

What does Causality have to do with Necessity?

In her 'Causality and Determination', Anscombe argues for the strong thesis that despite centuries of philosophical assumption to the contrary, the supposition that causality is to be identified with some form of necessary connection is baseless. Observing that the association between causation and necessity has a long history, Anscombe notes that philosophers as variable in their other metaphysical commitments as Aristotle, Spinoza and Hobbes nevertheless all explicitly endorsed a version of the idea that causality bears some form of close relation to necessity. Moreover, she points out, the majority of those who later followed Hume in embracing the thesis that there is certainly no *logically* necessary connection between causes and effects, nevertheless ultimately failed to call into question "the equation of causality with necessitation" (134) - with the possible exception, a footnote concedes, of C.S. Peirce (135). Kant, Mill and Russell, for example, all appear to be regarded by Anscombe as philosophers who failed ultimately to resist the thesis it is the purpose of her article to oppose.¹ In place of the idea that causality is a form of necessitation², Anscombe offers us a view that is, in her own estimation, "so obvious as to seem trite", being based on the simple idea that effects "derive from, arise out of, come of, come of" their causes (136). The "radically different account of causation" she proposes, she notes, can grant that there *are* necessitating causes – but opposes the identification of causation with any kind of necessitation.

In making the case for her proposal, Anscombe offers a number of powerful arguments for supposing that causation and necessitation are not related either as the necessitarian or as the Humean has supposed, arguments which I shall consider, one by one, in section (i) below. In the context of most contemporary philosophical accounts of causation, though, one might be forgiven for wondering how important these various arguments of Anscombe's remain today. For much of the contemporary literature on causation gives little reason for supposing that anyone is much in danger any longer of believing that causality is, or might be, a variety of necessitation. Most of the lively debate about causes and causation which has taken place over the last fifty years or so has taken place under resolutely probabilistic assumptions, particularly in the philosophy of science (e.g., Suppes 1970; Cartwright 1979; Pearl 2000; Spirtes, Glymour and Scheines 2000; Glynn 2011; Fenton-Glynn 2017). Lewis's influential counterfactual account of causation was explicitly modified by Lewis in an attempt to cover 'chancy causation' (Lewis 1986c)³ and subsequent developments of counterfactual-based theories have retained the ambition to cover these sorts of examples (see e.g., Noordhof 2020). Neither do interventionist approaches such as that of Woodward (2003) appear to retain any interesting role for necessitation in their accounts of causation. In the context of the recent literature, then, it is not so much Anscombe's conclusion, but rather the received wisdom she is attempting to rebut, which might seem interestingly puzzling, so at odds does it seem with the assumptions which characterise the modern debate.

One interpretation of this state of affairs, of course, might be that those on Anscombe's side of the debate she entered (or perhaps even initiated) simply won the day in the second half of the twentieth century. Perhaps 'Causality and Determination' contributed (along with an increased understanding of developments in science, and the work of a number of other philosophers including those mentioned above) to the wholesale dismantling of the association of causality with necessitation which Anscombe claims had dominated previous centuries. On that premise, we might surmise that the rise of probabilistic accounts of causation is a natural result of the attempt to understand what we might mean by a 'cause' in a context in which we have dropped the assumption that causes necessitate. And if that were so, we might think, Anscombe's paper is now really of purely historical interest, since we are no longer inclined (on the whole) to believe in the mistaken doctrine or doctrines she is attempting to undermine – though it might remain a very fascinating question what gave rise to the long reign of that variety of mistaken thinking. But this will not be my interpretation of the situation – and nor do I accept that Anscombe's points are now no more than

an interesting chapter in the history of our gradual release from views of causation which almost no one now really thinks tenable. Instead, I shall be trying to suggest that we still need Anscombe's arguments as much as ever. *In the context of the kinds of instantiations of causality which she has mainly in view*, the thought that necessitation is involved remains a constant temptation – for reasons on which I shall attempt to cast light later. And in that context, Anscombe's arguments continue to be of enormous importance to the case against ideas to which many of us continue to be drawn.

As is frequently observed, the word 'causation' is used to refer to many different kinds of phenomena – and in any given historical period, philosophers (and psychologists) tend to be interested in some of them more than they are in others. What I shall try to argue is that the central cases of causality in which Anscombe is interested in 'Causality and Determination' are not at all the same as those which animate, for example, the interventionist approaches of philosophers such as Woodward and Pearl; or the probabilistic approaches of Cartwright or Spirtes, Glymour and Scheines. For contingent historical reasons, philosophers of the last fifty years or so have been mainly concerned with a particular subset of causal questions, questions which relate mainly to (i) general causation and (ii) the *causal relevance of facts* to instances of particular causation – notions I shall clarify later. My contention will be that it is simply not very tempting to deploy the notion of necessitation in connection with either of these kinds of causal understanding. These are not the areas of causality in which the notion of necessitation is at home. But Anscombe's central paradigm of causality is different – as has been the central paradigm of many philosophers of the past. What she – and those other historical philosophers - were mainly concerned with is causality as it is to be found in what I shall call *the productive causal process*. And it is here, in connection with the resolutely particular, productive causation that dominates Anscombe's examples, that we have been – and I would claim, still are sometimes (though confusedly) - inclined to resort to the idea of necessitation.

Having defended the claim that Anscombe's paradigmatic cases are very different from those which have been the main concerns of recent theorists of causation, and that there is reason to suppose that in certain philosophical areas, the mistakes she highlights are still being made, I shall attempt to provide two separate, complementary explanations of the tendency to suppose that causal production and necessitation are closely associated with one another. One, also briefly mentioned by Anscombe herself, is a deep conceptual confusion which is certainly present in English but appears also to be detectable in at least some other languages and is quite likely, I think, to be underpinned by deeper cognitive mechanisms involved in our mental representation of causation. The other is rather more historically specific – the product of the confluence in our time of a number of different philosophical developments which have made it difficult to understand how properly to incorporate the real, natural necessity which is (for many of us) an indubitable feature of reality as we find it, into our understanding of what goes on in a productive causal process. In connection with the first explanation, I shall try to expand and elaborate a little on Anscombe's reflections concerning the notion of causal sufficiency and add to those some further points concerning the interesting notions of 'making happen' and 'ensuring'. And in connection with the second, I shall suggest that in the context of contemporary ontological preferences, a temptingly fallacious inference encourages us to move too readily from a recognition of the existence of the necessitating causes which even Anscombe acknowledges, to the conclusion that causation *just is* necessitation.

The paper falls into four sections. In what is by far the longest section, section (i), I shall begin by looking at Anscombe's arguments against the view that causality and necessitation are closely related. It is somewhat artificial to separate the different arguments that Anscombe deploys because there are complex mutual dependencies amongst them, but I have chosen to outline four potential arguments which seem to me broadly deserving of separate consideration. I call these (a) the argument from knowledge; (b) the argument from derivedness; (c) the argument from the impossibility of providing sufficient conditions; and (d) the argument from the ball in the pipe. In

section (ii), I shall defend the view that Anscombe's central paradigm of causation is the *productive causal process* and explain why that sets her concerns apart from those which have motivated the widespread acceptance of probabilistic views of causality in connection with general causation, on the one hand, and causal relevance, on the other. In this section, I shall also try to support the idea that where the productive causal process is concerned, the temptations of the views that causation is a form of necessitation remain strong. Finally, in sections (iii) and (iv), I will outline two possible explanations of the source of what Anscombe shows to be a pervasive and persistent intellectual error. If either has any plausibility, it should be obvious why Anscombe's paper retains its currency, and why we may still need its insights in order to steer ourselves free of the fallacies and misleading pictures to which we might otherwise succumb.

(i) *Anscombe's Arguments*

(a) The Argument from Knowledge

Anscombe's first argument against the view that causality and necessity are essentially connected starts from the observation that we often know with certainty that something is the cause of something else without knowing whether there is any necessity in the case (or whether there is an exceptionless Humean generalization to be found)⁴. The example she gives is that if I have had one and only one contact with someone suffering from a contagious disease, which I then contract, I can know that that contact must have been the cause of my becoming ill. But I need not know, in order to know this, that my getting the illness was *necessitated* by the contact I have had with this person – that having had such contact, there was no possibility that I should escape the disease. Anscombe points out, indeed, that doctors would quite likely be unable to say whether, such contact having taken place, the person in question would or would not contract the disease – though no doubt they might be able to estimate probabilities. Necessitation cannot, Anscombe thereby seems to conclude, be part of the concept of causation.

