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Perceptual Causality, Counterfactuals, and Special Causal Concepts

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On one view, an adequate account of causal understanding may focus exclusively on what is involved in mastering general causal concepts (concepts such as ‘ x causes y ’ or ‘ p causally explains q ’). An alternative view is that causal understanding is, partly but irreducibly, a matter of grasping what Anscombe called special causal concepts, concepts such as ‘push’, ‘flatten’, or ‘knock over’. We can label these views generalist vs particularist approaches to causal understanding. It is worth emphasizing that the contrast here is not between two kinds of theories of the metaphysics of causation, but two views of the nature and perhaps source of ordinary causal understanding. One aim of this paper is to argue that it would be a mistake to dismiss particularism because of its putative metaphysical commitments. I begin by formulating an intuitively attractive version of particularism due to P.F. Strawson, a central element of which is what I will call naïve realism concerning mechanical transactions. I will then present the account with two challenges. Both challenges reflect the worry that Strawson’s particularism may be unable to acknowledge the intimate connection between causation and counterfactuals, as articulated by the interventionist approach to causation. My project will be to allay these concerns, or at least to explore how this might be done. My (tentative) conclusion will be that Strawson’s naïve realism can accept what interventionism has to say about ordinary causal understanding, and that interventionism should not be seen as being committed to generalism.

1 Special Causal Concepts and Perception

Suppose you observe a boulder rolling down the mountainside and flattening the wooden hut in its path (Strawson, 1992: 118) We can ask two questions about the causal judgement you are likely to make as a result of this experience. What is the content of your judgement? And what is its basis or source?

The standard answer to the first question is that your judgement will be of the form ‘*x* causes *y*’ and will involve reference to two observed events. It is in these terms that ‘perceptual causality’ tends to be characterized both in the psychological and in the philosophical literature. For example, according to Schlottmann and Shanks, in a Michottean launch event ‘successive motion of two objects appears to evoke an immediate perception that the first motion caused the second’ (1992: 321). Turning to the second question, the familiar problem here is what to make of the idea that it is ‘immediate perception’ that gives rise to the judgement. One reason why the idea can seem hard to take very seriously is this: to say that the relation between the two events is causal is to say that it is not a mere correlation. It is not just, for example, that the two events occur as the result of a common cause. Let us call the question whether an observed sequence of events is related as cause and effect, or whether it is a mere correlation, the *causal question*. Now what should count as an adequate basis for answering the causal question arguably depends on what the difference between causes and correlations amounts to or consists in. An attractive approach to this latter question is that the difference has to do with the correctness of certain counterfactual conditionals. As Hume said, ‘if the first object had not been, the second never had existed’ (Hume, 1975: 76). The idea has recently been given an authoritative formulation by the interventionist analysis of causation. Very briefly, the suggestion is that the difference between causal relations and mere correlations turns on the correctness of suitable ‘intervention counterfactuals’, to the effect, roughly, that had there been an intervention on the value of the cause variable this would have made a difference to the value of the effect variable. Given this analysis, the problem then is that it is difficult to see how you can extract information about the correctness of such counterfactuals from observation of a sequence of events in a single case, unless of course perception simply supplies some relevant input to your theorizing about the situation. In that case, though, it would be misleading to characterize the basis of your judgement as ‘immediate perception’.

Strawson rejects the standard answer to the first question. In its place he recommends the following alternative: you will judge that *the boulder flattened the hut*. Does this alternative answer to the first question (concerning the content of your judgement) make a material difference to the way we should think about the second question (concerning its basis)? Strawson certainly thinks it does. In this section I want to set out in some detail his position, its commitments, and some of the concerns that motivate it. In the next two sections, I will further probe his claim about the bearing of his account on the second question.

Strawson’s account of the content of our judgement differs from the standard picture in two respects. First, on his account, your judgement involves not the general concept of causation but what Anscombe calls a special causal concept. Her famous list of such concepts includes the following: ‘scrape, push, wet, carry, eat, burn, knock over, keep off, squash, make (e.g. noises, paper boats), hurt’ (Anscombe, 1993: 93). Strawson characterizes such concepts as concepts of ‘kinds of action and transaction’ (1992: 116), of ‘varieties of bringing something about, of producing some effect or some new state

of affairs' (1992: 115). The second difference concerns the ontology of causation. While the standard picture takes your judgement to be about a causal relation between *two events* (the boulder colliding with the hut and the hut collapsing), on Strawson's reading, the judgement is about a causal transaction between two *physical objects* (the boulder and the hut), where the causal transaction constitutes a *single event* (the boulder flattening the hut) that causally explains a certain fact or state of affairs (that the hut has been left flat). We might call the two positions on the first question the two events view and the single event view, respectively.

