simple shapes, and had subnormal colour perception. She couldn't judge or use her fingers to show how big objects were or in which orientations. Despite these substantial visual impairments, she was normally accurate when object orientation and size were used to guide an action. Although she couldn't judge when objects were the same or different in shape, when she had to pick up an object she adjusted her fingers to grip it optimally; and when she had to post a card through a slot her movements were fluid and accurate, even though she could not match the orientation of the slot with another.[37]

As with blindsighted subjects, although she lacks visual awareness of properties of objects, DF is able to use visual information about those properties to guide her actions. Again, therefore, "it does not seem that conscious experience is what is setting the parameters for her actions, since she seems to lack any basis for verbal reports of sameness or difference of shape, size, and orientation, though in action she does manage to set these parameters correctly" (Campbell, p.156).

Subjects with optic ataxia – typically following damage to the posterior parietal cortex – have visuo-motor deficits, and are unable to reach accurately for visually presented objects or to accurately grasp an object between finger and thumb or orient a card correctly for posting through a slot. They are nonetheless able to make accurate perceptual reports of the location and orientation of visually presented objects, and they can accurately indicate the size of an object with their fingers or rotate a slot to match the orientation of one presented to them. Their difficulty in reaching towards and grasping objects cannot, therefore, be explained in terms of their lacking perceptual awareness of the relevant properties of objects. Nor do they simply have a motor deficit since they can perform non-visually-guided actions normally; they can, for example, reach to places on their own body with normal accuracy. Although the exact form of deficit produced by optic ataxia varies from subject to subject it is best explained in terms of an underlying visuo-motor system – that is, a system that functions to produce visually guided actions – that can be damaged at different points.[38] Subjects with optic ataxia have intact visual perception, but an impaired ability to use visual information to guide their action, and therefore show a dissociation between perception and action which is the reverse of that found in subjects with blindsight or agnosia.

These neuropsychological cases suggest that a subject's visually guided actions can be determined by visual information about properties of an object even when the subject lacks visual awareness of those properties. There are examples of dissociations in normal vision that suggest that the visual information about an object which guides a subject's action may be inconsistent with the way that object appears to them in experience.

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[35] Campbell, 'The Role of Demonstratives in Action Explanation', in *Agency and Self-awareness*.

[36] Associative agnosics, in contrast, can perceive objects normally, but cannot recognise or name them. See Farah, Visual Agnosia, etc. The dissociation between vision and action is associated only with apperceptive agnosia.

[37] Ref. to Milner and Goodale. Perenin and Rosetti describe a blindsight patient who was asked to post a card through a slot and grasp blocks in the blind field. Although the subject lacked awareness (couldn't report, denied seeing, etc.) their posting was accurate and grasping appropriate for the object. (Perenin and Rosetti 1996.)

[38] M and G. p. 92ff.

The Titchener circles illusion consists of an array of two circles of equal diameter, one surrounded by an annulus of smaller circles and the other by an annulus of larger circles. Although the two central circles are of equal diameter, the circle surrounded by smaller circles appears larger. This illusion has been used in a series of experiments which seem to show that visually guided actions are not affected by an object's illusory appearance.[39] The experimenters used a version of the illusion in which the central circle is a disk that can be grasped between finger and thumb. During normal grasping movements a subject's fingers progressively stretch to a maximum aperture that always occurs at the same point in the movement and has been found to be reliably correlated with the object's size. The experimenters found that when subjects were asked to make a comparative judgement of the size of the disk, their judgments were subject to the illusion and they overestimated its size; similarly, if subjects were asked to indicate with their fingers the width of the disk then their indications, like their judgements, were subject to the illusion. However, when they were asked to pick up the disk the size of their grasp was scaled appropriately to the actual rather than the apparent size of the disk. Their grasping, unlike their judgments, was immune to the illusion.