This argument would, I think, likely be met with the following objection: no one who thinks the causality in this case is necessitating believes that the mere fact of contact with the contagious person was the *whole* cause of my becoming ill. Other factors will also have been causally pertinent, e.g. the fact that the contact was close and prolonged and in an enclosed space; that I had not yet been vaccinated against the illness; that I was 55 years old at the time, rather than 15; etc.⁵ The necessitation in a case like this, then, it will be said, is best conceived of as something which holds only between a giant constellation of causally relevant factors, on the one hand, and the effect, on the other. In general, the things we pick out as the 'causes' of various effects, in an everyday sense, are usually only particularly salient or contextually apposite *parts* of this whole complex network of events and states which together always constitute the total cause of any effect. So, we cannot argue against the necessitarian picture by arguing merely that something we mention as 'the cause' of something may not in fact have necessitated it. That will generally be agreed by the necessitarian – but she will not see that as a reason to deny that necessity is nevertheless present in the case.

Anscombe is aware of the possibility of this rejoinder, but she gives it short shrift – perhaps too short, given how influential is the thinking concerning causation that it embodies. She points out that it would be a mere assumption – one for which we have yet to see a convincing justification – that the onsets of diseases (or indeed any other effects) are things such that there always exist sets of conditions which obtain prior to those effects, and which causally necessitate them. Moreover, she notes, even if there were such a set of necessitating conditions to be had in the particular case at hand, we do not have to settle the question whether there is, in order to know what we mean by speaking of the contact as the cause of my getting the disease. However, the first point might

conceivably be met by the provision of the wanted justification for the mere assumption; and the second point – as Anscombe herself seems to concede – is not conclusive:

“All the same, might it not be like this: knowledge of causes is possible without any satisfactory grasp of what is involved in causation? Compare the possibility of wanting clarification of ‘valency’ or ‘long-run frequency’, which yet have been handled by chemists and statisticians without such clarification; and valencies and long-run frequencies, whatever the right way of explaining them, have been known. Thus, one of the familiar philosophic analyses of causality, or a new one in the same line, may be correct, though knowledge of it is not necessary for knowledge of causes” (136).

Anscombe here seems to confess that we can sometimes identify a phenomenon without knowing what its true nature is – which might open up the possibility that we are able to recognise causes without being able to determine whether or not necessitation obtains in the case – even if necessitation is a necessary part of the existence of causation. And if that were possible, this second argument would lose its force, leaving Anscombe only with the conclusion that we need an *argument* for supposing that causes are generally such as to necessitate their effects, at any rate, once we have fully and accurately delineated them, rather than with an argument which shows that causes are *not* generally such as to necessitate their effects.

(b) The Argument from derivedness

Anscombe next offers what may be regarded as a second independent argument against the thesis that causality and necessity are essentially connected, by putting forward a rival account of causality which contains no mention of necessity. Her suggestion is that “causality consists in the derivativeness of an effect from its causes” (136). Analysis in terms of necessity (or universality), on the other hand, she notes, does not say anything about this derivedness – rather “it forgets about that” (136). Hence, no such analysis can be correct.

There are two potential problems with this argument. The first is that to say that causality consists in derivativeness might be thought to offer not any kind of *analysis* of causality but rather something that is fairly close to being a mere synonym for it. For one might ask the question whether ‘deriving from’, or ‘arising out of’ are not the very same thing as ‘being caused by’? The answer to that is ‘no’, in fact, since there are kinds of derivedness which are not causal (for example, conclusions are logically derived from premises) – but this fails to remove the difficulty – indeed, in some ways it makes it even more obvious what the difficulty is. For if we were to try to specify what *kind* of derivedness was at issue in a case of causality, it seems very likely that we would have no hope of doing so without saying that we are speaking, specifically, of *causal* derivedness. And if we have to mention causality in order to explain what kind of derivedness is to feature in the analysis, one might think we have not really succeeded in providing an analysis at all – that the conceptual circle here is too tight to be regarded as illuminating.

It might be alleged (rightly, I think) that there is no need to suppose that Anscombe intended her explanation of what causality ‘consists in’ to constitute anything that might amount to an *analysis* of causality. Perhaps her point is rather that causality is a *basic* concept, one which does not admit of meaningful explication in terms which are sufficiently distinct from it to be illuminating. And perhaps what she intends is to generate a favourable comparison of this idea of causation as a basic, unanalysable concept with what she regards as the unsatisfactory analysis in terms of necessity, an analysis which simply ‘forgets about’ the idea of derivedness which is at the heart of the basic concept. But this brings me to the second potential problem. It is not entirely obvious that analysis in terms of necessity *need* in fact forget about ‘derivedness’, as Anscombe claims. It must be admitted in Anscombe’s defence that there are *versions* of the idea of necessitation that *do* forget about it; Russell, in particular, as is well known, developed an account of determinism which implies

that in a deterministic system, future states determine past ones in just the same way as past states determines future, a symmetry which certainly seems at odds with the intuitive idea of causal derivation (Russell, 1912). But Russell's is not the *only* way of elaborating the idea that necessitation somehow enters into the causal relation – and asymmetric versions of that idea seem perfectly conceivable. For instance, if an effect were such that nothing else could possibly have followed from an antecedent situation that preceded its occurrence, given the laws of nature, would that not imply a kind of 'derivedness' of the effect from the antecedent circumstances? And if it were *not* such that nothing else could possibly have followed, is there not at least some inclination to suppose that that effect did *not* derive solely from those conditions, but perhaps instead from those conditions together with another, or others (including perhaps negative ones concerning absences), or from those conditions together with what may be conceived as a lucky contribution from 'chance'? Perhaps it is precisely because necessity looks as though it might do an *excellent* job of accounting for derivedness, indeed, that we are so tempted by its charms as a potential analysis of causation. Anscombe might, of course, point out in response that we can recognise cases of causal derivedness in which we know of no connections of necessitation (as with the example of the disease, above) – but that would be to return us to what I have called 'the knowledge argument', on whose power to establish the conclusion that causality in fact has nothing essential to do with necessity I have cast doubt above.

Anscombe goes on to buttress her point, however, with reference to an example which might clinch the case against the identification of causal derivedness with a form of necessary connection, by providing a *counterexample* to it. Noting that "everyone will grant that physical parenthood is a causal relation", Anscombe claims that the derivation here "is material, by fission" (136) – by which I take it she means that children (or offspring in general) derive causally from their parents by being produced from certain of their material parts (e.g., from sperm and egg) – although there are perhaps different possible interpretations here. But no necessity (she alleges) characterises this kind of material derivation. Given a potential parent (or two potential parents) and a child which has resulted from them, we cannot say, for example, that the parents had to have that child, or any child. Laws may indeed govern the material derivation of child from parent in various ways (e.g., the laws of genetics, the laws of mitosis, etc.) but the derivation itself is causal, according to Anscombe, in a way which is not essentially underwritten by the existence of these laws. The relation, I think we are supposed to conclude, is causal anyhow, and would be so with or without the laws.

Will everyone grant that physical parenthood is a causal relation? It sounds strange to modern ears, perhaps, to say that a parent is the cause of their child.⁶ But it sounds less strange to say that the parent begat or conceived or gave birth to the child and then in turn to insist that *begetting* and *conceiving* and *giving birth to* are causal relations. This connects with a point made subsequently by Anscombe about what she calls *special* causal concepts (as opposed to the highly general one expressed by the word 'cause' itself). She offers a 'small selection' of such concepts, all expressed by transitive verbs "*scrape, push, wet, carry, eat, burn, knock over, keep off, squash, make (e.g. noises, paper boats), hurt*" (137) – concepts which in her view are absolutely central to the way we learn to recognise causality in the world and the things which can stand in that relation to effects in which we are interested – things like cats, chisels and acids, for example. And once these sorts of concepts are centrally in view (instead of the word 'cause' itself) one can see very clearly, I think, why one might feel sceptical that the notion of necessity is always in play whenever any of these concepts is used. I scrape my plate clean – and thereby cause a change in its state – but it is natural to think that I need not have done this – at this, or at any other time. And yet I have certainly caused the plate to become clean. So I have caused an effect which was nevertheless not necessitated.

