

Vision and Causal Understanding

William Child

When we see an object, it causally affects us. It reflects light towards us; the light strikes our retinas; that causes impulses to be sent down our optic nerves; and so on. Without those causal processes, we could not see. But that is a scientific thesis: something we learn *a posteriori*, long after we have the concept of vision. There is nothing distinctively philosophical about this scientific thesis. And it seems clear that, when philosophers argue for or against a causal theory of vision, they are not arguing about the truth or falsity of the scientific thesis. What, then, are they arguing about? The causal theory of vision has been formulated in various ways. But there is a common basic intuition: according to the causal theory, the idea that our perceptual experiences are causally explained by the things we see is part of our ordinary thought about vision; it is an element of our naïve, pre-theoretical view of the world, rather than a feature only of a more sophisticated, scientific view.

That basic intuition has been expressed in various ways. H. P. Grice sees the causal theory as part of an attempt ‘to elucidate or characterize the ordinary notion of perceiving a material object’ (Grice 1961, 121-2). He concludes that the theory must not contain ‘material of which someone who is perfectly capable of using the ordinary notion might be ignorant’ (Grice 1961, 143). In defending a version of the causal theory, P. F. Strawson says that ‘the general idea [of] causal dependence’ is ‘implicit’ in ‘the naïve or unsophisticated concept of perception’ (Strawson 1974, 83, 82); and, again, that ‘the idea of the presence of the thing as accounting for, or being responsible for, our perceptual awareness of it is implicit in the pre-theoretical scheme from the very start’ (Strawson 1979, 51). Paul Snowdon says that, for the causal theorist, it is a conceptual truth that seeing is a causal process. That implies, he says, that the causal claim can be supported by appeal to data ‘that are relatively immediately acknowledgeable by any person, whatever their education, who can count as having the concept in question’ (Snowdon 1981, 176). Or again: the causal theory is concerned with the ‘analysis of the *concepts* of perceiving and seeing’; so a defence of the theory cannot rest only on ‘arguments relying on what are, broadly, empirical considerations’ (Snowdon 1990, 121-2). And Helen Steward, in her contribution to the present volume, writes that ‘it is usually thought to be essential to the Causal Theory of Perception that the causal connection between *o* and *S*’s *seeing o* is supposed to be a part of the very concept of seeing – not merely something we can infer only from what we know empirically about how seeing in fact works’ (Steward 2011, 4).

The point of these characterizations of the status of the causal theory is broadly similar: they aim to distinguish the philosophical claim that seeing is a causal process from a scientific claim. But the ways in which that distinction is drawn in the passages just quoted are not equivalent. The implication of Grice’s comments is that the truth of the causal thesis is known by everyone who is capable of using the ordinary notion of vision. (An elucidation of the ordinary notion, he says, must not contain material that someone who grasps that notion might be ignorant of. So if the causal thesis figures in a correct elucidation of the ordinary notion, users of that notion must know that the causal thesis is true.) Snowdon’s requirement that a defence of the causal thesis must not rely on ‘empirical considerations’ is less

demanding: for even if the truth of the causal thesis could be established without relying on empirical evidence, it would not follow that the thesis must be known to be true by everyone who grasps the ordinary concept of vision. Strawson’s idea that the causal thesis is ‘implicit in’ the ordinary concept of perception is weaker still. It is weaker than Grice’s condition: for something might be implicit in the ordinary concept without being known by everyone who possesses that concept. And, on the face of it, the idea that the causal thesis is ‘implicit in the pre-theoretical scheme’ is also weaker than Snowdon’s requirement. After all, much of our pre-theoretical scheme – our naïve way of thinking of the world – seems to involve knowledge that is, in some sense, empirical; it is acquired on the basis of our experience of the behaviour of things in the world around us. (Think, for example, of the principles that govern the mechanical interactions of physical bodies.)

So the characterizations offered by Grice, Strawson, and Snowdon are not equivalent. Furthermore, there is room for debate about what it takes for those characterizations to be satisfied. What makes it correct or incorrect to include the causal thesis in an elucidation of the ordinary notion of vision? What does it take for the causal thesis to be ‘implicit in the pre-theoretical scheme’, or to be ‘a part of the very concept of seeing’? Without an answer to those questions, we do not know exactly what the causal theory of vision is claiming. There remains a strong intuition that there is room for a distinctively philosophical debate about the role of causation in our thought about perception: a debate that is not settled by the universal acceptance of the scientific thesis with which we started. But resolving that debate requires greater clarity about the intended content of the philosophical theory.

Philosophers recently have been increasingly interested in questions about the character of philosophy. What is the nature of philosophical reasoning and of philosophical theories? What distinguishes them from scientific reasoning and scientific theories? In what sense, if any, is philosophy concerned with the analysis of concepts? Is philosophy a distinctively *a priori* discipline? The questions we have just been raising about the status and nature of the causal theory of vision are instances of such questions about the status and nature of philosophical theories in general. Many of the classic writings on the causal theory of vision date from a period when it was taken for granted that the business of philosophy was conceptual analysis, and that philosophical theories are to be assessed by purely *a priori* reasoning. Philosophers nowadays tend to reject that conception of philosophy. How (if at all) and in what form does the causal theory of vision survive that change?

I want to approach those questions from three related directions. In part 1 of this paper, I respond to an objection raised by Helen Steward against some earlier work of mine; she suggests that my account of the causal theory of vision ‘forsake[s] the original idea at the heart of the causal theory that causality is something conceptually (and not merely empirically) central to seeing’ (Steward 2011, 4). In part 2, I consider the objection that the causal thesis cannot be part of the ordinary concept of vision, since it is perfectly possible for someone to grasp the ordinary concept without accepting that seeing something involves being causally affected by it. In part 3, I reflect on the causal theory of vision in the light of psychological work on causal understanding. What light does experimental work on the origin and nature of causal thinking cast on the question, whether our ordinary thought about vision is a form of causal thinking?

