Contextualising Causation Part II

Julian Reiss*
Durham University

Abstract

In recent years, a number of philosophers have attempted to fix paradoxes of the counterfactual account of causation by making causation contrastive. In this framework, causation is understood to be not a two-place relationship between a cause and an effect but a three or four-place relationship between a cause, an effect and a contrast on the side of the cause, the effect or both. I argue that contrasting helps resolving certain paradoxes only if an account of admissibility of the chosen set of contrasts is given. I show by means of numerous examples that it is contextual features that determine admissibility. This way, context becomes part of the semantics of causation. I finally argue that once contextualised, explicit contrasting is redundant: causation is therefore a three-place relationship between a cause, an effect and a context.

1. Interlude: Summary of Part I

Part I of this article started from the observation that the simple counterfactual theory of causation according to which C causes E if E counterfactually depends on C is ridden with counterexamples to four features of the account:

- it understands causation as a relation between events;
- counterfactual dependence is understood using a metric of similarity among possible worlds;
- it defines a non-discriminatory concept of causation; and
- it understands causation as transitive.

Proponents of contrastive causation sometimes argue that causation is contrastive because making contrasts explicit defuses counterexamples. A contrastive causal claim has the following form: C rather than C^* causes E rather than E^*, where C^* and E^* are alternative or contrast events. I have shown that making contrasts explicit does indeed defuse counterexamples. However, I have also argued that the examples discussed in the literature all share a common feature. That is, in all cases where contrasting works, the original, non-contrastive causal judgements were ambiguous. Contrasting therefore functions by disambiguating initially ambiguous causal judgements.

2. The Hard Cases

I will now discuss a number of cases where making causation contrastive does not seem to do the required work. The examples are again organised according to the four features of the simple theory: event-causation, similarity metric, non–discriminatory concept and transitivity. Throughout, the judgements involved will be somewhat more controversial, in part because our intuitions are more varied and in part because certain views concerning causal judgements are hotly disputed among philosophers. To agree with my main result, it will not be necessary to find all causal judgements I present below convincing. All I need to do is to raise doubts that the contrastive form of causal claims solves all or the majority of the problems the counterfactual account faces.

2.1. EVENT CAUSATION

Whether or not absences can stand in causal relations is highly contested among philosophers of causation. Ordinary language and the languages of the law and history surely *seem* to accept that absences can be both causes and effects. Negligence for instance is an important concept in common law, and it often involves the negligent person's failure to act rather than a positive action. On the other hand, there is something metaphysically fishy about absences as standing in causal relations. David Armstrong expresses his worry thusly (Armstrong 1999: 177): 'Omissions and so forth are not part of the real driving force in nature. Every causal situation develops as it does as a result of the presence of positive factors alone'.

Without going into the metaphysical debates concerning causation by absences here (see for instance, Dowe 2004 vs Schaffer 2004) I will take ordinary language and legal practice seriously in allowing absence causation as in 'Billy's *not* watering the plants caused them to die', 'Jim prevented the child's drowning; that is, Jim caused the child *not* to drown' or 'Suzy's failing to give Jones his medicine prevented him having an allergic shock; that is, Suzy's *not* giving Jones his medicine caused him *not* to have an allergic shock'. Cs/C^*'s and Es/E^*'s can therefore all be either events/event alternatives or absences/absence alternatives.

My first set of examples will show that when absences are involved, contrasting is unsuccessful because there are many possible contrast events such that an alternative to the effect is counterfactually dependent on the alternative to the cause but the associated causal judgement is false.

> **The Escapee Gardener**. Billy and Suzy have grown up. Suzy is now a famous movie actress and owns a mansion. Billy has not been so lucky and would be job and homeless if it hadn't been for Suzy giving him bread and a roof in return for him tending her garden. But Billy grows bitter over their unequal relationship and one time, when Suzy is away from home to shoot a film, leaves her mansion. When Suzy returns, she finds her favourite plants dead.