However, there are ways to object to the claim that in these ordinary examples of agency we truly have causation without necessitation. The scraping, it may be pointed out, may indeed have necessitated the change in state of the plate – perhaps given a scraping with exactly those properties, in those circumstances, it is simply not possible that the plate should not have become

cleaned. And as for my initiation (and continuation) of the scraping, it might seem unwise for Anscombe to rest her case on the thought that *that* was an undetermined event/indeterministic process, given the huge controversies concerning the metaphysics of free will and agency in which we are then likely to be embroiled. Anscombe's point remains, of course, that I can *know* that I, as scraper, had a causal role to play in the plate-cleaning, without so much as raising these issues about necessitation. But once again, this might merely be because "knowledge of causes is possible without any satisfactory grasp of what is involved in causation" (136). If we did grasp it, objectors might retort, perhaps we would come to see that necessitation is always in play wherever causality is. And this response also seems potentially available in connection with the example of physical parenthood. Until we can find something that is an uncontroversial example of causation in which necessitation is *clearly absent*, we are always in danger of being sent back to the knowledge argument.

c. The Argument from the Impossibility of Providing Sufficient Conditions

The third argument I want to discuss in some ways seems to me the most important of the four Anscombeian arguments I shall consider here. It is deployed by Anscombe as a response to the often-made claim that since we can't observe causation in an individual case, the reason why we connect the cause and the effect must lie elsewhere. The reason we do so is then alleged to reside in the regular observation we make that certain kinds of event tend to be followed by certain other kinds, a fact which generates true universal generalizations under which any given singular causal relation can be brought and enables us to identify such singular causal relations. As is well known, Anscombe claims, against those who hold this kind of view, that we *can* observe causation in the individual case; but the argument I wish to consider here is not this, but rather her second argument against this Humean view – namely, that it is usually impossible to supply the wanted universal generalizations:

"... if you take a case of cause and effect, and relevantly describe the cause, A and the effect B, and then construct a universal proposition, "Always, given an A, a B follows", you usually won't get anything true. You have got to describe the absence of circumstances in which an A would not cause a B. But the task of excluding all such circumstances can't be carried out" (138).

Why does Anscombe think the task of excluding the circumstances in which an A would not cause a B cannot be carried out? Noting first that there may be an association in people's minds between the wanted universal generalizations and scientific laws, she proceeds to examine certain kinds of generalization which we might regard as scientific laws of a certain kind – namely, those which specify important properties of certain substances (flashpoints⁷, boiling points, melting points, and so on). Such laws will be important in the explanation of why substances have, for example, ignited, boiled or melted under certain conditions. But such laws as these, Anscombe notes, are not going to take the form of universal generalizations such as 'Always, if a sample of substance S is raised to such-and-such a temperature, it will ignite'. Generalizations of this sort will not usually be true⁸ – it may be, for example, that in the absence of oxygen, there is no ignition; or that if the material is damp, it will not light even once it reaches its flashpoint; or that someone might be on hand to prevent the material from igniting when it reaches its flashpoint and so on. We may speak vaguely of 'normal conditions' – but we will not be able, in general, to say exactly what those normal conditions have to be – as Anscombe remarks, the idea of normal conditions is "quite properly a vague notion" (138). We cannot, then, in a very wide variety of cases, actually provide the wanted generalisations. Such laws as there are concerning melting and boiling points, flashpoints and the other properties of particular kinds of substance, are equivalent, on Anscombe's view not to universal generalizations, but rather to conditionals of the form: "if a sample of such a substance is

raised to such a temperature and doesn't ignite/melt/boil, there must be a cause of its not doing so" (138).

Even if we are wrong to think of scientific laws as providing the model for the truly *universal* generalisations which might be supposed to underlie individual cases of causality, though, might it not be objected that there nevertheless *are* such generalizations to be found (though doubtless none of them would look much like a scientific law)? One thought might be that though science is not interested in them particularly, nothing Anscombe says rules out the possibility that there might be such true generalizations, complex though their antecedents might need to be. There might be two rather different conceptions of what such generalizations might look like. On the first model, each possible interfering condition would be specified as being absent in the antecedent of the relevant conditional (on this model, we would of course need to make the assumption that there is a finite means of specifying all possible interferers). On the second, the idea would be that the wanted generalization would be specified not by listing the absence of all the possible interfering factors which might conceivably prevent the effect from occurring, but rather by reliance on a detailed *positive* description of something we might think of as the 'state of the world' at an instant just prior to that at which the effect occurs. Suppose, for example, that one believed that all truths about a time *t* were supervenient upon the distribution of fundamental particles at that time *t*. Then one might think that a specification of this 'state of the world' distribution of particles at a time immediately antecedent to the effect in question would suffice *in any case* to rule out the various circumstances the absences of which are necessary conditions for the effect to occur. Such a description, it will probably be granted, will always be impossible for anyone to give in practice – but in principle, there will in fact be some positive world-state description in terms of the location and properties of a range of fundamental entities, whose holding entails the absence of the interfering circumstances – and hence genuinely necessitates the effect.

I think both these lines of thought have probably had their part to play in the failure of Anscombe's argument to prevent deterministic views of the universe entirely from disappearing – and Anscombe gives us no argument for supposing that either view must be untenable. But neither view is able easily to supply a good answer to the question Anscombe originally poses of why we might think in the first place that reality is such as to justify the deterministic assumptions that both ultimately embody. If the existence of reliable scientific laws cannot provide an acceptable motivation for the deterministic picture that both embody, what can? What Anscombe's argument seems to show is that even if the premise that causation in the individual instance is unobservable were true (which of course she also denies), the recourse to our undisputed experience of regularities could not work, in fact, to support a belief in any relation between the existence of causality in a given instance and the holding of any relationship of necessary connection. Although we still have not been given a knockdown argument against the view that causality is a form of necessitation, we have an argument that shows us that we are left without the *grounds* we might have thought we had for accepting that causality is a form of necessitation. Such grounds might of course conceivably be supplied from elsewhere, but Anscombe has shown that anyone who wishes to maintain a *reasonable* belief in the idea that causation is necessitation will indeed need to supply them.

d. The Argument from the Ball in the Pipe

Anscombe's paper falls into two parts, and at the start of the second part, she notes that her argument thus far (an argument which should presumably be conceived of as including all three of the arguments discussed above, all of which occur in Part I) "lies always open to the charge of appealing to ignorance" (139). I have more or less accepted this assessment of the arguments thus far. With the fourth and final argument, with which she begins the second part of her paper, though, it seems that Anscombe hopes to avoid the possibility of any such charge. This argument attempts to show by way of an example that there are relatively ordinary, macroscopic effects which are not

necessitated by prior causes. The example she gives is that of a ball lying on top of some others in a vertical transparent pipe. Prior to coming to rest in this position, this ball was forcibly ejected along with many others out of an opening in the enclosed space above a row of adjacent pipes. After much bouncing, rebounding, colliding, and so on, it then comes to rest eventually in one of the pipes, rather than in any of the others. The hypothesis we are to consider is that it was determined to come to rest where it did by the series of impacts with the sides and edges of the contraption and the collisions with other balls in which it was involved prior to its arrival in its final resting position.

Anscombe begins by noting that no one could have *predicted* where this ball would come to rest because of the indeterminateness that arises from the finite accuracy of measurements. Over a long period of time, the small inaccuracies that result from the fact that we can specify a measurement only to a certain finite number of decimal places will multiply up, resulting in a considerable degree of uncertainty about where the ball will come to rest. She observes that one might still think that there *was* a necessary path, despite our inability to calculate it. But what ground could one have for supposing so? The only such ground, Anscombe argues, would be belief in a system of which this result was a consequence.

Do we have any grounds for believing in a system of which this result was a consequence? Anscombe suggests that the answer to this question should be in the negative. Classical mechanics (which would presumably be the relevant system in this case) is true only for the systems in connection with which it makes the calculation of actual results possible. There is no sense in which it is simply unrestrictedly *true* in some way which transcends the recognised limits to its applications. She points out, for example, that no one supposes any longer that classical mechanics can aid us in understanding the actions and interactions of things below a certain size, and moreover that in the case of the ball in the pipe, it might well be that we should need to get down to a fineness of grain that would take us into these microscopic realms before we could hope to specify measurements to a degree of exactitude that would suffice to determine the result. She claims that “in default of predictability, the determinedness declared by the deterministic system has got to be believed because the system itself is believed” (140). We have however no reason for believing in Newtonian mechanics except as a system which is approximately true for certain kinds of bodies. Where it is not useful for the calculation of outcomes (as in the case not only of quantum phenomena but also for soft things, liquids, living things, to name but a few), there is no ground to suppose that it nevertheless obtains in some way that escapes our capacity to utilise it.⁹

With the argument from the ball in the pipe, Anscombe’s aim, I think, is to loosen the grip of the vision of the Universe which Newtonian mechanics tends to engender of a system whose every motion is dictated by a system of exceptionless laws. The laws govern only what they govern – and this is as true of the other laws we might think to cite in the explanation of the unfolding of reality as it is of the laws of mechanics. It is true, for example, also of the ‘thermal, nuclear, electrical, chemical and muscular’ forces – they are applicable only where they are applicable. And so we remain without any solid justification for the very thing for which we need a solid justification if we are trying to establish the truth of determinism – that is to say, the assumption that “in the hurly-burly of many crossing contingencies whatever happens next must be determined” (144).