1. Mentalism, Physicalism, and the Causal Theory

In an influential paper published in 1981, Paul Snowdon argued that the causal theory of vision is undermined by the possibility of taking a disjunctive view of visual experience.¹ His argument was this: The causal theory of vision treats the experience *S* has when she sees an object as an effect; the effect-end of a causal chain initiated by the seen object. But if a disjunctive, or relational, view of experience is correct, then it is wrong to treat experience in that way. For the disjunctivist, the experience *S* has when she sees an object is not an inner effect that is produced in *S* by the object. It is, instead, a relational state of affairs: the state of affairs of *o*’s looking some way to *S* (or equivalently: the state of affairs of *S*’s seeing *o* as being that way). Now the object, *o*, is a component of this state of affairs. And an object cannot be the cause of a state of affairs of which it is a component. So, if the disjunctive view of experience is correct, it is wrong to treat the experience *S* has when she sees *o* as something that is causally produced by *o*. The causal theory, therefore, must be rejected. Snowdon does not argue that the disjunctive view of experience is correct. His argument is less ambitious: the disjunctive view, he says, is not ruled out by the concept of vision; it cannot, therefore, be a conceptual truth that our visual experiences causally depend on the objects we see; but the causal theory holds that that is a conceptual truth; hence, Snowdon concludes, the causal theory is false.

In a response to Snowdon, I argued for the *compatibilist* view that there is no conflict between a disjunctive or relational view of experience and the causal theory of vision.² The disjunctivist conceives the experience *S* has in seeing *o* as a relational state of affairs: the state of affairs of *S*’s seeing *o*. That view of experience, I argued, is quite compatible with the causal theory. For there is no difficulty in holding that an object, *o*, causally explains, or is causally responsible for, the state of affairs of *S*’s seeing *o*.

Someone might object to this compatibilist view on the ground that it violates a Humean requirement that causes and effects must be distinct existences. A relation between *a* and *b* can only be a causal relation, Hume thought, if *a* and *b* are ‘distinct existences’: if it is possible for each to exist without the other. If the existence of *a* entailed the existence of *b*, he thought, the relation between them would be a logical relation (or, in his terms, a relation of ideas) not a causal relation. (The event of my sister’s giving birth and the event of my becoming an uncle, for example, are not distinct existences; that shows that the first is not the *cause* of the second.) But the object, *o*, and the state of affairs, *S*’s seeing *o*, are not distinct existences; the existence of the state of affairs entails the existence of the object. So if we accept the Humean constraint, the objection goes, we cannot regard the relation between *o* and *S*’s seeing *o* as a causal relation.

How should the compatibilist respond? I explored two ways of developing a compatibilist position: a *mentalist* view and a *physicalist* view. On the mentalist view: ‘The entire causal story implicit in saying that something is a case of vision can be told in mental language; in showing how vision is causal, we do not need to rely on any non-mental characterizations’; in particular, ‘we do not have to appeal to a description of *S*’s experience as a physical state or event’ (Child 1994, 156). On the physicalist view, by contrast, ‘the causal element in vision can be made intelligible only if we draw on physical facts about the subject’ (Child 1994, 156).

Suppose we take the mentalist view. One way of responding to the Humean argument is simply to deny that the Humean constraint applies to causal relations involving mental phenomena. The Humean constraint, we might argue, derives from reflection on causal relations between physical entities. And a crucial feature of the physical is that it is ‘a realm of autonomous entities, things whose intrinsic natures are

independent of any other things’ (Child 1994, 159). But the mental is not a realm of autonomous billiard-ball-like entities; that is part of the point of the disjunctive view of experience. So in the case of mental causation we should reject the Humean constraint altogether. The fact that the existence of the experience, *S*’s seeing *o*, constitutively depends on the existence of the object, *o*, is then no barrier to the presence of a causal relation between them.

This mentalist view has much in common with Steward’s position. Steward, too, thinks that the Humean constraint does not apply in this case. And she, too, holds that there is no need for the causalist to appeal to a physical characterization of the effect in order to make sense of the causal element in vision. On Steward’s view, the causal relation holds between two *facts*: the fact that *o* is located where it is, and the fact that *S* sees *o*. And the effect – the fact that *S* sees *o* – is essentially relational; it ‘could not obtain unless *o* existed’ (Steward 2011, 17). But, she insists, it is a mistake to think that, in order for this to qualify as a genuinely causal relation, there must be some non-relational, presumably physical, characterization of the effect. For, she argues, ‘the [Humean] Principle is not applicable where the causal relationships involved hold between facts rather than events’ (18). Steward’s reason for holding that the Humean constraint does not apply to the causal relation in vision is different from the reason given by the mentalist I have described. But the two positions are pushing in the same general direction. Had I endorsed the mentalist view, the distance between Steward and me would have been relatively small.

But I favoured the physicalist view. Exploring the reasons for that preference sheds light both on Steward’s critique of my position and on the questions about the status of the causal theory with which we began.

On the physicalist view, I said, ‘a full understanding of causal relations involving mental phenomena . . . must relate them to physical phenomena and to physical causality’ (110). In particular, ‘the causal element in vision can be made intelligible only if we draw on [such] physical facts about the subject’ (156). Why should we accept that claim? It is sometimes suggested that we need to appeal to a physical characterization of the effect in vision in order to show how the causal relation in vision satisfies the Humean constraint – to show that an object and the experience it causally explains are suitably distinct existences. I made some comments that were sympathetic to that suggestion (see Child 1994, 117, 160). But that was not my main argument. And I would not now put any weight on it.³ My main reason for preferring a physicalist view stemmed from the thought that the mental supervenes on, or is determined by, the physical. Causality is involved in many mental phenomena: action, perception, memory, and so on. But these phenomena do not involve a *sui generis* sort of causation: something whose operation is a basic, autonomous feature of the world, independent of the production of physical effects by physical causes. On the contrary, it is overwhelmingly plausible that mental causation is realized by, or constituted by, more basic processes of physical causation. And if that is right, I argued, it is not intellectually satisfactory to say simply that *o* causes *S*’s seeing *o* and to leave it at that. A full understanding of the causal element in vision must say something about how the causal relation between an object and a person’s seeing that object relates to the underlying physical causal processes; it must say something about how the effect in vision is brought about by the cause. Unless we do that, we not fully understand the idea that seeing is a causal process. That, I argued, is why we should prefer the physicalist version of compatibilism.⁴

Against this position, Steward objects that the truth of physicalism is not built into the concept of vision. The physicalist, I said, holds that the mental state of affairs, *S*’s seeing *o*, ‘consists in the whole chain of physical events . . . by which *o* causally affects *S*’ (Child 1994, 161). But, Steward observes, the events mentioned in that causal story are events such as *o*’s reflecting light in the direction of *S*. And ‘once we say this, it looks as though the causal relations which really obtain in the case are just those which are revealed by the *empirical* investigation of vision, not causal relations of a kind it might be plausible to think are part of the very concept of perceiving’ (Steward 2011, 4). So, she argues, the physicalist view ‘forsakes the idea at the heart of the causal theory that causality is something conceptually (and not merely empirically) central to seeing’ (Steward 2011, 4).