As we saw, on the two events view, the perplexing feature of 'perceptual causality' is that 'immediate perception' *appears* to yield an answer to the causal question, the question of whether the relation between two given events is causal or merely correlational. Strawson maintains that this way of thinking about the matter is misconceived: 'There is no question of dissolving the transaction into a sequence of states of affairs—a sequence of "distinct existences"—and wondering whether, or in virtue of what, the sequence constitutes a causal sequence. One has observed the change being brought about in some characteristic mode' (1992: 116). The idea here is that a judgement about a causal transaction between two physical objects can intelligibly arise from 'immediate perception', given that in perception we may be aware of the (single) event of the two objects interacting in a specific mode. The shift to special causal concepts and the single event view is not intended to explain how perception can provide the answer to the causal question. The idea, rather, is that the causal question *does not normally arise* when we perceive mechanical transactions among physical objects, and does not arise *because* we conceptualize the situation in terms of special causal concepts.¹

¹ It is important to distinguish Strawson's view from certain theories of causation that give a privileged role to mechanical processes. In an illuminating recent paper, James Woodward contrasts 'geometrical/mechanical' theories of causation with 'difference-making' theories. The former focus 'on cases in which there is a physical process connecting cause and effect and, more broadly, on phenomena that are mediated by contact-mechanical forces and in which spatio-temporal or geometrical relationships play an important role' (2011: p. 203f). The latter appeal to 'difference-making information', such as information on what happens to the effect under interventions on its putative cause. According to Woodward, the appeal of geometrical/mechanical theories, such as it is, is grounded, at least in part, in intuitions concerning 'perceptual causality': they promise to make the possibility of perceptual knowledge of causal relations less perplexing than it would be under a difference-making account. Now there are two reasons it would be mistaken to group Strawson's particularism with geometrical/mechanical theories of causation in Woodward's sense. First, Strawson is not primarily concerned with the metaphysical issue of the nature of causation (which is what both of the two kinds of theories Woodward distinguishes are about) but with the source of ordinary causal understanding. Second, on Strawson's view, we cannot get the source of causal understanding right if we focus exclusively on the general concept of causation. His emphasis on mechanical transactions is an emphasis on a particular class of *special* causal concepts.

Admittedly, Strawson suggests that the fundamental role of such concepts in our causal thinking may account for certain psychological facts about us; for example, our reluctance to countenance action at a distance, or our tendency to seek to assimilate causal phenomena in other areas to the case of mechanical transactions—intuitions that might be invoked in support of geometrical/mechanical theories of causation. But I think this part of Strawson's discussion is intended to be an exercise in psychology, not metaphysics (and it is anyhow something of an afterthought). It is not a commitment of Strawson's view that causation in general has to be conceived on the model of mechanical transactions.

One ingredient of the view Strawson is recommending here might be called naïve realism about mechanical transactions. This involves both phenomenological and epistemological commitments, and indeed commitments concerning the relation between experience and knowledge. Thus a naïve realist may claim that mechanical transactions are visible in the sense that we have visual recognitional capacities for them. This does not require that such transactions are amongst the properties and relations of things that help to *constitute* the character of our visual experience of them, alongside shape, colour, orientation, motion, and so on. What it arguably does require is that our ability visually to recognize mechanical transactions is immediately *intelligible* to us in terms of the character of our visual experience, constituted by those lower-level properties. For example, we find your ability to tell that the boulder flattened the hut unmysterious in the light of the way things looked to you when you observed the transaction. (See Roessler, 2011 for a more detailed discussion of the relation between experience and recognitional capacities.) This picture goes beyond anything Strawson explicitly says; but I think it is in the spirit of his position.