What is the ultimate upshot of these four Anscombeian arguments? The conclusion that seems warranted is not exactly the conclusion that causality is not a form of necessitation; nor even the conclusion that determinism is certainly false (indeed, it seems true that there is no way to show *conclusively* that determinism is false) – though Anscombe does at different times run the risk of suggesting that she is aiming to argue for each of these things. The collective upshot of the arguments is that we have no *grounds* for supposing that causal relations are connected in the ways envisaged to such things as exceptionless generalizations and subsuming laws – and no ground either, therefore, for supposing that universal determinism is true. As noted earlier, philosophers are today far less inclined than they were when Anscombe wrote to believe in universal determinism,

partly because of the increased recognition that physicists mostly endorse an indeterministic vision of reality; and partly because of the work I referred to earlier, which shows that there are perfectly acceptable probabilistic construals of the concept of causation, at any rate as it figures in certain contexts. But so far as particular productive causal processes are concerned, I shall now move on to suggest, we remain stubbornly vulnerable to the temptations of necessitarian thinking.

(ii) *Causality in Anscombe*

The development of probabilistic conceptions of causation over the last fifty years or so has mainly been focused on questions such as the following: how are we to distinguish a causal generalisation from a mere correlation? What must we add to covariation to establish causation? How are effective strategies for intervention in fields such as social policy, medicine, education, environmental health, agriculture to be distinguished from ineffective ones? In considering such questions as these, we are in the domain of what I shall call *general* causation. The claims in which we might be interested are such things as ‘smoking causes cancer’; ‘the application of fertiliser F to crop C increases yields’; ‘phonics is a better method for teaching reading than the ‘whole word’ approach’, etc. And for such claims as these, it is very plausible that the causal relationships in which we are interested are going to be probabilistic ones. Smoking will not cause cancer in everyone – but a population containing more smokers than another at a given time will be likely to contain higher numbers of cancer-sufferers at a later time (other things being equal, of course). There may also be interesting quantitative relationships to be mapped between changes in one variable (e.g., amount of fertiliser applied) and another (crop yield)) and inter-relationships we might want to model between different variables – e.g., increasing amounts of fertiliser might be effective only under certain weather conditions, or only for certain strains of a given crop. But Anscombe is clearly not primarily interested, in ‘Causality and Determination’, in understanding this kind of general causation. Her examples of the ‘causality’ she seeks to discuss are consistently particular (they are examples of what philosophers have variously called ‘singular’, ‘token’ or ‘actual’ causation).¹⁰ An individual infects another with a contagious disease; a parent conceives a child; a sample of a given substance is heated and ignites at a certain temperature; a ball is ejected into the space above a row of transparent vertical pipes and comes to rest in one of them in particular. I infer from this that it is primarily in connection with this kind of *particular* causality that she is assessing the thesis that causality is a form of necessitation.¹¹

It is perfectly true, of course, that probabilistic accounts have been offered of particular, as well as of general causation (for example, Mellor 2004; Fenton-Glynn 2017). But this is possible because our interest in particular instances of causation very often remains an interest in what I shall call *causal relevance* or *mattering* (just as it is in the general case).¹² Just as smoking causes cancer, Don’s smoking can cause Don’s cancer – and what it means to say this, roughly, is that the fact that Don smoked over a number of years was causally relevant to his death in that – other things being equal – it made his death more likely to occur earlier than would otherwise have been the case (and perhaps also more likely to be a death in which certain kind of processes rather than others were involved – e.g. those associated with lung cancer or pulmonary obstruction). Despite well-known problems with the simple idea that causes always raise the probability of their effects (Dupré 1984), the idea that causal relevance and probability have something to do with one another is a very natural one, and the problems it has occasioned might tend to suggest that the ‘causes as probability-raisers’ account needs judicious amendment rather than wholesale replacement. But whatever its prospects, that issue need not detain us here. For I maintain that causal relevance is simply not the causal notion which Anscombe has centrally in view in ‘Causality and Determination’. Her central notion is not relevance, but rather, that of the *productive causal process*.¹³

Consider the examples listed above. I come into contact with a person who infects me with a disease; a child is conceived; a sample of a given substance is heated to a given temperature and ignites, a ball is ejected above a row of transparent vertical pipes and comes to rest there. All these are particular processes which take a certain course, a course culminating in an end result. And consider also Anscombe's list of causal verbs – *scrape, push, wet, carry*, etc. The most basic uses of these verbs are also associated with productive causal processes – I *scrape* the plate clean, *push* the rock over the edge of the cliff, the rain *wets* the front yard, the wind *carries* Saharan dust to London. Each of these processes culminates in a given effect whereby certain things become changed or end up being in a new position. It is these kinds of processes which are central to Anscombe's discussion and which form the basis of all her examples. And notwithstanding the virtual eradication of views of causation which involve the idea of necessitation from the recent general literature on the metaphysics of causation, there is reason to think that at any rate in connection with *the metaphysics of the individual causal process*, a version of necessitarianism retains a potent intellectual hold on us. The fact that the contemporary literature on causation shows little sign of engagement with the confusions that Anscombe is attempting to unpick is a sign not so much that those confusions have disappeared from philosophy as that the general philosophy of causation has been focused in recent years on different kinds of questions. But in more specialist areas of philosophy which are no less important, we can readily discern those confusions still.

The literature on free will and agency, which is often centrally concerned with the voluntary production of bodily movement by means of psychological and also by neural processes (a central question, of course, being how these two kinds of causal process might be related to one another), is one good example of an area within which the temptation to think of individual causal processes as ones which must necessitate their effects is evident. Although many philosophers of agency now feel obliged to acknowledge the fact that physics no longer seems to be offering a deterministic picture of fundamental reality, and so that the assumption of determinism can no longer be taken for granted, one still finds in the free will literature many puzzles which are generated by the attempt to see how an indeterministic conception of reality might show up *in the individual processes* which give rise to such things as individual decisions and actions. A common thought is that it is very difficult to understand how indeterminism (thought of as something having application to the structure of the individual causal processes which culminate in actions or decisions) could possibly help with free will. A good example of this is provided by the discussion of the so-called 'rollback argument', an influential version of which was first offered by Peter van Inwagen (2000). The argument focuses on applying ideas about probabilities to an individual causal process culminating in a decision by an agent – say, a decision to lie – and attempts to show that unless such decisions are determined, they will have the same status as acts governed by coin-flips – which Van Inwagen suggests is precisely to say that they cannot be free and responsible decisions in which the agent and her motivations play the wanted kind of causal role. In the rollback argument, we have, I think, a line of reasoning whose plausibility derives from the assumption that we cannot really understand how an individual process can be a genuine action if it is not constituted by a causal process the links in which are such as to *necessitate* one another – and hence is an instance of the idea which Anscombe is attempting to undermine.

The literature on mental causation is another place in which the continuing influence of ideas connecting causal processes and necessitation can be discerned. Consider, for example, the role that has been played in the literature on the exclusion problem by the idea that each piece of behaviour has what is sometimes called a 'complete physical cause'. That claim often figures as a premise in arguments for the view that there can be no such thing as mental causation (see, for example, Kim 1998; Searle 2001). But what is a 'complete' physical cause? – and why should we think that any physical event must have one? Often, the idea of the completeness of a cause is glossed by way of the notion of a 'causally sufficient condition'. But this just raises the question what permits us to suppose that every physical event must have a causally sufficient condition. It is this assumption

which is often then utilised in the argument that – since the causally sufficient physical condition supposedly supplies a ‘complete’ causal story - there can be no possible room left for a mental or psychological one. But of course the assumption that there are such ‘complete’ causally sufficient conditions for things is precisely the assumption that Anscombe is attempting to undermine in ‘Causality and Determination’. If we were a little less mesmerised by its pull, perhaps it would be easier to see how to solve – or rather, dissolve, the mind-body problem.

My suggestion, then, is that we cannot assume that philosophers have now all rid themselves of the mistaken ways of thinking to which Anscombe is attempting to draw our attention. In many areas of philosophy, and specifically in those areas in which we are mainly concerned with the metaphysics of individual causal processes, these ways of thinking continue to hold powerful sway. But the question remains why we are still making those intellectual mistakes – why, in the context of our thinking about individual causal processes, it has been so tempting for us to suppose that everything that happens is necessitated by its ‘complete’ cause. In the next two sections, I shall canvass two possibilities, each of which I think holds some explanatory promise.