I shall make three points in response to that objection. First, my reasons for favouring the physicalist over the mentalist view were not supposed to be *a priori* or non-empirical. An essential premise in the argument was that the mental supervenes on the physical. And, as I said, that is plainly not something that we know *a priori*.⁵

Second, and relatedly, the case for a physicalist version of the causal theory should be seen as having two parts. The first part is an argument for the claim that our ordinary thought about vision is a form of causal thinking. (I shall explore that part of the argument in section 2, below.) That is a point about our ordinary thinking. Now, as we saw at the beginning of the paper, there is a question about how exactly to understand that claim. On one view, the key idea is that the causal claim is, as Steward puts it, ‘conceptually central to seeing’; on a different view, the idea is that the causal claim can be known to be true without empirical evidence; on a third view, it is that the causal claim is implicit in the pre-theoretical scheme; and so on. But whichever formulation we prefer, and however we understand it, it seems clear that we can endorse this first point without yet taking a position on the issue of physicalism. The second part of the case for physicalism is an argument that, since vision is a causal process, and since there are good reasons for thinking that all causation is realized by underlying physical causal processes, there is good reason for accepting a physicalist version of the causal theory. At no stage of the argument is it claimed that it is built into the ordinary concept of vision that seeing involves the specific kinds of physical events it actually does involve: events involving light waves, optic nerves, and so on.

So the argument for a physicalist version of the causal theory, taken as a whole, does not forsake the idea that causality is central to our ordinary way of thinking of vision. On the contrary, the first stage of the argument explicitly endorses that idea. What the argument does repudiate is an assumption fundamental to much writing on the causal theory of vision: that the causal theory is or should be concerned only with conceptual analysis. Suppose, for the sake of argument, that we have a clear grasp of what is and is not part of the ordinary concept of vision. And suppose that it is not part of the ordinary concept of vision that seeing involves the kinds of physical events it actually involves; or even that it involves any physical events at all. It does not follow that there is no properly philosophical argument for a physicalist version of the causal theory. For the proper business of philosophy is not confined to the analysis of our ordinary concepts. As I said:

Philosophy has a legitimate interest not just in understanding the concept of [vision] but also in understanding the relations between different sorts of concepts which apply to subjects, and between different levels of description; and in that way it has an interest in understanding the phenomenon of [vision] itself (1994, 115).⁶

In particular, philosophy has a legitimate interest in the relation between the causal story we can tell about vision in mental terms and the underlying physical causal processes. It is that concern, I claim, that makes the physicalist version of the causal theory preferable to the purely mentalist version.

Third, I said that, on the physicalist view, the causal element in vision cannot be ‘made intelligible’ without drawing on physical facts about the subject (1994, 156). In saying this, I did not mean that it would be literally *meaningless* to hold that there are no physical causal processes involved when someone sees an object, or to remain agnostic on the matter. (Cartesian dualists deny the physicalist view. But even if dualism can be shown by purely *a priori* reasoning to be incoherent, statements of dualism are not meaningless. So dualism is, in that sense, intelligible.) The point is, rather, that given the general reasons for accepting physicalism, it is not intellectually satisfactory simply to say that the objects we see are causally responsible for our visual experiences and to leave it at that. We need also to say something about how these causal processes relate to physical causal processes.

To take stock: (1) I agree with Steward that the kinds of physical event or process that will be mentioned in the physicalist’s account of what is involved in *S*’s seeing *o* are not plausibly ‘part of the very concept of perceiving’. But, for the reasons given, I do not see that as an objection to the physicalist view; the causal theory of vision need not confine itself to elements that are parts of the concept of vision. (2) As we have seen, the central claim of the causal theory has been variously formulated. Some say that the causal element in vision is part of the ordinary concept of vision; others say that it is implicit in the pre-theoretical scheme; others say that our ordinary thinking about vision is a form of causal thinking; and so on. Two questions have emerged very clearly in the discussion so far. First, which of these formulations should the causal theorist be aiming to defend? Second, why should we believe that the causal theorist’s central claim, thus formulated, is true?

2. Conceptual Truth and Our Ordinary Thought about Vision

On one way of formulating the causal theory, the central claim of the theory is that it is a conceptual truth that seeing an object is, or involves, being causally affected by it. And on one reading of that claim, it follows that that one cannot grasp the ordinary concept of vision without accepting the causal thesis. We saw above that Grice seems to endorse that claim. But, understood in that way, the causal theory faces an objection: that it seems perfectly possible for someone to grasp the concept of vision without accepting the causal thesis.

Timothy Williamson has recently argued that there are no conceptual truths. There is, he thinks, no truth that one has to accept in order to count as grasping the concepts it contains.⁷ So, in particular, there is no truth about vision that one is required to accept in order to grasp the concept of vision. Williamson’s argument focuses in the first instance on grasping the meanings of words. Understanding the English word ‘see’, on his view, requires being a sufficiently fluent member of the practice of using that word. But someone can be sufficiently fluent in using the word ‘see’ to count as understanding it, even if she holds bizarre views about vision and, as a result, denies what the rest of us take to be very basic and simple truths about vision; extreme eccentricity in some elements of her use of the word can be compensated for by her normality in other parts of its use.⁸ And, on Williamson’s view, what goes for understanding the word ‘see’ goes equally for grasping the concept *see*. If someone understands the word ‘see’, she understands the concept it expresses: the concept *see*.