Importantly, Strawson combines naïve realism concerning mechanical transactions with the rejection of naïve realism concerning causal relations between distinct events. Suppose you have become adept at switching back and forth between two ways of experiencing a Michottean launch phenomenon: you are able to see it now *as one event* (one object pushing away another object) and now *as a sequence of two events* (a collision between two objects followed by movement on the part of the second object). Then, on Strawson's view, in switching from the first to the second mode of experience there is a sense in which you disable yourself from perceiving causation. In seeing (as such) the single event of one object acting on another, you see a specific kind of causal transaction. In seeing the display as a sequence of two events you merely see two spatially and temporally related events: your perception will raise, but will not on its own be able to answer, the question of whether the sequence is a causal sequence. Now one of Strawson's claims is that this latter kind of experience is uncommon. To suggest otherwise, as the two event view does, is to 'atomize' and thereby 'falsify' the phenomenology of visual and tactual experience of mechanical transactions (1992: 118). The following analogy may help to clarify Strawson's thinking here. Elsewhere he argues that ordinary visual experience presents itself as an immediate experience of physical objects, objects that do not depend for their existence on being perceived. But he acknowledges the possibility of a radical Gestalt switch: 'An observer, gazing through his window, may perhaps, by an effort of will, bring himself to see... what he knows to be the branches of the tree no longer *as* branches at all, but as an intricate pattern of dark lines of complex directions and shapes and various sizes against a background of varying shades of grey' (1988: 90). The point of this concession is to bring out the contrast between this contrived mode of experience and ordinary perceptual consciousness, an adequate account of the character of which has to make use of concepts of physical objects. The dialectical role of this point is to help expose what Strawson regards as a fundamental distortion. The distortion consists in

misrepresenting our commitment to the existence of physical objects as a *theoretical* commitment, based on evidence supplied by perceptual experience. What this view assumes is that there can be a completely general question as to how the commitment is to be justified—and how the concepts that go into it may be acquired—on the basis of the more primitive deliverances of perceptual experience. However, given the actual character of our (ordinary, non-contrived) perceptual consciousness, such a question cannot arise: a commitment to the existence of physical objects is ‘given with the given’ (1988: 99). The analogous claim about causation is that uncompromising opponents of naïve realism misrepresent both the character of our ordinary experience of mechanical transactions and—connectedly—the status of commonsense realism about causation. They ‘atomize’ the way we experience mechanical transactions, and they regard our commitment to the reality of causation as the result of implicit or explicit reasoning about the causal question, relying on evidence and inference, rather than as something that is ‘given with the given’.

2 Interventionism

The task of assessing these arguments for naïve realism concerning mechanical transactions and physical objects, respectively, is well beyond the scope of this paper. (But I will come back to the relation between them in the next section.) In any case, I suspect the immediate concern prompted by Strawson’s version of naïve realism is not so much that it has no attractions as that it may be open to decisive objections. On Strawson’s view, our understanding of causation is embodied, partly but irreducibly, in our grasp of special causal concepts. This is what I called a particularist view of causal understanding. Those who are sceptical about this view do not deny that a great deal of causal thinking is done by the use of special causal concepts. But they see no explanatory value in focusing on such concepts when considering the question of what is involved in understanding causation. On the generalist view, an answer to that question has to draw on an analysis of the general nature of causation. Questions about ordinary causal understanding should be understood as questions about the way in which the metaphysical facts of causation are available to creatures capable of causal thinking.

Suppose that in filling in the generalist picture we take the interventionist analysis of the metaphysics of causation as our starting point. It seems to me that this would be an excellent choice, though there is no space to defend that choice or even to provide a detailed exposition of interventionism. (One rather quick way to motivate the choice would be to note how influential interventionism has been in recent work on causal understanding in both philosophy and psychology.) I take the core idea of an interventionist approach to causal understanding to be this:

INT-CU: To understand what it is for *X* to cause *Y* is to appreciate that were there to be an intervention on the value of *X* there would be a change in the value of *Y*.