Intuitively, Billy's escape – or his failure to water Suzy's plants – caused them to die. And this is just the result the simple counterfactual theory yields, the relevant counterfactual claim being 'Had Billy watered the plants, they would not have died'. The problem is immediate: uncountable other true counterfactual claims result in false causal statements: 'Had the Queen watered the plants, they would not have died' is just as true as 'Had Hamlet watered the plants, they would not have died' or as 'Had there been a tropical rainstorm, they would not have died' but the associated causal claims are false.

This is a problem for event causation. Absences are no events. If one reformulates the account such as to include absences such as Billy's not watering the plants to count as a cause of their death, many unrelated absences come out as causes. Call this the problem of proliferation of causes. It is easy to see that contrasting is not of help here. The contrastive causal claim:

> *Billy's going away rather than watering the plants caused them to die rather than live.*

is true while

> *The queen's doing queenly things rather than watering the plants caused them to die rather than live.*

is false (but both corresponding counterfactual claims are true!). The reverse problem comes up in the following example.

The Potent Breakfast. I had a smoothie for breakfast this morning. Now I am writing this paper.

Intuitively, having a smoothie for breakfast is causally irrelevant for writing later in the day.[1] But there are numerous contrast events that make it appear relevant:

Having a smoothie rather than poisoned porridge for breakfast caused my writing this paper.
Having a smoothie for breakfast rather than perishing in a terrorist attack caused my writing this paper.

Call this the problem of spurious preventers (*cf.* Menzies 2004 for similar examples). On behalf of the simple theory, a response is straightforward. The closest possible world in which I did not have a smoothie for breakfast is certainly neither one in which I eat a dish of poisoned porridge for breakfast nor one in which I perish in terrorist attack.

2.2. SIMILARITY AMONG POSSIBLE WORLDS

In one sense, the contrastive account is *more* egalitarian than the simple theory. According to the latter, to make a counterfactual true it must be the case that there is no possible world in which its antecedent is true but its consequent false that is as close to the actual world as the closest possible world in which both antecedent and consequent are true. Remote possibilities are irrelevant. Without further amendment, the contrastive theory counts every contrastive causal claim as true as long as the corresponding counterfactual dependence holds. That this can lead to counterintuitive judgements is shown by the next example.

The Greasy Spoon. At the University of K. there are two restaurants and a coffee bar. The restaurants are the university-run 'Mensa' and an independent bar serving chips, eggs and meats called Fryer's Delight. Some 98% of lunch meals eaten at the university are sold by Mensa. Professor S., a resolute man, is a regular Mensa goer and has never eaten at Fryer's Delight. Today, on a Monday, he feels adventurous however and forms a firm intention to have gammon, eggs and chips for lunch. Unbeknownst to S. the proprietors of Fryer's Delight routinely keep Friday's leftovers without much refrigeration over the weekend and offer it again on Mondays, which in the past has caused more than one food poisoning. In fact, were S. to eat at the restaurant, he would get food poisoned. Luckily for him, as he was just about to enter the restaurant, he bumps into his colleague B. who warns him about the bad practice at Fryer's Delight and recommends to avoid eating there on Mondays. They go together for sandwiches at the coffee bar.

Intuitively, bumping into B. or B's warning prevented S. from getting food poisoning. But according to the contrastive theory, there are two true contrastive causal judgements:

Eating at the coffee bar rather than Fryer's Delight caused S. not to get poisoned rather than get poisoned.
Eating at the coffee bar rather than the Mensa did not cause S. not to get poisoned rather than get poisoned.

The second statement is at best misleading and at worst outright false. It is true that S. would not have got poisoned had he eaten at Mensa. But given that he was firmly resolved to go to Fryer's Delight for lunch, this is a highly remote possibility. The simple theory gets this right because in the closest possible world in which S. did not eat at the coffee bar, he eats at Fryer's Delight.[2] The contrastive theory treats the two alternatives 'eat at Fryer's Delight' and 'eat at Mensa' as equals – but they shouldn't be treated as such.

2.3. NON–DISCRIMINATIVE CONCEPT

An example of causal selection has already been discussed in part I (**The Crooked Bridge**).[3] In that case, selection picks one among many causal conditions as the salient or relevant or simply 'the' cause. To the visitor, the war damage was the relevant cause as he is interested in the why the bridge collapsed rather than not. In this context, the winter floods are a recurrent background condition.