So, just as she can understand the word ‘see’ without accepting that seeing is a causal process, so she can grasp the concept *see* without accepting that seeing is a causal process. Of course we could decide to individuate concepts in some other way; and some ways of individuating concepts would indeed make acceptance of the causal thesis a necessary condition for grasp of the concept *see*. But, Williamson argues, we would need an intellectually respectable rationale for individuating concepts that way, and it is hard to see what that rationale would be.⁹

Williamson’s argument is extremely plausible. It is easy to produce actual or imaginary examples of people who plainly possess the concept of vision, but who hold views about vision on which there is no causal relation running from an object to the subject who sees it. For example, we can imagine someone accepting a ‘searchlight theory’ of vision. She thinks that the eye sends out visual ‘rays’ that range over the objects in one’s environment. When an object lies in the path of these visual rays, the person’s mind encompasses the object and she sees it. On this view, vision is a causal process; but the causality runs from the perceiver to the object, rather than the other way round. Or again, philosophical occasionalists hold that the objects we see do not themselves cause the experiences we have when we see things: they are only the occasions for God to produce those experiences in us. It is overwhelmingly plausible to say that the searchlight theorist and the occasionalist have the concept of vision. After all, they know what vision is; they can identify cases of seeing as well as any one else, and distinguish seeing from not seeing. They understand the causal claim about vision – which, of course, they reject. Their own false theories are clearly false theories *about vision*. Given all that, it would be implausible to say that the searchlight theorist and the occasionalist do not grasp the concept of vision. But they reject the causal theorist’s claim that seeing something involves being causally affected by it. So, it seems, grasping the concept of vision does not require accepting the causal claim.

How should the causal theorist respond? The right response, I think, is to give up the idea that one cannot grasp the concept of vision without accepting that vision is a causal process. What the causal theorist should be defending is a more modest claim: that our ordinary thought about vision is a form of causal thinking. A successful defence of that claim must do three things. It must say what it takes for someone to think of vision in causal terms, or to think of vision as a causal process. It must defend the claim that we do ordinarily think of vision as a causal process. And it must show that that way of thinking of vision is part of our naïve, intuitive view of the world, rather than being a feature only of a more sophisticated, scientific view of the world.

The causal theory, on this conception, is distinct from any scientific thesis about vision. No doubt there is no sharp distinction between our naïve, intuitive view of the world and a more sophisticated, scientific view of the world. But there is a distinction. And the causal theory is concerned with our naïve thinking about vision: the thinking involved when, for example, we consider what we and other people can or cannot see (‘Which of those two people is she seeing?’), ‘Can he see this thing from where he is standing?’), when we explain why we cannot see something (‘It’s too dark’, ‘It’s too far away’, ‘There’s something in the way’), when we explain why it looks as if things are thus-and-so, and so on. We can engage in that thinking without having any scientific knowledge about the causal processes involved in seeing –about light waves, optic nerves, the visual cortex, and so forth. The point of the causal theory, on the current conception, is that this ordinary thinking is a form of causal thinking. That is analogous to the claim that our naïve thought about the behaviour of

physical objects is a form of causal thinking; or to the claim that our naïve thought about the growth of plants is a form of causal thinking. In both of those cases, too, we can distinguish our naïve thinking from more sophisticated, scientifically-informed thought. In both cases, we can engage in the naïve thinking without having any relevant scientific knowledge. And in both cases, it is a non-trivial claim that the naïve thinking is a form of causal thinking.

I have accepted that someone may have the concept of vision without holding that seeing something involves being causally affected by it. The searchlight theorist and the occasionalist are cases in point: they grasp the concept of vision; but they explicitly deny that we are causally affected by the objects we see. If we hold, with the causal theorist, that our ordinary thinking about vision is a form of causal thinking – that our ordinary thought represents objects as causally responsible for our perception of them – what are we to say about the searchlight theorist and the occasionalist? There seem to me to be two possibilities. (i) We might say that, though our ordinary, naïve way of thinking about vision is a form of causal thinking, it is possible for someone to think about vision in a different way, which does not represent our visual experiences as causally dependent on the things we see. So, in particular, the searchlight theorist and the occasionalist have ways of thinking of vision that do not so represent it. An analogous position concerning our thought about physical objects would be this: ‘Our naïve thought about the behaviour of physical objects is a form of causal thinking: when one object collides with another and sets it in motion, we think of the first object as causing the movement of the second; when a ball hits a window and the window breaks, we think of the ball as causing the window to break; and so on. But there could in principle be ways of thinking about these kinds of relations that did not represent them in causal terms; for example, a way of thinking that represented events of the relevant kinds as constantly conjoined without representing them as causally related.’ (ii) We might, instead, take a more ambitious view. In thinking of something as a case of vision, we might say, one thereby thinks of it in causal terms. The searchlight theorist and the occasionalist have theories of vision that explicitly deny that seeing something involves being causally affected by it. Nonetheless, their basic, ground-level thought about vision still represents it in causal terms. So there is a tension in these theorist’s thought: their explicit theory of vision denies that it has a feature that their ordinary thought about vision represents it as having. An analogous proposal in a different area would be this: ‘When one thinks of x as breaking y , one thereby thinks of x as causing y to break. Nonetheless, someone may have a bizarre theory that denies that x ’s breaking y involves x ’s causally affecting y . Perhaps she is an occasionalist: x does not causally affect y ; it is simply the occasion for God to produce a change in y . Or maybe she thinks that what happens when x breaks y is this: y spontaneously disintegrates and draws x into contact with it. Such a person has the concept of breaking: she can pick out cases of breaking, and her use of the word “break” passes muster in the community. But there is an internal tension in her thought: in thinking that x breaks y , she represents x as causally affecting y ; but her explicit theory of breaking denies that x ’s breaking y involves x ’s causally affecting y .’

This second, more ambitious, view seems right for the case of breaking; in representing something as a case of x ’s breaking y one really is thereby representing it as a case of x ’s causally affecting y . But I am inclined to think that the first, less ambitious, view is more plausible for the case of seeing. That is to say, it is possible to represent S as seeing o without representing S as being causally affected by o . My reason for distinguishing the two cases in that way is the following. Suppose the

bizarre theory about breaking turned out to be true: suppose that, in cases that we ordinarily call ‘instances of x breaking y ’, what happens is not that x causes y to break; instead, y spontaneously disintegrates and draws x into contact with it. What we would have discovered would not be that the process of one thing’s breaking another was very different from what we had thought: that it did not, after all, involve x causally affecting y . Rather, we would have discovered that the cases we ordinarily regard as ones in which x breaks y are not cases of x ’s breaking y at all. But things seem different for the case of vision. Suppose the searchlight theory or the occasionalist theory of vision turned out to be true: it turns out that, in cases that we ordinarily regard as instances of a person’s seeing an object, there is no causal relation running from object to perceiver. Should we conclude that these cases that we ordinarily regard as instances of seeing have turned out not to be instances of seeing at all? Or should we rather conclude that, contrary to what we ordinarily thought, seeing something turns out not to involve being causally affected by it? My own sense is that this latter view is more plausible. But if that is right, then it is not true that, in representing something as a case of someone’s seeing an object, one cannot fail to be representing it as a case of the object’s causally affecting the person.