Put loosely and intuitively, an intervention on X is a causal relation between some variable I and X such that I causes a change in the value of X in an ‘exogenous’ way—it takes complete control of X without affecting Y in any other way than through X . Leaving aside the critical issue of how to make that intuitive notion more precise (see Woodward (2003) for a sustained discussion), the question that matters in the current context is what is involved in ‘appreciating’ the entailment between causal claims and interventionist counterfactuals. It would be quite unsatisfactory to construe this as a matter of explicit propositional knowledge, if only because the notion of an intervention is a technical philosophical notion that can hardly be assumed to be familiar to all. A much more plausible suggestion is this. An interventionist account of causation seeks to illuminate the content of causal claims by articulating in a perspicuous manner the commitments we incur in making such claims. One shows one’s ‘appreciation’ of such commitments through the patterns of reasoning one accepts as relevant when establishing causal claims and when drawing out implications of causal claims. This is not the only way in which one might bring interventionism to bear on ordinary causal understanding. But it seems to me the most plausible model, and I think it is the one Woodward himself favours.² It is worth stressing that this model offers no reductive account of causal understanding, any more than interventionism offers a reductive account of the nature of causation. In both cases, causal concepts figure conspicuously in the analysis. For example, exploiting the affinity between the technical notion of an intervention and the commonsensical concept of manipulation, an interventionist is likely to argue that a basic way to manifest one’s possession of causal concepts is by appreciating the *practical* implications of causal claims, by acting intentionally on causes in order to manipulate their effects. In effect, what we are talking about here is the idea that causal understanding involves being able to appreciate certain *causal* implications of causal claims. It is by no means clear, though, that this should be seen as an objection to the commitment model. Intuitively, the model is neither trivial nor unilluminating. It is not obvious that a reductive account of causal understanding is compulsory.

We can distinguish two ways in which the interventionist account may put pressure on Strawson’s particularism. According to what I’ll call the manipulation challenge, there is a completely general connection between grasp of causal concepts (whether general or special causal concepts) and an appreciation of the implications of causal claims for purposes of manipulation. The particularist account, it may be said, fails to respect that connection. It should be rejected as an ‘impractical’ theory of causal understanding.³ According to what I will call the justification challenge, there is a mismatch between the *basis*, as construed by the particularist, and the *content* of causal claims. Even an ostensibly perceptual judgement about a particular boulder’s flattening a particular hut commits us to general counterfactual claims to do with certain features,

² See especially Woodward (2007).

³ See Woodward (2003: 30) for objections, under that heading, to a range of theories of causation (though not Strawson’s).

or the general types, of the objects involved. For causation implies a *reproducible* relationship between variables. It requires that changing the value of one variable is a way of manipulating the value of the other variable in certain kinds of circumstances. Moreover, it is in virtue of our understanding of some such type-causal claim that we are entitled to make counterfactual judgements about a particular case (e.g. that ‘if the first object had not been, the second never had existed’, or perhaps, would still exist). Given the counterfactual commitments inherent in the content of causal claims, it is wholly implausible that passive observation of a single causal transaction could provide an adequate basis for such claims.

I briefly mention an extreme line of response, though only to set it to one side. One might seek to make particularism immune to these challenges, by insulating special causal concepts and ‘actual causation’ from the sorts of commitments affirmed by the critic. Anscombe writes that ‘the word “cause” can be *added* to a language in which are already represented many causal concepts’ (1993: 93). This may be read—though perhaps the passage is open to more than one interpretation—as suggesting that special causal concepts are autonomous in this sense: their mastery is independent of, and prior to, grasp of causation in general. This, in turn, might suggest that such concepts are available independently of appreciating any general connection between causal claims and manipulation, contrary to the manipulation challenge. A similarly extreme response to the justification challenge would be to adopt a singularist approach to causation (also often associated with Anscombe), on which singular causal claims do not commit us to any type-causal claims at all.

I want to suggest, or at least explore the possibility, that particularism may be defensible without resorting to such heroic measures. In the next section, I discuss the manipulation challenge. In Section 4 I return to the—arguably more serious—justification challenge.

3 Causal Understanding and Manipulation

I take it to be common ground that claims couched in special causal terms have *a priori* determinable causal implications.⁴ That the boulder flattens the hut implies that the boulder brings about, or causes, a certain outcome or effect. Presumably this is the rationale for calling the concept ‘flatten’ a special *causal* concept in the first place. It is a further question whether possession of the concept requires knowledge, explicit or in some sense implicit, that the implication holds. I want to suggest that it is open to a particularist to accede to this requirement. To do so is not to accept the idea that mastery of a given special causal concept can be reduced to understanding causation in general, plus suitable non-causal material (grasp of some relevant spatial and temporal concepts, say). An alternative picture might be that the relation between understanding

⁴ I borrow this formulation from Paul Snowdon (2011).

special and general causal concepts is one of *mutual dependence*. One doesn't fully grasp what it means for one object to push or scrape or flatten another unless one recognizes the manipulationist implications of such interactions, showing one's appreciation of certain completely general commitments of causal claims.⁵ Still, one's understanding may have its source, in part, in one's observation of (and perhaps participation in) specific modes of interaction among physical objects.⁶