(iii) *Sufficiency, Ensuring and Making Happen*

It is sometimes said that a ‘necessitating’ cause is one that is sufficient, or perhaps ‘causally sufficient’ for its effects. But as Anscombe notes, the notion of a sufficient condition is ambiguous:

... “sufficient condition” is a term of art whose users may therefore lay down its meaning as they please. So they are in their rights to rule out the query: “May not the sufficient conditions of an event be present and the event not take place?”. For “sufficient condition” is so used that if the sufficient conditions for X are there, X occurs. But at the same time, the phrase cozens the understanding into not noticing an assumption. For “sufficient condition” sounds like it means “enough”. And one certainly *can* ask: “May there not be *enough* to have made something happen and yet it not have happened? (135)

Anscombe’s point here is that although from the fact that a causal process has in fact culminated in an effect, we can of course infer that ‘enough’ must have been present to permit that process to take place, we *cannot* infer that conditions were sufficient in a second, stronger sense of ‘sufficient’. We cannot infer that conditions must have *necessitated* the result – that no other result could possibly have occurred, conditions being what they were. And the word ‘sufficient’ here, she observes, sows confusion. By ‘cozening the understanding’ into substituting one conception of sufficiency for the other, the ambiguity leads us to the fallacious inference that anything which in fact was caused to happen in culmination of a causal process was deterministically so caused. A conceptual confusion here, she suggests, might therefore encourage the thought that anything caused is thereby necessitated.

I am fully persuaded that Anscombe is right that we sometimes move illicitly in thought from ‘enough’ to ‘necessitated’, by way of the confusing concept of sufficiency. But perhaps even more importantly, there is a more ‘ordinary language’ version of Anscombe’s point to be made. Ordinary people do not talk a great deal about sufficient conditions. But they *do* talk a great deal about certain things *making other things happen*. And the phrase ‘making happen’ contains a somewhat similar ambiguity. If an effect actually occurs as the culmination of a causal process, then we can say that the event or state at the culmination of that process was *made to happen* (or to come into existence) by that process, since that is just another way of saying that the effect was *produced* or *generated* by it. For example, when I scrape my plate clean, the state of cleanliness of my plate which results from my action was made to happen (or come into existence) by me, and in particular

by the scraping process. Understanding that is an essential part of understanding the claim, for example, that I scraped my plate clean. But ‘making something happen’ can – particularly if one lays a certain stress on the word *make* – also mean *ensuring* that something happens. ‘Can you make it happen?’, for example, often doesn’t just mean ‘Can you *produce* that result?’ – it means ‘Can you *ensure* that result?’¹⁴ Austin’s famous putter who sunk his putt despite having no ability in golf undoubtedly made the ball go into the hole in one sense. He produced the motion by way of which the ball ended up in the hole (Austin, 1956). But as Austin points out, he could not *ensure* it – for he did not have the requisite reliable ability to sink putts of that difficulty. And so he could not make it happen in a different, stronger sense. As we might put it, he could not *make* it happen.

One source of the association between causality and necessitation, then, may lie here, in confusions concerning the causal constructions by means of which we talk about production, on the one hand, and ensurance, on the other. Recent work in linguistics casts an interesting light on these confusions. Nadathur and Lauer (2020), for example, have suggested that natural language causatives do not encode a single concept of ‘bringing about’, as did Dowty’s (1979) theoretical posit of a single causal atom, CAUSE, defined as a relation between two events in an event-based semantics – but rather that they instead draw on a *plurality* of distinct causal concepts. By examining the English causative verbs *make* and *cause*, they argue that *cause* generally asserts a relation of causal necessity between a cause and its stated effect and that *make* rather asserts causal sufficiency. They offer this, moreover, not merely as a claim about English, but rather as evidence for the more far-reaching claim that the general notion of causal influence enters into mental representations in a variety of different ways each of which can be encoded by a different natural language expression, thereby arguing for a kind of pluralism about the notion of causality. In addition, there is a wide range of work both in philosophy (Bigelow, Ellis and Pargetter 1988; Fales 1990; Mumford and Anjum 2011); and also in a range of empirical disciplines, including psychology (Copley and Harley, 2014; Hubbard and Ruppel, 2014; White 2012; Wolff 2007; Wolff, Barbey and Hausknecht 2010; Wolff, Ritter and Holmes 2014; Wolff and Shepard 2014); linguistics (Gardenfors 2000; Lakoff and Johnson 1989; 1999; Warglien, Gardenfors and Westera 2012); and neurophysiology (Blakemore et al 2005; Keyzers et al 2004) which is devoted to the explanation of exactly what these mental representations might be, and how they might be related to one another, which seems potentially relevant to the question we have been discussing here of what the relationship might be between causation and necessitation. There is not space here to discuss this literature in sufficient detail to support specific hypotheses; but for the purposes of illustration, I offer one possible account of how ideas which it contains might be used to help us understand why we often resort to the idea of necessitation in order to understand causation within individual causal processes.

A number of authors have endorsed the suggestion (which has deep roots in philosophy, going back at least as far as Aristotle) that the concept of causation is based in some way on our experience of our own agency, and in particular on the feeling of force as understood through the senses of proprioception and touch. Piaget (1930) speculated that infants first learn about causation when they realise that they can manipulate objects in their environment – pulling off their covers, dropping their toys, throwing their bottles, etc. and a number of psychologists have since uncovered evidence for the view that the connection between these sorts of experiences and the concept of causation is close. The hypothesis that the mental representation of causation at least very often centrally involves the haptic and proprioceptive systems now has a lot of empirical support from psychology and neurophysiology; and research in cognitive linguistics has stressed that the concepts central to our talk of causation are often drawn from the domain of physical interactions of a simple sort (e.g. pushing and pulling) in which agents manipulate objects which respond by moving in various ways to the application of bodily force. Lakoff and Johnson (1989; 1999), for example, argue that evidence from linguistics reveals that

[a]t the heart of causation is its most fundamental case: the manipulation of objects by force, the volitional use of bodily force to change something physically by direct contact in one's immediate environment. It is conscious, volitional human agency acting via direct physical force that is at the center of our concept of causation (177).

Utilising an understanding of conceptual categorization which elevates the metaphors we utilise in thinking from a supporting to a starring role in the explanation of abstract thought, they then seek to show that the inferences we make concerning causation (and indeed other abstract concepts) are deeply influenced by the structures of the domains from which we take the central metaphors which have guided the imaginative construction of these concepts.

As I have already said, I cannot here hope properly to assess or defend the thesis that the representation of causation is thus associated with the idea of bodily force and with the pushings, pressings, probings and pullings that are some of our earliest interactions with the world; and it must be acknowledged that the thesis has attracted a range of both philosophical and empirically-based criticism to which a fuller defence of that thesis would need to respond (Cheng, 1997; Cheng & Novick, 1992; Schulz, Kushnir, & Gopnik, 2007; Woodward, 2007; Sloman, Barbey, & Hotelling, 2009). But if it were indeed the case that the mental representation of causation is associated with the idea of bodily force, it would enable us to provide a certain kind of psychological explanation of the association we tend to make between causation and necessitation, despite the existence of cases in which (as Anscombe shows) a genuine connection is hard to sustain.

To see how such a story might go, suppose it were true that the central prototype metaphor by means of which we mentally represent causation was that of the application of force to another object and that in considering and representing instances of causation to ourselves in other cases, the haptic and proprioceptive systems become imaginatively primed and/or utilised in some way, as some psychologists and neurologists have argued (Blakemore et al 2005; Keyser et al 2004; Wolff, Ritter and Holmes 2014). In that case, the experience by means of which, by hypothesis, we later come to represent much causation more generally would be experience in which an effect in another object actually occurs as a result of the application of a force which we apply – as an object moves away from us, for example, in response, for example, to a push, or to continued pressure. The suggestion being made by a number of philosophers, psychologists, neurophysiologists and linguists is that we then eventually come to represent causation more generally in terms of the idea of pushing, even where no such force could possibly literally be involved (for example, where the purported cause is an event or a fact, and hence not the sort of thing which could genuinely push or pull another entity). But note that it is also part and parcel of such experiences as this that they are experiences of objects which yield, as it were, to our will – which do what they have no choice but to do in response to the pressure we apply. To be sure, not all such objects are so obliging – we also have experience of objects which do not move, however hard we push them (house walls, large boulders, etc.) But in these cases, note, no effect actually occurs. In any case, though, in which we actually succeed in producing motion in another object, we will have the experience of making that object move - or as we might say of forcing or compelling it to do so. It is 'forced' in the sense that we apply force to it – we push. But we may also be encouraged to think that it is forced in another sense – that it must do what it does. Force is an idea that we associate with necessity, with the idea of 'must', as well as with the idea of causation. We are thereby encouraged by the overlapping and related metaphors by means of which we construct our thoughts concerning both causation and necessitation to conflate the two. The very idea of a person's 'making something happen', as noted, already contains the ambiguity. This idea that a cause 'ensures' its effect will generally be literally out of place, even in the source domain – no pushing activity is ever likely to be such as to have necessitated the motion of the object pushed, for reasons such as those offered by Anscombe. Even in a case in which my push is unopposed, we must reckon with the fact that another suitably positioned agent or entity might have interfered with the result – e.g., another agent might have

pushed the object back with equal force in the opposite direction, resulting in stasis – so that the absence of such an agent would need to be included in any inventory of antecedent necessitating conditions for the actual result that occurred. But if the notion of necessity, as well as that of causation, is constructed in part on the basis of metaphors drawn from the same basic experiences of pushing and pulling as is the notion of causation, we would have the seeds of a psychological explanation for why we cannot help but feel that causation within an individual process is intimately connected with necessitation, and why we are always seeking to locate necessity in cases of causation in which it is implausible philosophically speaking, that any such connection exists.