Some philosophers would object that, if we concede this much, then we are no longer defending a philosophical causal theory of vision. Once we allow that someone may have the concept of vision without accepting that seeing something involves being causally affected by it, the objector will say, and once we allow that someone may represent something as a case of vision without thereby representing it as involving causation, all we are left with is the claim that our ordinary, pre-theoretical way of thinking about vision does as a matter of fact represent vision as involving the causal dependence of our experiences on the things we see. And, it may be said, there is nothing philosophical about that: it is just an empirical claim about the way we think. I do not agree that the concessions I have made leave us defending a claim with no philosophical content. For one thing, the question, what it takes for a given way of thinking to be a form of causal thinking, is not an empirical question; it is a distinctively philosophical question. And in considering whether our ordinary thought about vision is a form of causal thinking, part of what we are considering is precisely that question. For another thing, the project of charting the most general features of our conceptual scheme – the project of descriptive metaphysics – has a distinguished history as part of philosophy. It is no shame for the causal theory of vision to be part of such a project.

The causal theorist claims that our ordinary, pre-theoretical thought about vision is a form of causal thinking. What can be said in favour of that claim? Consider, for example, how we tell which of two similar objects someone is seeing. We move them about, one at a time, and see which movement makes a difference to the person’s experience. That procedure, the causalist says, is exactly the same as the procedure we adopt in any other case where we are testing which of two things produce a given effect. Suppose we want to know which of two switches controls the light. We press each in turn, and see which of them makes a difference to the state of the light. In that case, we are testing for the presence of a causal relation. And the same is true in the case of vision; testing which thing S is seeing is testing which thing is causally affecting S : which thing is causally responsible for S ’s experience. Similarly, the causalist says, thinking about vision involves thinking about the enabling and defeating conditions of vision. When we think about vision, we do not just have thoughts of the form ‘I am seeing x ’, or ‘She is seeing y ’. We also think about what we and others can and cannot see: ‘She can’t have seen the object, because

it wasn't there, or it was too far away, or there was something in the way, or the room was too dark'; 'This must be the object she was seeing because this is the one that was in her line of sight'; and so on. And these enabling and defeating conditions are causal conditions: they are conditions on an object's causally affecting a person. Reasoning of this sort about vision is ubiquitous in our ordinary thought. And, the causalist says, in reasoning in these ways, we are engaged in causal reasoning – just as we are engaged in causal reasoning when we think that it cannot have been the ball that broke the window because the ball is too light, or because it did not hit the window sufficiently hard, or because something stopped it hitting the window at all.

The non-causalist rejects this argument. She agrees that vision is a causal process; that, she thinks, is an undeniable empirical truth. But she denies that our ordinary, pre-theoretical thought about vision represents it as a causal process. Similarly, she agrees that, in reasoning about the enabling and defeating conditions of vision, we are reasoning about what are in fact causal conditions. But she denies that we ordinarily represent those conditions as causal conditions. All that is built into our ordinary thought, she suggests, is a set of simple principles about the conditions under which one can see things: one cannot see something if it is not there, or if it is too far away, or if it is blocked from view, or if it is too dark, and so on. We accept those principles about vision and we reason in accordance with them. But it is no part of the pre-theoretical scheme that these principles have anything to do with causation. Similarly, when we test which of two objects someone is seeing, we are in fact testing for the presence of a causal relation. But we do not ordinarily think of what we are doing in those terms.

What should the causal theorist say in response? An ambitious causalist might respond that it is just not possible to think about the enabling and defeating conditions of vision in non-causal terms; in representing them as enabling and defeating conditions of vision, one is perforce representing them as causal conditions for someone's seeing something. But I shall not defend that view. My causal theorist thinks that, though our ordinary pre-theoretical thought about vision is a form of causal thinking, it is possible for someone to represent something as a case of *S*'s seeing *o* without thereby representing it as a case of *o*'s causally affecting *S*. And likewise for the enabling and defeating conditions of vision. For her part, the non-causalist insists that our ordinary, naïve thought about vision does not represent it in causal terms. But she will agree that it is possible to think of vision in causal terms, and to do so without adopting a distinctively scientific viewpoint. For we can know that objects are *causally* involved in our seeing them simply on the basis of our naïve experience of the world, without engaging in science – just as we may know on the basis of ordinary experience that moisture, light, and soil are causally involved in the growth of plants.

At this stage, the debate between the causalist and the non-causalist may seem to degenerate into an uninteresting verbal dispute about what to count as our ordinary pre-theoretical thinking about vision. The causalist agrees that vision *can* be thought of in non-causal terms; the non-causalist agrees that it *can* be thought of in causal terms; they simply disagree about which way of thinking is the ordinary, naïve, pre-theoretical way of thinking about vision. I think that view of the debate is too pessimistic. There is, as I have already said, a substantive philosophical issue about what it takes for a kind of thinking to count as causal thinking. The lower we set the threshold for something to count as genuinely causal thinking, the easier it will be to show that our ordinary thought about vision is a form of causal thinking, and the more plausible the causalist's position will be. The higher we set the threshold, the harder it

will be to show that our ordinary thinking is a form of causal thinking, and the stronger will be the non-causalist's position. But we do not have a free hand to set the threshold wherever we want: there are plausible and less plausible views about what it takes for something to be a form of causal thinking. We should look for the best view of what causal thinking involves. Having done that, we may find that it is quite clear that our ordinary thought about vision qualifies as causal thinking, or that it does not. My own view is that our ordinary thinking about vision plainly is a form of causal thinking.

What, then, does it take for a kind of thinking to qualify as causal thinking – for it not merely to represent phenomena that are causal, but to represent them as causal? I have only a preliminary and sketchy answer to offer to that question. But I offer the following suggestion.

In the first place, it is overwhelmingly plausible that the concept of cause is basic and unanalyzable. That means that we cannot give a completely non-question-begging explanation of what it takes for our thinking about some domain to be a kind of causal thinking. We might say, for example, that in order for someone to represent the relation between *x* and *y* as a causal relation, she needs to represent *x* as bringing *y* about, or influencing or affecting *y*. But, while those formulations may be true, and while they may be helpful in reminding us what causal thinking involves, they do not give us an *analysis* of what it takes to be thinking in causal terms: for the notions of ‘bringing about’, ‘influencing’, and ‘affecting’ are themselves causal notions.