I want to bring out one way in which this reciprocal view bears on the development of causal understanding. Consider the question whether infants' engagement with Michotte-type launching phenomena, as probed in looking-time studies, should be interpreted as a manifestation of causal beliefs, i.e. possession of causal concepts. Leslie and Keeble (1987) hint at an affirmative answer. On their interpretation, their experimental work provides evidence that 'causal understanding' has 'its beginnings in a low level visual mechanism' (1987: 285). An interventionist response to this claim would be that the relation of what is probed in looking-time studies to propositional attitude psychology is no straightforward matter; and that manifestations of even the beginnings of causal understanding should be expected to include an appreciation of the implications of causal claims for manipulative activities. (See Woodward, 2011.) From the interventionist perspective, the development of causal understanding is inextricably bound up with the development of counterfactual reasoning, a minimal form of which may simply involve the use of future hypotheticals in practical reasoning. (See the papers by Woodward; Beck et al.; McCormack et al.; Perner and Rafetseder in this volume.)

The reciprocal view concurs with this line of response, but points out that this is entirely consistent with *rejecting* a second kind of interventionist comment on 'perceptual causality'. The second comment claims that counterfactual reasoning is required not just to grasp the essential *commitments* of causal claims, but to marshal the canonical *evidence* on which to base such claims. This second comment assumes that perception alone can provide no adequate basis to determine whether the relationship between two observed events is merely correlational or causal. It argues that the canonical method to settle this is to design and carry out a suitable experiment, with a view to obtaining evidence for the relevant interventionist counterfactuals. Put bluntly, on this view the case of observing mechanical interactions is not in principle different from the diffuse 'impression of causality' one might enjoy when opening the door at the same moment the light comes on. (See Schlottmann, 2001.) The difference is merely a psychological, not an epistemological matter. As Woodward writes, in certain cases

⁵ One reason particularists may be well-advised to resist Anscombe's autonomy claim may be the thought that understanding special causal concepts requires the ability to give causal explanations, and that the latter in turn requires some grasp of the completely general idea of one thing causally explaining another. I suspect Strawson would be sympathetic to this thought. He certainly emphasizes that directly observed causal transactions provide adequate causal explanations of their outcome.

⁶ The relation between the respective contributions of observation and participation in mechanical interactions as sources of causal understanding is an issue that would deserve more extensive discussion. Strawson focuses on the former, but also stresses the importance of the latter and of possible interconnections between the two.

‘the possibility that the relationship in question [is] merely correlational seems so unlikely that it is easy to overlook the point that a separate inferential step is required to move from the claim that two kinds of events are correlated to a claim about how one will respond under manipulation of the other’ (2003: 33). The reciprocal view maintains that this is to misrepresent the epistemic role of perceptual experience. Observing mechanical transactions does not present us with the question of how to understand the relationship between two events. For it does not present us with two events at all, but with the single event of an object pushing or flattening or squashing another object. Thus it may enable us to perceive without reliance on inference and experimental evidence *that* one object is pushing or flattening or squashing another. The development of causal understanding may be a matter, partly, of acquiring (or actualizing) the ability to perceive mechanical transactions as such.⁷ This is of course not to deny that an equally important aspect of that development is the ability to evaluate causal claims concerning less immediately accessible matters on the basis of experimental evidence.

A defender of the second sort of interventionist comment on ‘perceptual causality’ may well ask why we *should* treat ‘causal impressions’ of pushings and flattenings differently from perceptually induced hunches. Furthermore, even granting that the cases appear to be different, he may remind us of the justification challenge: how can perceptual experience on a single occasion provide an adequate justification for the characteristic counterfactual commitments of causal claims?

4 Dispositions and Their Grounds

Recall Strawson’s remark that in observing mechanical transactions, ‘there is no question of dissolving the transaction into a sequence of states of affairs—a sequence of “distinct existences”—and wondering whether, or in virtue of what, the sequence constitutes a causal sequence. One has observed the change being brought about in some characteristic mode’ (1992: 116). The fact remains, it might be said, that even if an observer does not address the causal question, even implicitly, but instead describes the situation by the use of special causal concepts, her judgement *commits* her to a certain answer to the causal question. The judgement ‘the boulder flattened the hut’ commits one to the obtaining of a causal relation between two events, the observed collision and the attendant collapse of the hut. And to claim that the relationship between these events is causal rather than merely correlational is to be committed to the correctness of counterfactuals concerning *reproducible* relations between interventions on the first *type* of event and changes in the second *type* of event. If the observer’s causal judgement is rich in these sorts of general commitments, how can observation of a causal transaction on a single occasion provide an adequate basis for it?