In his (1912), Russell considers the idea that necessity is part of the concept of causation and suggests that it must be misleading to regard a cause as ‘compelling’ its effect because ‘where desire does not come in, there can be no question of compulsion’ (182). Russell is right, of course, that inanimate physical objects do not have desires. But it is notable that the terminology in terms of which we speak of the difficulties of getting objects to move about in response to our efforts has close associations with the language in which we talk about getting things which do have opposed desires (mostly other people) to do what we want. The word ‘compel’ itself comes from a root which means ‘push’ or ‘drive’. We press and push people to do things and exert pressure on them. We force them. We ‘motivate’ them (the root is from movement). Might it not be, then, as Lakoff and Johnson have suggested, that it is in fact the case of getting physical objects to move around that is the basic source of the idea of compulsion which we then transfer to the case of things with desires? If that were so, we would then have the means to offer a somewhat different view of the situation from that suggested by Russell. We could say this: the representation of necessity, like that of causation, is closely associated with the haptic and proprioceptive experiences that are involved in pushing things around with our bodies (and perhaps also of being pulled and pushed around ourselves). It is the fact that both abstract ideas – that of causation and that of necessity – are rooted in these same basic physical experiences that explains why we are so inclined to connect them together. We could then agree with Russell that we make a mistake, of sorts, when we suppose that the connection between causation and necessity is an objective fact. But it would not be the kind of mistake we could swiftly dismiss by noting that the concept of compulsion only has application to things with desires which can be opposed. It would be the kind of mistake that would be an ineradicable feature of our psychological economy.

(iv) *The Ontology of Causation*

The second explanation of our tendency to suppose that causality and necessity are related that I should like to consider is this: although the relationship between causality and necessitation in an individual causal process is not given by the statement that ‘a causal process necessitates its effects’ (or anything similar) there is indeed a relation between causality and necessitation, a *genuine* relation, which demands recognition in our understanding of the causality that exists in certain kinds of case. However, as I shall try to explain below, our predilection since Hume for ontologies of causation that are event-, state- and fact-based (rather than, for example, substance-, agent- and power-based)¹⁵ has made it impossible for us to represent the necessity that we perceive to be involved in certain sorts of causal action and interaction in the right kind of way.¹⁶ The difficulty is that with only these non-potent ontological resources at our disposal, we cannot *hedge* our claims concerning that necessity adequately, because events, states and facts, whatever else they are, are not entities which can be thought of as agents (or patients) with a *potential* to interfere in or disrupt proceedings which *may or may not* be actualised. We therefore do not have available the right tools by means of which to constrain the necessity which genuinely is involved in certain instances of causality within its proper bounds. Nevertheless, we feel obscurely that the necessity is there and must be represented *somehow* in our view of the causal situation; and we therefore have recourse

to the only location that our non-substantial ontology makes available to us, placing the necessity whose presence we discern in the relation between causes (usually conceived of as giant constellations of facts, states, or similar) and effects. Thus we are led from truth to falsity – from the genuine perception that there are necessities involved in many causal actions and interactions in which substances act and interact unimpeded, according to their natures, to the false doctrine that the effects in such cases are deterministically related to their antecedents.

What *is* this relation that does, truly, exist between causation and necessitation? In order to help explicate this idea, it will be helpful to return to Anscombe's reflection, quoted earlier, on laws of nature which concern such things as the flashpoints (or autoignition points) of certain chemical substances. Such laws, she says, are equivalent not to generalizations which run "Always, if a sample of such a substance is raised to such a temperature, it ignites", but rather to generalizations which run "If a sample of such a substance is raised to such a temperature and doesn't ignite, there must be a cause of its doing so" (138). But one might ask: *why* must there be a cause of its doing so? If the claim that 'there must be a cause' is to be actually true, rather than just a useful supposition to make methodologically speaking, as we seek to explore and investigate the universe, it can only be, presumably, because without the operation of such an interfering cause the sample of the substance would have *had* to ignite, because it is in its nature to do so. And certain philosophical scruples notwithstanding, this kind of natural necessity is believed by very many people to be real enough. It is widely (and in my view quite correctly) believed that there are ways things *must* go unless they are prevented from doing so. And where we have 'musts', of course, we have necessity. Not all philosophers, of course, believe that such necessities as these exist and I cannot undertake to defend the supposition here - but arguably, the universe could scarcely be the fairly predictable and technologically malleable place that we find it to be, were it not so – could we not harness the reliable tendencies of certain kinds of things to respond in the same ways to the same conditions. Natural necessity, on this plausible and commonly held view, is a reality. The mistake is only to suppose that in order to accommodate this reality, we have to be determinists.

This mistake is encouraged by the ontological shift mentioned earlier, away from a substance ontology and towards one consisting of such things as events, states and/or facts. To see this, suppose one eschews an ontology of substances or other entities with powers, thinking it outdated, or unacceptable by the lights of some conception of what physics endorses¹⁷, or perhaps by the lights of one preferred metaphysical view. One might then be likely to think of causal reality instead as something whose ontology is constituted essentially by such things as constellations of events and states (or facts, or tropes or property instances).¹⁸ What is one to say, then, if one believes in natural necessities, such as those we have just noted, with which chemical substances ignite on reaching their flashpoints, unless prevented from doing so? One might try to represent that perceived necessitation as it relates to an individual process of heating in something like the following way: 'an event (or property instance) which is a heating of ethanol (say) to degree X, in circumstances C, must (necessarily) be followed by an event (or property instance) which is an ignition of ethanol'. As Anscombe argues, however, such generalisations will not be true unless we can manage in our specification of 'circumstances C' to rule out all the possible interfering causes which might prevent ignition – and she gives us good reason for supposing this cannot be done. But we may be unwilling to be persuaded by those good reasons if we are already gripped (as many of us are) by the conviction that there is certainly *some* necessity in the vicinity when an individual portion of ethanol ignites at what thousands of experiments have confirmed to be its autoignition temperature. And where else are we to suppose the necessity to be present, given our purged ontology, if not in the causality by way of which the effect is brought about by its antecedent causes? We are understandably then tempted by the idea that the effect *must* happen, given the cause, provided we have got specification of the cause right in the first place – and so we must ensure that the cause is so conceived of as to render the effect inevitable. And thus are we led to the

giant ‘whole cause’ which is such as to necessitate its effect, Anscombe’s warnings about the impossibility of specifying such necessitating causes properly notwithstanding.

The truth about the necessity of the situation, though, as Anscombe observes, can be quite adequately represented in a different way, if only we permit ourselves the ontological resources to do it justice. Anscombe is clear that there is a sensible notion of ‘necessitating cause’ in the offing in such cases, and she characterises it as follows:

“a necessitating cause C of a given kind of effect E is such that it is not possible (on the occasion) that C should occur and should not cause an E, given that there is nothing that prevents an E from occurring” (144).

This definition enables an event such as some ethanol’s being heated to a certain point, to count as a necessitating cause of that same ethanol’s igniting. That event is necessitating because, *given* that there is nothing interfering (i.e., no *substance* or other agent actualising its *power* to interfere) with the normal manifestation of the liability of ethanol to ignite, that effect *must* occur. But this does not imply that determinism reigns – even locally – in this case – since we are not in a position to know that nothing *could* have interfered – even if nothing did. Perhaps, for example, someone was standing there all along, ready to throw a damp towel over the vessel in which the ethanol was contained in such a way that the autoignition would have been prevented at the crucial moment – but was momentarily distracted by a bluebottle at the crucial time. And there is simply no warrant, Anscombe would argue, for the assumption that the determinist would likely make, that the presence of such a distraction was itself determined. Perhaps the relevant motion of the bluebottle – the one which brought it into distracting range – was undetermined – we cannot know otherwise. But even if that were so, that does not prevent the ethanol’s being heated to a certain point being (in her sense) the necessitating cause of the ignition, given that that was the manifestation of a liability which is part of its natural endowment, and with which no other substance in fact interfered on the occasion at issue. The mistake is only to assume that a necessitating cause must make the non-occurrence of its actual effect an impossibility.