Second, a concept may be a causal concept – it may represent the relations it picks out as causal relations – even if those who possess the concept do not possess any general concept *cause* that they are prepared to apply in every case in which they apply one or another more specific causal concept. In practice, it seems clear that children do grasp all-purpose, domain-general causal and causal-explanatory concepts like ‘make’ and ‘because’ at an early stage. But there seems no reason in principle why it should not be possible for a child to grasp a range of specific causal concepts – such concepts as *crush*, *break*, *spill*, *sting*, *wash*, *switch on* and so forth – and to use those concepts in thinking about phenomena in genuinely causal terms, without having any more general causal concept that she can use to classify these specific kinds of causal action or causal process as instances of the same general kind – i.e. as instances of causation.

What, then, makes these concepts causal concepts? What makes the thinking that employs them causal thinking? Strawson writes:

‘cause’ is the name of a general categorial notion which we invoke in connection with the explanation of particular circumstances and the discovery of general mechanisms of production of general types of effect (Strawson 1985, 135).

On this view, what makes a concept a causal concept is just that it has to do with explaining why something happened; why an event or state of affairs occurred, or came about, or persisted; what produced some event or state of affairs; why a particular thing behaved as it did, or why that kind of thing generally behaves as it does; and so on. That is a very plausible view. And by that standard, what makes our ordinary thinking about vision a form of causal thinking is that the ‘because’ in our reasoning about seeing (‘She couldn’t see it because it was too far away’, and so on), has to do with the explanation of why something happened (or did not happen). In our ordinary thought about vision, we are concerned with the occurrence or non-occurrence of natural phenomena: someone’s seeing this, or failing to see that. In the same way, when we reason about the enabling and defeating conditions of vision, we

are reasoning about why something happened or persisted, or why something of a certain sort failed to happen. That is enough for this reasoning to be a form of causal reasoning.

3. Psychologists’ Understanding of Causal Understanding

We have been considering whether our naïve, pre-theoretical thought about vision is a kind of causal thinking. In this connection, I want to consider work from developmental psychology on questions of exactly that form, about the nature and acquisition of causal understanding. I can only scratch the surface of that work here. But even a brief and incomplete comment on some psychological literature will be helpful from a philosophical point of view – as well as raising questions about some claims that have been made in the developmental literature.

In the psychological literature, the phrase ‘causal understanding’ is used with at least two different senses. In some cases, psychologists who consider the question, whether *S* has a causal understanding of *x*, are considering whether *S* represents or thinks of *x* in causal terms. In those debates, the question ‘Does our thought about *x* involve a causal understanding of *x*?’ is equivalent to my question, ‘Is our thought about *x* a form of causal thinking?’ In other cases, psychologists who ask whether *S* has a causal understanding of *x* are asking whether *S* knows, or understands, the kinds of causal processes involved in *x*. To have a causal understanding of something in this second sense one must have a causal understanding in the first sense too: one cannot have knowledge of the causal processes that produce something without thinking of that thing in causal terms. But the opposite is not true: one could on the face of it think of the relation between *x* and *y* as a causal relation without knowing anything at all about how *x* produces *y*.

Susan Carey’s work on naïve biology provides an example of this second use of the phrase ‘causal understanding’.¹⁰ Her aim is to show that naïve biology is a much later-developing element in our thinking than either folk psychology or naïve mechanics. These latter, she argues, unlike naïve biology, are ‘core cognitive modules’. Part of Carey’s argument is that someone only qualifies as having a naïve *biology* if she has a causal understanding of biological processes. And, she maintains, a causal understanding of biological processes is lacking even in children as old as 6 or 7 years old. She writes:

Until the child has constructed an intuitive theory of how bodily processes mediate between eating and growth, or eating and becoming fat, knowledge of mere ‘input-output’ relations does not constitute causal understanding . . . It is unlikely that the pre-school child knows of any biology-specific causal mechanisms relevant to bodily phenomena; these may just be facts that the child has observed about his and others’ bodies. Animals and people grow, the heart beats, we become sleepy even if we want very much to stay awake, etc.’ (Carey 1995, 284-5)

The child who does not know of any biological causal mechanisms, then, does not have ‘causal understanding’ of the relation between eating and growth.

But Carey does not think that that one needs a theory of the causal mechanisms relevant to bodily growth in order to think of the relation between eating and growth as a causal relation at all. She is happy to allow that someone can think of a relation as a causal relation even if she has no idea at all of any mediating causal mechanisms. She writes, for example:

knowledge about the relation between eating and growth. . . . may be mere knowledge of an input-output relation, such as knowledge that turning on a light switch *causes* a light to go on. Such knowledge is probably acquired through being told about input-output relations explicitly (‘If you don’t eat your vegetables, you won’t grow into a big strong girl . . .’). . . The pre-school child has no clue as to any bodily mechanism which mediates between eating and growing (Carey 1995, 286-7, my emphasis).

Or again:

pre-school children’s understanding of disease, like their understanding of . . . growth and bodily processes, is limited to knowledge of input-output relations – dirt, poisons, going outside with no coat on, and germs *cause* disease (Carey 1995, 292, my emphasis).

In these examples, Carey treats knowledge of ‘input-output’ relations as causal knowledge. So when she says that the pre-school child lacks ‘causal understanding’ of the relation between eating and growth, she does not mean that the child does not think of the relation between eating and growing as a causal relation at all. She is talking about causal understanding in the second of the two senses distinguished above: knowledge of causal mechanisms.

But what about the other sense of causal understanding? Carey allows that knowledge of an input-output relation may be causal knowledge. But what makes it causal knowledge rather than mere knowledge of an association? Could there be a stage in a child’s development at which she grasps that eating is associated with growth, and extrapolates that association to new cases (if A eats, he will grow; if B does not eat, he will not grow); but at which she does not think of the association in causal terms at all? If not, why not? But if there could be such a stage, what makes it the case that a child at a later stage of development is engaging in causal thinking rather than merely thinking about regularities?

These questions receive some treatment in an interesting literature about infants’ perception of causation, which explores the extent to which very young infants perceive interactions of various kinds as causal interactions.¹¹ The primary focus of this work is the *perception* of causality, rather than the more general issue of what it is to *represent* a relation as a causal relation. But work on the perception of causation must take a position on the more general question. For in order to explore the extent to which infants perceive certain relations as causal relations, we must know what it takes for a perception to have causal content; and answering that question requires some answer to the question, what it takes for representations in general to have causal content.