⁷ I think the point is neutral on debates in psychology over the existence and role of innate constraints on the development of causal understanding.

Although Strawson does not explicitly address this challenge, his discussion contains two moves that are highly relevant to it. The first move is to draw attention to the fact that in perceiving mechanical transactions we also tend to perceive some of the *features* of objects in virtue of which they have the causal powers exercised in such transactions. The second move consists in the claim that our observational concepts of such features are *dispositional* concepts: it is ‘internal’ to such concepts that ‘the bearers of those qualities regularly act and react in such-and-such ways’ (1992: 122). Strawson presents this latter point as a partial concession to (e.g. Humean) opponents of naïve realism concerning mechanical transactions: ‘With this dispositionality, the *generality*, which is the core of the reductive conception, is already given’ (ibid.). But the concession is not expected to supply ‘any comfort to the reductionist’:

This it could do only if the relevant concepts of thing and quality dissolved into, or were constructed out of, a complex of wholly non-dispositional concepts (of sense-quality) plus generalizations relating them. But the relevant concepts of thing and quality do not so dissolve and are not so constructed. They are basic conceptual stock; and to think otherwise is to misrepresent us as theorists before we have the means of theorizing (1992: 122).

I want to make three brief comments on the first move, before raising worries about the second move and sketching an alternative to it.

Here is a classical example of a mechanical interaction. Suppose you see a square axle passing through a square (and similarly sized) hole in a millstone. And suppose you then see the axle turn. According to the naïve realist, in seeing the axle turn you will see the axle *turning the millstone*. Your experience provides you with an immediate explanation of the fact that the millstone is moving. (The axle is turning it.) Strawson’s first move may be put by saying that the availability of this explanation is essentially connected with that of another sort of explanation. You perceive certain features of both the millstone and the axle that make their interaction *intelligible*: most importantly, their respective shapes and their solidity. For it is in virtue of these properties that the axle has the power to turn the millstone.

My first comment is that *if* our perceptual experience supplied us with both sorts of explanation, this would indeed help to make it unmysterious how perception can be a source of knowledge of the kinds of counterfactuals implicit in causal claims. If we could single out some of the features in virtue of which the axle has the power to move the millstone this would give us at least a rough idea of what sorts of interventions on the axle would make a difference to the movement of the millstone. None of this is to suggest that your perceptually based judgement that the axle turned the millstone could not be mistaken. The point of drawing attention to the intelligibility of mechanical interactions in terms of perceived features is not to rule out the possibility of error and illusion—something that is undeniable but is of little importance in the current context. For the possibility of illusions of causal transactions does not prove that in a veridical case we are presented with something less than particular modes of causal transaction. The reason it matters that perceived transactions are intelligible in terms of

perceived features is that the perception of the relevant features may ground the kind of knowledge that opponents of naïve realism claim has to rely on evidence (for example, experimental evidence) and theorizing.

Second, the point surely holds the key to the question of what is special about mechanical transactions. The obvious difference between ‘perceptual causality’ in the mechanical case and the sorts of hunches one might have when opening a door at the precise moment the light comes on is that in the latter case one’s perceptual experience is silent on the features in virtue of which the door might have the power to activate the light. Part of what makes such ‘causal impressions’ mere hunches is that the relevant causal relation is not intelligible in terms of perceived properties. The difference between the two sorts of cases is an epistemological matter, not merely a matter of the ‘robustness’ of the phenomenology of the causal impression.

Third, earlier I discussed a parallel or analogy between Strawson’s case for naïve realism concerning mechanical transactions and his case for naïve realism concerning physical objects. In both instances, opponents of naïve realism are said to distort the character of ordinary perceptual experience and, connectedly, to misrepresent as a theoretical commitment something that is ‘given with the given’. There are some indications that Strawson himself takes the two cases to be rather more closely connected—that he takes naïve realism about mechanical transactions to be *entailed* by naïve realism about physical objects.⁸ I cannot pursue this idea, but one way one might try to reach such a conclusion would be to argue thus: physical objects can be immediately perceived only in so far as some of their properties, including shape and solidity, are immediately perceivable also; and the satisfaction of this latter condition makes it possible for mechanical transactions amongst physical objects to be immediately perceivable too.