Conclusion

In this paper, I have suggested that the correct conclusion to be drawn from Anscombe’s ‘Causality and Determination’ is that we have no ground for supposing that causality essentially involves necessitation. I have argued that contemporary philosophy still shows the tendency to make the mistake that Anscombe argued against, in the areas in which it is concerned with the metaphysics of individual causal processes. Anscombe’s brief discussion of the idea of a sufficient condition, I have suggested, can be augmented to supply a general case for supposing that causation and necessitation are two abstract ideas which are easily confused with one another. There are explanations proper to the English language why the confusion is tempting for those who speak or read that language; but these may very well be underlain by deeper explanations with a basis in the structure of human cognition. One possible explanation of this variety, for example, might be provided by the idea that we have recourse to the same fundamental experiences of physical action both to represent processual causation and to represent necessitation, which leads us to conflate and confuse the two. The second explanation is that there are indeed many cases of natural necessity in nature, cases which need representation in our metaphysical thinking, but which certain ontological choices can make impossible to represent except wrongly, as the necessitation of effects by giant constellations of causes. These explanations – and especially the first – need more defence than I have been able to provide here. But I hope to have done enough, at least, to suggest some promising hypotheses and that the hypotheses might eventually prove to be a useful means of removing the final sources of resistance that might remain in our contemporary thinking to Anscombe’s thesis that we have no reason for thinking that causes necessitate.¹⁹

References

- Anscombe, G.E.M. (1981 [1971]) 'Causality and Determination', in her *Metaphysics and the Philosophy of Mind: Collected Philosophical Papers Volume II* (Oxford: Blackwell): 133-47.
- Aristotle (1984 [mid-4thC BCE]). *Metaphysics*. In *The Complete Works of Aristotle* Vol. 2, tr. Jonathan Barnes. (Oxford: Oxford University Press).
- Austin, J.L. (1956). 'Ifs and cans'. *Proceedings of the British Academy*, 42: 109–132, reprinted in his *Philosophical Papers* 2nd edition (Oxford: Oxford University Press, 1970): 205-32.
- Bigelow, J., Ellis, B., & Pargetter, R. (1988). 'Forces'. *Philosophy of Science*, 55, 614–630.
- Blakemore, S. J., Bristow, D., Bird, G., Frith, C., & Ward, J. (2005). 'Somatosensory activations during the observation of touch and a case of vision-touch synaesthesia'. *Brain*, 128, 1571–1583.
- Campbell, J. (2020). *Causation in Psychology*. Cambridge, MA: Harvard University Press.
- Cartwright, Nancy. (1979). 'Causal Laws and Effective Strategies', *Noûs*, 13(4): 419–437.
- Cheng, P. W., & Novick, L. R. (1992). 'Covariation in natural causal induction'. *Psychological Review*, 99, 365–382.
- Cheng, P. W. (1997). 'From covariation to causation: A causal power theory'. *Psychological Review*, 104, 367–405.
- Copley, B. & Harley, H. (2014). Force dynamics for events: Reifying causation in event structure. In B. Copley, F. Martin, & N. Duffield (Eds.), *Forces in Grammatical Structures.: Causation between linguistics and philosophy*.
- Davidson, Donald (1980). 'Causal Relations' in his *Essays on Actions and Events* (Oxford: Oxford University Press): 149-62.
- Dretske, Fred (1993) 'Mental Events as Structuring Causes of Behavior', in Heil, J. and Mele, A. (eds) *Mental Causation*. Oxford: Oxford University Press.
- Dowty, David (1979). *Word Meaning and Montague Grammar*. Dordrecht: Reidel.
- Dupré, John (1984) 'Probabilistic Causality Emancipated', in Peter French, Theodore Uehling, Jr., and Howard Wettstein (eds), *Midwest Studies in Philosophy IX*, Minneapolis: University of Minnesota Press, 169–175.
- Eels, Ellery. (1991). *Probabilistic Causality*. Cambridge: Cambridge University Press.
- Fales, Evan (1990). *Causation and Universals*, London: Routledge.
- Fenton-Glynn, Luke (2017). 'A Proposed Probabilistic Extension of the Halpern and Pearl Definition of 'Actual Cause'', *British Journal for the Philosophy of Science* 68(4): 1061–1124.
- Gardenfors, P. (2000). *Conceptual Spaces: The Geometry of Thought*. Cambridge: Cambridge University Press.
- Glennan, Stuart. (2011). 'Singular and general causal relations: a mechanist perspective' in McKay Illari, P., Russo, F., and Williamson, J., *Causality in the Sciences*. Oxford: Oxford University Press.
- Glynn, Luke. (2011). 'A Probabilistic Analysis of Causation', *British Journal for the Philosophy of Science* 62(2): 343–392.

Hall, Ned (2004). 'Two Concepts of Causation' in J. Collins, N. Hall, and L. A. Paul (eds.), *Causation and Counterfactuals*, Cambridge, MA: MIT Press, 181–204.

Hitchcock, Christopher. (1995). 'The Mishap at Reichenbach Fall: Singular vs. General Causation,' *Philosophical Studies*, 78: 257–91.

Hitchcock, Christopher. (2001). 'A Tale of Two Effects', *Philosophical Review* 110: 361-96.

Hubbard, T. L. & Ruppel, S. E. (2014). 'Ratings of causality and force in launching and shattering'. *Visual Cognition*, 21, 987 – 1009.

Hume, David (1978/1740). *A Treatise of Human Nature*. 2nd Edition, ed. L.A. Selby-Bigge. Oxford: Oxford University Press.

Hume, David (1975/1748). *Enquiry Concerning Human Understanding in Enquiries Concerning Human Understanding and Concerning the Principles of Morals* 3rd Edition, ed. L.A. Selby-Bigge. Oxford: Oxford University Press.

Keysers, C., Wicker, B., Gazzola, V., Anton, J., Fogassi, L., & Gallese, V. (2004). 'A touching sight: SII/PV activation during the observation and experience of touch'. *Neuron*, 42, 335–346.

Kim, Jaegwon (1973). 'Causation, Nomic Subsumption and the Concept of Event'. *Journal of Philosophy* 70: 217-36; reprinted in his *Supervenience and Mind*. Cambridge: Cambridge University Press, 33-53.

Kim, Jaegwon. (1998). *Mind in a Physical World: An Essay on the Mind-Body Problem and Mental Causation*. Cambridge, MA: MIT Press.

Ladyman, James and Ross, David (2007). *Every Thing Must Go*. Oxford: Oxford University Press.

Lakoff, George and Johnson, Mark (1989). *Metaphors we Live By*. Chicago: University of Chicago Press.

Lakoff, George and Johnson, Mark (1999). *Philosophy in the Flesh*. New York: Basic Books.

Lewis, David. (1986a) 'Causation'. *Philosophical Papers Volume II*, Oxford: Oxford University Press, 159-172.

Lewis, David (1986b) 'Causal Explanation'. In his *Philosophical Papers Volume II*, Oxford: Oxford University Press: 214-240.

Lewis, David (1986c). 'Postscripts to "Causation"' in his *Philosophical Papers Volume II*. Oxford: Oxford University Press, 172-213.

Mackie, J. L. (1980) *The Cement of the Universe*. Oxford: Oxford University Press.

Mellor, D.H. (1995) *The Facts of Causation*. (London: Routledge).

Mill, J.S. (1873) *A System of Logic* 8th edition (London: Longmans).

Nadathur, Perna and Lauer, Sven (2020). 'Causal necessity, causal sufficiency and the implications of causative verbs'. *Glossa: a journal of general linguistics* 5(1): 49. 1-37.

Noordhof, Paul (2020). *A Variety of Causes* (Oxford: Oxford University Press).

Mumford, S and Anjum, R. (2011). *Getting causes from powers*. Oxford: Oxford University Press.

Pearl, Judea (2000). *Causality*. Cambridge: Cambridge University Press.