I want briefly to explore some issues about the bearing of this work on our earlier discussion of the causal theory of vision. I focus on the overview offered in Saxe and Carey’s paper, ‘The perception of causality in infancy’ (Saxe and Carey 2006).

Saxe and Carey accept, for the sake of argument, the view taken by Michotte (whose work they are discussing): that we have an innate representation of cause.¹² Their own view is that it is an empirical question whether or not the representation of cause is innate. But, they think, it is a live possibility, compatible with current evidence, that ‘representations with the content *cause* [are] innate’ and are ‘part of a central conceptual system that integrates information’ provided by different sources of information about causality (Saxe and Carey 2006, 163). Even if our concept of cause is innate, we can still ask what makes that concept a concept *of causality*. Possible answers to that question would include that the innate representation is a

representation of *causality* in virtue of being reliably triggered by exposure to causal relations; or in virtue of its biological function; and so on. But Saxe and Carey do not address that question. So as far as their 2006 paper goes, all we are told about what it takes for someone to represent a relation as a causal relation is this: to represent a relation as a causal relation is to represent it in a way that employs one's innate *cause* representation. The main focus of their discussion is the question, what reason we have for thinking that infants do represent events of various kinds in causal terms: Do the experimental data support the claim that infants represent the world in causal terms? Or are the data consistent with the hypothesis that infants represent the world only in some more basic, non-causal way?

The psychological literature that Saxe and Carey bring together does not, then, directly address the question, what it takes for our thinking about some domain to be a form of causal thinking. But it may still deliver insights that are relevant to our question. For one thing, we can infer something about what psychologists take causal representation to involve from what they regard as strong evidence for the presence of such representation. For another thing, if we are convinced by psychologists' case for saying that infants as young as 6 or 7 months old do represent their environment in causal terms, that will imply that the threshold for a representation's counting as a causal representation is relatively low. That in turn will make it easier to show that the causal theorist is right to say that our ordinary, pre-theoretical thought about vision represents seeing in causal terms.

Saxe and Carey argue that the studies they review do indeed 'suggest that young infants (by 6-7 months of age) perceive and interpret' events of various kinds causally (Saxe and Carey 2006, 162). What evidence do those studies provide?

There are simple situations that adults reliably perceive in causal terms: e.g. when adults are shown a scene in which an object, A, approaches and makes contact with another object, B, and then B immediately moves off, they reliably perceive this as A's causing B to move – as A's 'launching' B. Other similar situations are not perceived by adults as involving causality: e.g. if A approaches B but stops before it makes contact, whereupon B starts moving, we do not see A as launching B; and similarly in cases where A does come into contact with B but there is a short delay before B starts moving. Taking sets of cases like these, experimentalists then ask whether infants reliably distinguish between the kinds of events that adults perceive as launching events and the kinds of events that adults do not perceive as launching events. If infants do make such a distinction, that is taken as evidence that, like adults, they perceive the relation as causal in the first kind of case but not the second.

However, as Saxe and Carey observe, the fact that infants make such a distinction is not by itself conclusive evidence. For infants might perceive the two kinds of case differently without the difference in the contents of their perceptions being a *causal* difference. 'The challenge for researchers remains to show that infants perceive these events in terms of *caused* motion (rather than merely predicted motion)' (Saxe and Carey 2006, 151). They argue, however, that the hypothesis that infants do indeed perceive such events in causal terms is strongly supported when we take account of further evidence. I shall mention two of the kinds of evidence Saxe and Carey cite.

First, 'infants categorize different spatiotemporal patterns together on the basis of whether they specify a causal interaction or not' (Saxe and Carey 2006, 151). That is to say, infants distinguish events that adults perceive as launching events from events that adults perceive non-causally; but they do not distinguish amongst the different kinds of events that adults perceive non-causally (those where A stops before

it hits B; and those where A hits B but there is a delay before B starts moving).¹³ That, it is said, shows that the difference between causal and non-causal cases is in itself a salient difference for infants. And that in turn, say Saxe and Carey, is evidence that they are representing the causal cases in terms of causality.

Second, a range of experiments show that infants have a ‘systematic and pervasive sensitivity to the dispositional causal status of the entities involved in the interactions’ they observe (Saxe and Carey 2006, 162). That is to say, their expectations about the behaviour of objects involved in events of various kinds – including the kinds of launching events described above – are sensitive not just to the objects’ spatiotemporal properties, and not just to physical properties such as size and weight, but also to the kinds of objects they are. For instance, if A and B are inanimate objects, infants are surprised by scenes in which A moves towards B, stops without hitting B, and B then starts moving. But if B is a person, infants are unsurprised by that sequence of events. The obvious explanation is that infants are sensitive to the fact that people but not inanimate objects have the capacity to move themselves.¹⁴ The fact that infants’ expectations are sensitive in quite subtle ways to the effects of combining a range of causally relevant properties, argue Saxe and Carey, provides further evidence that infants have representations with causal content. This sensitivity, they write:

bolsters our interpretation that infants are reasoning causally – they are reasoning about the causes of motion of entities, and consider that the motion of dispositionally inert objects must be caused by contact with a moving entity, and that dispositional agents are better candidate causes of motion than are dispositionally inert objects (Saxe and Carey 2006, 162).

The studies that Saxe and Carey describe are certainly suggestive. But I want to register a note of caution; do the data Saxe and Carey cite really demonstrate that young infants represent the world in causal terms?

The studies Saxe and Carey discuss do show that infants are sensitive to more than just constant conjunction: for infants distinguish constant conjunctions that adults represent in causal terms from non-causal conjunctions. And they show that the expectations infants form are sensitive to the interactions of a range of causal factors, in a fairly complex and subtle way. But does that give us compelling reason to think that infants represent those factors as causal factors? Couldn’t an infant form all the expectations that Saxe and Carey describe, and be sensitive to all the features they mention, without yet representing these interactions as causal interactions? Carey warns elsewhere against what she calls the ‘fallacy of theory-laden attribution’.¹⁵ She says, for example, that it is a fallacy to infer from the fact that pre-school children distinguish animals from other things that they have the concept *animal*. But isn’t it equally fallacious to infer, from the fact that infants distinguish causal relations from non-causal ones, that they have the concept *cause*? I raise this point not as a serious argument against Saxe and Carey’s view but as a challenge to be answered – and as a request for more discussion and more justification. Without a fuller account of what it takes for a representation to be a causal representation, my suspicion is that they set the standards for causal representation too low.