Now to meet the justification challenge, it is not enough to point out that we directly perceive features such as shape and solidity, and that appeal to such features may help to make mechanical transactions intelligible. An immediate line of response is that even if perceptual experience reveals to us what shapes are and thus enables us to think about them, it takes experiment and theory to work out what sorts of dispositions are associated with a given shape. Strawson’s second move seems designed to counter this response. It claims that our concepts of features such as shape or solidity are *both* observational *and* dispositional. This claim is not easy to understand, though. I want to examine briefly what I take to be the most promising line of defence, though only to conclude that Strawson’s view cannot be sustained. I end with a tentative suggestion as to how one might tackle the justification challenge without reliance on Strawson’s peculiar view of observational concepts.

⁸ Compare his remark that Kant ‘had a secure grasp of the central point, which it would perhaps not be unacceptable to express in more or less his own words by saying that the concept of causal efficacy is not derived from experience of a world of objects, but is a presupposition of it; or, perhaps better, is already with us when anything which could be called “experience” begins’ (1992: 124).

For simplicity I focus on the case of shape. An obvious worry about Strawson's second move is that ordinary shape concepts do not appear to be dispositional concepts. They are not concepts of tendencies of objects to respond in certain ways to certain circumstances. They are not like concepts such as brittle or bendable. To develop and defend Strawson's position here one might invoke a view of properties advanced by Sydney Shoemaker. On this view, properties are what Shoemaker calls clusters of conditional powers. Shoemaker acknowledges that shapes, for example, are not dispositions in the ordinary sense. But he argues that what determines the identity of a shape property is the 'potential for contributing to the causal powers of the things that have it' (2003: 212). For example, to be knife-shaped is, amongst other things, to have the power of cutting butter and cheese, conditionally upon its having certain other properties, such as being made of steel and being knife-sized. He labels the powers an object has conditionally on having certain other properties its conditional powers. Shoemaker's main reason for the claim that properties, even shape properties, are conditional powers is that he regards this as the only way of avoiding the unpalatable consequence of making properties wholly inaccessible to us. If shape properties were logically distinct from the cluster of conditional powers things have in virtue of having a particular shape, we would be cut off from their presence. It would be unintelligible 'how properties are capable of engaging our knowledge, and our language, in the way they do' (2003: 214).

In a crucial respect, Shoemaker's view is clearly congenial to Strawson. On Shoemaker's view, it is impossible to analyse our conception of shape properties into grasp of non-dispositional concepts of 'sense-quality' plus empirical generalizations as to how objects having such qualities tend to act and react under particular sorts of circumstances. You have no grasp of a property unless you have mastered something like a functional characterization of the property. This chimes with Strawson's remarks about the 'thoroughgoing dispositionality' of our concepts of things and their qualities (1992: 122).

The trouble is that there are other aspects of Shoemaker's view that are in tension with Strawson's naïve realism. How do we come to know what shape properties are? For Shoemaker this is a matter, most fundamentally, of observing 'actualizations' of the causal potentialities definitive of a given property. 'We know and recognize properties by their effects, or, more precisely, by the effects of the events which are the activations of the causal powers which things have in virtue of having the properties' (2003: 214). Shoemaker offers a subtle account of how knowledge of even a relatively small subset of the conditional powers definitive of a property can be sufficient to 'fix the reference' of a property term. Without going into the details, the basic picture is that to grasp the property of being square you need to understand some patterns of causal relations, such as the causal relations between (a) the rotation of a square axle passing through a square hole in the millstone and (b) the rotation of the millstone; or the 'causal connection between the possession of [the property of being square] by an object and the sensory states of an observer related to that object in certain ways, e.g. looking at it in good light' (2003: 214).