If visual awareness of the size of the disc determines both the subject's judgments and her action then we would expect that if one is wrong, the other will be so too. This doesn't happen. Correct information about the size of the disc guides the subject's action, but the subject experiences the disc as having an illusory size. On pain of attributing contradictory representational contents to experiences, it cannot be visual experience of the size of the object that guides both judgement and action.[40]

In the neuropsychological cases, selective damage to the visual system affecting only one of the two visual pathways produces a visual dissociation. Damage to the ventral pathway leaves subjects unaware of visually presented objects, but able to use visual information about those objects in guiding their actions; damage to the dorsal stream leaves subjects aware of objects, but apparently unable to use visual information to guide actions directed towards objects they can see. This pattern of dissociation supports the hypothesis that the two visual pathways implement functionally independent processes:[41] one which enables subjects to use visual information to guide object directed actions, and the other which produces visual awareness of objects and enables subjects to select and discriminate amongst them, to make judgements about them, and form intentions to act on them. Further support for this interpretation is provided by the Titchener circles illusion in which the subject's awareness of the apparent properties of the circles that grounds her (erroneous) judgement, but doesn't guide her (accurate) action.

The empirical cases show that the visual awareness of an object as being some way is not necessary for me to perform a visually-guided action directed at that object. In first part of this paper I suggested that visual experience might guide actions by determining the content of a premise in a piece of practical reasoning: I intend to press the light switch, and I see that the light switch is at that place, so I form the intention to move my hand to that place. But, I argued, that suggestion is wrong: it doesn't explain the way vision *guides* visually-guided actions. I suggested instead that visual experience guides action in a direct way not mediated by intentions or practical reasoning. If that's right then it is difficult to see how being visually aware of an object as being a certain way *could* explain a visually-guided action directed at that object. Being aware of an object as being some way could only determine an action in the context of a piece of practical reasoning: you are aware of an object as being some way and, given that, have to work out how to move in order to achieve your goal. The empirical cases show that someone can perform a visually-guided action when they lack the visual awareness of an object necessary for this kind of practical reasoning; and this is just what we should expect: there's no direct move from being aware of an object as being some way to the way you ought to move in order to act on it. If that's right, then visual awareness of an object as being some way cannot directly guide action in the way required by visually-guided action; and the empirical cases don't tell us anything about visually-guided actions that we cannot discover simply by reflecting on what is required to explain how visual experience can guide action.

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[39] Reference to Ways of seeing chapter, and to other illusions.

[40] There are other possible interpretations of this example, including that the illusory appearance of the circles concerns only their relative size, whereas the subject's action is guided by their objective size (for a discussion of this possibility, see Clark, pp.505ff.). For a discussion of the possibility that visual experience might represent incompatible or inconsistent properties see Crane, 'The Waterfall Illusion'.

[41] This pattern of double dissociation is important because…

Even if the empirical cases don't tell us anything new, they might seem to support the claim that there is nothing philosophical to say about how vision guides action: if awareness of an object as being some way doesn't guide action, then experience doesn't guide action; and if experience doesn't guide action, then actions are guided by non-conscious psychological processes about which there is nothing philosophical to say. There are two arguments which appear to show that visual experience does not guide our actions. The first argument appeals to pathological cases, like blindsight and agnosia, and is as follows. The way the subject moves in performing an object-directed action has a property that is determined by the object's being F (for some property F), but the subject is not aware of the object as F; therefore, awareness of an object as F is not necessary for the subject's movement to have a property determined by the object's being F. The second argument appeals to visual illusions like the Titchener circles, and is as follows. The way the subject moves in performing an object-directed action has a property that is determined by the object's being F (for some property F), but the subject is apparently aware of the object as G (for some property G) and judges that the object is G (where being G entails being not-F); the subject is therefore not aware of the object as F.[42] Therefore, awareness of an object as F is not necessary for the subject's movement to have a property determined by the object's being F. In both cases, although vision information concerning the object's F-ness determines a property of the action, awareness of the object *as F* doesn't play a causal role in determining the way the subject moves. If awareness of an object as F doesn't determine the way the subject moves, then experience doesn't determine the way the subject moves. Visually-guided actions are guided by visual information about an object, but not by visual experience; therefore, visually-guided actions are guided by non-conscious visual information.

This argument assumes that if we are not aware of an object as being some way, and don't have a visual experience of the object as being that way, then visual experience doesn't guide action. But why should we accept the assumption that if experience of an object as being some way doesn't determine the way the subject moves in performing a visually-guided action then visual experience doesn't do so? I am going to argue that this assumption is false. It doesn't follow from the fact that our awareness of an object as being some way doesn't determine the way the subject moves that visual experience doesn't determine the way the subject moves in performing that action.

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[42] I am assuming that, even if it is possible, the Titchener illusion is not such a case of experience having inconsistent contents, so that if an object appears G to the subject, and being G entails being not-F, then the object cannot appear F to the subject.