Suppose, however, that we accept Saxe and Carey’s argument for the conclusion that infants as young as 6 or 7 months old represent the behaviour of animate and inanimate objects in causal terms. What if anything would that suggest about the issue we have been discussing: whether our ordinary thought about vision is a form of causal thinking? Saxe and Carey do not address that issue. But their position, applied to the case of vision, would undercut the non-causal view. The non-

causalist holds that our ordinary thought about vision involves the mastery of enabling and defeating conditions. She accepts that these conditions are in fact causal conditions; conditions for the causal production or prevention of an effect. But, she says, one can grasp and manipulate those conditions without thinking of them as causal conditions. So our ordinary thought about vision is not essentially causal. If we adopt Saxe and Carey’s approach, however, that position seems untenable. The non-causalist agrees that we reliably classify instances as cases of seeing or not seeing; and she agrees that, in doing so, we are sensitive to the interactions of a varied and complex range of causal factors. On Saxe and Carey’s approach, however, that in itself is compelling evidence that our ordinary thought involves representations with causal content – that it is a form of causal reasoning. To defend her position, therefore, the non-causalist needs to set out and justify a different and more demanding standard of what it takes for a representation to be a causal representation.

My own view, as I have said, is that Saxe and Carey do set the standard for causal representation too low. But, as I argued in section 2, even when we adopt a higher standard of what is involved in causal thinking, it remains the case that our ordinary thinking about vision is a form of causal thinking.¹⁶

REFERENCES

- Carey, Susan (1995) ‘On the origin of causal understanding’, in Sperber, Premack and Premack 1995.
- Child, William (1992) ‘Vision and Experience: The Causal Theory and the Disjunctive Conception’, *Philosophical Quarterly*, 42, 297-316.
- Child, William (1994) *Causality, Interpretation, and the Mind*, Oxford: Oxford University Press.
- Grice, H. P. (1961) ‘The Causal Theory of Perception’, *Proceedings of the Aristotelian Society, Supplementary Volume*, 35, 121-168.
- Leslie, A. (1982) ‘The perception of causality in infants’, *Perception*, 11, 173-86.
- Leslie, A. and Keeble, S. (1987) ‘Do six-month-old infants perceive causality?’, *Cognition*, 25, 265-88.
- Michotte, A. E. (1963) *The Perception of Causality*, transl. T. R. Miles & E. Miles, London: Methuen.
- Oakes, L. and Cohen, L. (1990) ‘Infant perception of a causal event’, *Cognitive Development*, 5, 193-207.
- Saxe, R. and Carey, S. (2006) ‘The perception of causality in infancy’, *Acta Psychologica*, 123, 144-65.
- Snowdon, Paul (1981) ‘Perception, Vision and Causation’, *Proceedings of the Aristotelian Society*, 81, 175-92.
- Snowdon, Paul (1990) ‘The Objects of Perceptual Experience’, *Proceedings of the Aristotelian Society, Supplementary Volume*, 64, 121-50.
- Spelke, E., Phillips, A. and Woodward, A. (1995), ‘Infants’ knowledge of object motion and human action’, in Sperber, Premack and Premack 1995.
- Sperber, D., Premack, D and Premack, A. (1995) *Causal Cognition: A Multidisciplinary Debate*, Oxford: Oxford University Press.
- Steward, Helen (2011) ‘Perception and the Ontology of Causation’, in N. Eilan, H. Lerman & J. Roessler (eds) *Perception, Objectivity and Causation*, Oxford: Oxford University Press.
- Strawson, P. F. (1974) ‘Causation in Perception’, in his *Freedom and Resentment*, London: Methuen.
- Strawson, P. F. (1979) ‘Perception and its Objects’, in G. F. Macdonald (ed) *Perception and Identity*, London: Macmillan.
- Strawson, P. F. (1985) ‘Causation and Explanation’, in B. Vermazen & M. Hintikka (eds) *Essays on Davidson: Actions and Events*, Oxford: Oxford University Press.
- Williamson, Timothy (2007) *The Philosophy of Philosophy*, Oxford: Blackwell.

NOTES

- ¹ See Snowdon 1981. The argument is further explored in Snowdon 1990.
- ² See Child 1992. A revised version appears as chapter 5 of Child 1994.
- ³ In the first place, the fact that an object can exist without being seen is already sufficient to satisfy any legitimate requirement that causes and effects must be distinct existences (a point that I noted, but did not sufficiently stress). In the second place, the version of physicalism we get from this suggestion construes a visual experience as an event or state of affairs *in S*; on this view, the phrase ‘*S*’s seeing *o*’ picks out an inner event in terms of its cause. But, on a whole-heartedly disjunctive view, the experience *S* has when she sees *o* is not an inner event; it is a relational state of affairs of which *o* is a component. And a relational state of affairs cannot be shown to be independent of its cause by being redescribed in physical terms; however we describe that state of affairs, its existence requires the existence of the object.
- ⁴ See Child 1994, 115-16, 159.
- ⁵ See Child 1994, 116, 75.
- ⁶ The quoted passage focused on the causal theory of memory rather than the causal theory of vision. But the same considerations apply in each case.
- ⁷ See Williamson 2007, chapter 4.
- ⁸ Williamson 2007, 90.
- ⁹ For more detail, see Williamson 2007, chapter 4, part 5.
- ¹⁰ See Carey 1995.
- ¹¹ For two early contributions to that literature, see Leslie 1982, and Leslie and Keeble 1987. For a comprehensive recent survey, see Saxe and Carey 2006.
- ¹² Saxe and Carey 2006, 148. For Michotte’s work, see Michotte 1963.
- ¹³ Saxe and Carey cite Oakes and Cohen 1990.
- ¹⁴ See Spelke, Phillips, and Woodward 1995.
- ¹⁵ Carey 1995, 279-80.
- ¹⁶ Earlier versions of this paper were presented at the Warwick Workshop on Understanding Perception and Causation in April 2007, and at the Catz Work in Progress Group. I am extremely grateful to the participants in those discussions, and to an anonymous referee, for very helpful comments.