There are several reasons why Strawson has to reject this picture. Shoemaker's view might be described as a 'theory theory' of our grasp of shape properties. We come to know what it is for something to be square by discovering something about the functional role of the property of being square. This picture implies that in acquiring shape properties we emerge from just the kind of condition Strawson declares to be impossible: a stage at which we are aware of objects and events but are 'equally prepared, or unprepared, for anything to come of anything' (1992: 122). The twist Shoemaker gives to this view is that what is lacking at this primitive stage is not only knowledge of the causal powers of things but also, connectedly, mastery of shape concepts. Importantly, though, one thing he thinks is available even at this stage are concepts of shape *appearances*: acquiring concepts of the shapes of physical objects is partly a matter of understanding what kinds of sensory appearance they tend to cause in suitably related observers. This is another reason Strawson could not accept the view of properties as clusters of conditional powers. An accurate description of the character of sensory appearances, according to Strawson, requires *using* concepts of some of the properties of perceived physical objects. (See Strawson, 1988.) I conclude that an attempt to secure a solid metaphysical footing for Strawson's view of shape concepts is unlikely to be successful.

As John Campbell has pointed out, we ordinarily think of the shape of an object not as a cluster of dispositions to act or react in certain ways but as the causal ground of those dispositions (2002: ch. 12). We can put the point in interventionist terms. Suppose you intervene on the shape of Arnauld's axle. Suppose, say, you change the value of the variable 'shape' from 'square' to 'round'. By doing so you will in one fell swoop manipulate an extremely large variety of dispositions. For example, you would change the axle's disposition to turn a wide range of objects, conditional on being suitably installed. Or, moving on to another classic example, you would change the axle's disposition not to pass through a round hole (where the length of its side is the same as the diameter of the hole) (Putnam, 1975). Intuitively, the axle's shape provides the causal explanation of its disposition to act and react in these myriad specific modes. Suppose we accept this intuitive view of shape, rather than Shoemaker's revisionist account. Does it then follow that contra Strawson, grasp of what it is for something to be square is not sufficient for knowledge of any of the dispositions square objects have to act and react in specific ways? Does it follow that understanding shape concepts is consistent with being 'equally prepared, or unprepared, for anything to come of anything'—a position from which one can only emerge by constructing or assimilating an empirical theory of the causal powers of shapes, based on repeated observation or experimental evidence?

It is not obvious that the intuitive view has this implication. There is a time-honoured view according to which the explanatory connection between the shape of an object and its disposition for mechanical interactions with other objects (conditional on its other properties) is not an empirical matter. It is this idea that Arnauld's example was originally intended to illustrate. In Michael Ayers' words, 'whether keys

will turn locks or axles will turn mill-stones can simply be evident from the shape of the rigid parts, together with the idea of a body's defining capacity to push others out of its way' (1991: 147). Arnauld unhelpfully put the point in terms of infallibility ('l'effet qu'il a prétendu s'ensuit infailliblement'⁹); a formulation echoed in Hume's discussion of the idea of a power. But of course in any particular case the effect may fail to occur for some undetected reason. The 'evidence' or 'perspicuity' illustrated by the example really concerns a *type*-causal claim: it can be evident *a priori* that the property of being square causally explains the disposition to turn a (suitably installed) millstone. It is often assumed that Hume's treatment of causation has rendered this rationalist view wholly obsolete. But as Ayers points out, it is at least a good question why 'mechanical interactions appear more intelligible to us than other experienced physical changes'. The Humean answer, 'that this is simply a matter of familiarity', is 'utterly unconvincing': 'We are not much less used to the effects of heat and light than to the effects of the mechanical properties of things. Yet we do not immediately understand why heat will harden an egg as we can immediately understand why Arnauld's axle will turn one millstone [with a square hole, installed at the square end of the axle] but not the other [with a round hole, installed at the round end of the axle]' (1991: 168).

In view of the extensive metaphysical and epistemological ramifications of Ayers's point, my conclusion will have to be tentative. I suggest that the most hopeful response to the justification challenge would be one that blends naïve realism with the rationalist insight that mechanical interactions have a distinctive intelligibility.¹⁰ Such a response would enable us to avoid both Strawson's dispositional view of shape concepts and the view he is concerned to resist, that knowledge of the dispositions associated with shape properties amounts to possession of an empirical theory.¹¹

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⁹ Quoted in Ayers, 1991: 135.

¹⁰ Campbell's account of the relation between perceptual experience of shape properties and our grasp of the dispositions they ground can be read as one way to develop the rationalist insight. (See Campbell, 2002: ch 12.) On Campbell's account, the experience of a categorical property causes and justifies a subject's dispositions to engage in certain kinds of imagistic reasoning, where the latter are taken to be partly constitutive of the subject's knowledge of the dispositions objects have in virtue of the categorical property.

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