- Piaget, Jean. (1930) *The Child's Conception of Physical Causality*. (Trans. by M. Gabain.) London: Kegan Paul; New York: Harcourt, Brace.
- Russell, Bertrand. (1912). 'On the Notion of Cause'. Reprinted in his *Mysticism and Logic* (London: Allen & Unwin, 1986): 173-99.
- Searle, John (2001) *Rationality in Action*. Cambridge, MA: MIT Press.
- Schulz, L., Kushnir, T., & Gopnik, A. (2007). 'Learning from doing: intervention and causal inference'. In A. Gopnick, & L. Schulz (Eds.), *Causal learning: Psychology, philosophy, and computation*: 67–85. Oxford: Oxford University Press.
- Sloman, S.A., Barbey, A.K. and Hotaling, J. (2009). 'A causal model theory of the meaning of *cause*, *enable*, and *prevent*'. *Cognitive Science*, 33, 21–50.
- Sober, Elliott. (1984). 'Two Concepts of Cause', *Proceedings of the Biennial Meeting of the Philosophy of Science Association 2*: 405-24.
- Spirtes, Peter, Clark Glymour, and Richard Scheines (2000). *Causation, Prediction and Search*, 2nd edition, Cambridge, MA: MIT Press. First edition in 1993.
- Steward, Helen (1997a). 'On the Notion of Cause 'Philosophically Speaking'', *Proceedings of the Aristotelian Society* 97(2): 124-40.
- Steward, Helen (1997b). *The Ontology of Mind: Events, Processes and States*. Oxford: Oxford University Press.
- Suppes, Patrick (1970). *A Probabilistic Theory of Causality*. Amsterdam: North Holland Publishing Company.
- Van Inwagen, Peter (2000). 'Free Will Remains a Mystery', *Philosophical Perspectives* 14: 1–20.
- Warglien, M., Gardenfors, P. & Westera, M. (2012). 'Event structure, conceptual spaces and the semantics of verbs', *Theoretical linguistics*, 38, 159-193.
- White, P. A. (2012). 'The experience of force: the role of haptic experience of forces in visual perception of object motion and interactions, mental simulation, and motion-related judgments'. *Psychological Bulletin*, 138, 589–615.
- Wolff, P. (2007). 'Representing causation'. *Journal of Experimental Psychology: General*, 136, 82–111.
- Wolff, P., Barbey, A. K., & Hausknecht, M. (2010). 'For want of a nail: how absences cause events. *Journal of Experimental Psychology: General*, 139, 191–221.
- Wolff, Phillip, Ritter, Samuel and Holmes, Kevin J. (2014) 'Causation, Force and the Sense of Touch' <http://www.psychology.emory.edu/cognition/wolff/papers/WolffRitterHolmes2014.pdf>
- Wolff, Phillip and Shepard, Jason (2014). 'Causation, Touch and the Perception of Force', *Psychology of Learning and Motivation* 58: 167-202.
- Woodward, James (2003). *Making things Happen: A Theory of Causal Explanation* (Oxford: Oxford University Press).
- Woodward, James (2007). 'Interventionist theories of causation in psychological perspective'. In A. Gopnik & L. Schulz (eds.), *Causal learning: Psychology, Philosophy, and Computation*. Oxford: Oxford Univ. Press, 17 - 36.

¹ Hume is a more complicated case. It is perhaps not absolutely clear that Anscombe meant to insist that Hume *himself* should be regarded as a philosopher who identifies causality with necessitation – she notes only that his thinking “curiously reinforced” the doctrine (134). But it is plain that Hume is a philosopher who nevertheless remains within Anscombe’s sights, in ‘Causality and Determination’. Alongside more traditional necessitarians, she suggests, his embrace of the idea that events related as cause and effect must instantiate exceptionless, ‘lawlike’ generalizations commits him to the following thesis:

“If an effect occurs in one case and a similar effect does not occur in an apparently similar case, there must be a relevant further difference” (133).

This thesis, Anscombe intimates, unites both traditional causal necessitarians *and* Humean regularity theorists and embodies at least some version of the thought that where some effect is truly caused, its occurrence, given that cause (and perhaps also given the exceptionless generalizations which constitute the laws) *had* to happen (even if its thus ‘having to happen’ is ultimately a status whose basis is rooted in the machinations of human minds). Anscombe grants that the thesis may constitute a reasonable principle of investigation; but denies that we have any reason for supposing, in advance of such investigation, that a relevant further difference, of the kind that the thesis insists must always exist, will always be forthcoming.

² One might reasonably wonder what ‘necessitation’ is. Many readers will perhaps think that talk of one particular event necessitating another, for instance, really makes no sense unless it is a kind of shorthand for the possibility of subsuming the individual case under an exceptionless law. But I believe that though Anscombe clearly recognised the predominance of this law-focused view at the time at which she was writing, she also means to include amongst those identifying causation with necessitation a range of pre-Humean philosophers who were not necessarily inclined to invoke laws or generalisations in their accounts of the necessity involved in causation at all. The idea of an event being such that it *had to happen* is arguably a much older and more generic idea which can be, but need not necessarily be elaborated by reliance on the idea of law. I shall return at the beginning of section (ii) to suggest, moreover, that the idea that particular events may be necessitated by others (perhaps in combination also with ‘particular circumstances’) continues to have a significant presence in those parts of the philosophical literature in which the focus tends to be on individual causal processes (such as philosophy of action and philosophy of mind), rather than on general causation.

³ Thanks to an anonymous referee for reminding me of this.

⁴ For simplicity’s sake, and because I am primarily concerned in this paper with the relation between causation and necessity, I shall continue henceforth to consider Anscombe’s arguments only as they impinge on her necessitarian opponent, rather than the Humean regularity theorist whom she also has in her sights. But many of the points I shall make apply *mutatis mutandis* to the Humean position.

⁵ For views of causation which insist that we may add separate causal factors together to arrive at the notion of the ‘whole’ cause of some effect, see for example Mill (1873); Mackie (1980); Lewis (1986); Dretske (1993). For critiques of this idea see my 1997a and 1997b, Ch.7.

⁶ I, at any rate, find it slightly strange. Anscombe’s Aristotelian background is I think inclined to make her more accepting of the idea that Aristotelian ‘material’ causes really are instances of the genre than some contemporary philosophers might be.

⁷ A slight complication rears its head with respect to flashpoints. Anscombe seems to think of the flashpoint of a substance as the temperature at which it will *spontaneously* ignite; it is my understanding that this temperature is more properly called the ‘autoignition temperature’ and that ‘flashpoint’ is usually the term used for the lowest temperature at which a substance could possibly ignite, given the presence of an external ignition source. I ignore this complication in what follows and adopt Anscombe’s usage for simplicity of exegesis.

⁸ Though there will be *some* such generalizations that are true – perhaps, for example, no one has ever or will ever survive the bite of a particularly venomous spider, because the venom is simply too fast-acting and destructive for circumstances to be possible in which death would not follow.

⁹ For instance, as Cartwright (1999) points out, a physicist trying to predict where in St. Stephen’s Square a thousand-dollar bill swept away by the wind might land would be possessed only of a very partial mechanical model of the situation, quite insufficient for making the necessary prediction. The view she calls ‘fundamentalism’ insists that there is a complete mechanical model of the situation, which represents all relevant factors and their contributions precisely. But Anscombe’s (and Cartwright’s) point here, though, is that fundamentalism is a faith and not something which our possession of the merely partial model gives us any reason for endorsing.

¹⁰ I shall stick to ‘particular’ because of its traditional contrast with ‘general’ – and because I feel uneasy about each of these different alternatives, for different reasons.

¹¹ There is a very large literature on general and particular causation and the relation between them. See for example Sober (1985); Eels (1991); Hitchcock (1995) and (2001); Hall (2004); Glennan (2011).

¹² For an account of the distinction between what I call ‘causal efficacy’ and the different notion of causal relevance see my 1997b.

¹³ See Campbell (2020) for an interesting development of a notion specifically of *psychological* causation “that is not merely a matter of correlations, not merely a matter of probabilities or counterfactuals about what happens under interventions” but is rather an account which forefronts “causal processes operating in the mind” (75).

¹⁴ ‘Ensure it’ not under any possible circumstances, of course – but rather under those we have reason to believe are likely to be in place at, or over, the relevant time.

¹⁵ The crucial thing is really that the ontology, whatever it is, contain entities which may harbour potentialities. These may, but need not be, substances in the traditional sense. Things such as winds, fire, earthquakes, electrical fields, waves, etc. will also provide the necessary kinds of resources.

¹⁶ Ontologies of causation which are event-based are offered, for example, by Davidson (1980), Lewis (1986a) and Kim (1973). Fact-based views are defended by Bennett (1988) and Mellor (1995). Tropes are endorsed by Campbell (1990) and Ehring, (2011).

¹⁷ See for example Ladyman and Ross (2007) for a view of this kind.

¹⁸ Although there may of course be important differences between ontologies of events and states, say, on the one hand and ontologies of facts, on the other, the differences between them are not relevant to the point I wish to make here. What is common to all these kinds of ontologies is that none has any location available for the placement of *potential* – and it is this which disqualifies them from being capable of properly representing natural necessity.

¹⁹ Particularly warm thanks are due to the anonymous reviewers for Synthese whose careful comments have enabled me greatly to improve this paper.