However, if someone came along and said that the winter floods too were a cause of the collapse, he would perhaps be regarded as being a bit of a hair splitting type but he would (and should) not be contradicted.[4] This is different in the following case.

> **Flight 447**. Air France Flight 447, a scheduled commercial flight from Rio de Janeiro to Paris, took off on 31 May 2009 at 22:03 UTC. About three hours later the aircraft encountered thunderstorms along the Intertropical Convergence Zone. The plane crashed into the Atlantic Ocean on 1 June 2009, killing all 216 passengers and 12 crew members, after sending a final message at 2:14 UTC. An Air France spokesperson stated on 3 June that 'The Earth's gravitational field caused the crash of flight 447'. While the technical investigation is still not completed, it has later emerged that so-called pitot probes, which measure airspeed, were also implicated.

The spokesperson's statement is absurd. The causal claim is false even though we can suppose that had gravity been weaker, the plane would not have crashed. By contrast, supposing that the suspicions that faulty pitot probes were implicated are confirmed, it is true that the malfunctioning of the probes were a cause of the crash. According to the contrastive account, however, both claims appear to be true. The relevant contrastive causal claims are

> *The pitot probes' malfunctioning rather than proper functioning caused the plane to crash rather than land safely,*

which is true, and

> *The Earth's gravitational force having the value g rather than a different, much lower value caused the plane to crash rather than land safely,*

which is false. The associated claims about counterfactual dependence are both true. This example too shows that information is required about which contrast evens are admissible and which are not.

2.4. TRANSITIVITY

Here is a counterexample to transitivity that cannot be handled by the contrastive account:

> **The Purple Fire** (Ehring 1987). Smith's adding potassium chloride caused the fire to turn purple. The purple fire caused Jones' death.

We would not call Smith's action a cause of Jones' death but it comes out as a cause under Lewis's account. At first glance, contrasting appears to provide a solution:

> *Smith's adding potassium chloride rather than nothing caused the fire to turn purple rather than remain as it was; the fire's turning purple rather than remaining as it was did not cause Jones to die rather than live.*

Alternatively,

> *Smith's adding potassium chloride rather than copper chloride caused the fire to turn purple rather than blue; the fire's turning purple rather than blue did not cause Jones to die rather than live.*

From the point of view of the contrastive account, the case only appears to involve a causal sequence such as *C* causes *D* causes *E*. The two links in the sequence – Smith's adding of potassium salt caused the purple fire, the purple fire caused Jones' death – do not connect because two different contrast events are involved. Smith's adding potassium salt caused the fire to be purple *rather than yellow or blue*; but it is the fire's burning *rather than not burning* that caused Jones' death. As before, the simple counterfactual account fails because it overlooks an illicit shift in the contrast.

But a moment's reflection shows that this analysis hinges on the specific choice of contrasting events. Choose a different contrast and a problem appears:

> Smith's adding potassium chloride *rather than water* caused the fire to turn purple *rather than choke*; the fire's turning purple *rather choke* caused Jones to die *rather than live*.

So Smith's action comes out as a cause of Jones' death after all. This is false.

3. Analysis

The counterexamples discussed in 2. all show the same thing: the contrastive account of causation must be supplemented with an account of admissibility of the contrast events. Without it, the old problems of the simple theory reappear. In fact, it is only due to the saliency of specific alternative events in the examples discussed in Part I that contrasting seems to be able to deal with counterexamples. Thus, emphasising the 'stole' in 'Leonike stole the bike' makes the alternative 'Leonike bought the bike' salient. Similarly, emphasising the 'bike' makes the alternative 'Leonike stole the scooter' salient. However, as long as we are not told how to get from emphasising a certain part of the sentence to a specific contrast event, different choices could be made.

Considering **Railroad Switch** and **Greasy Spoon** jointly illustrates the issue nicely. The two cases are structurally exactly identical. In both cases there is a variable with three possible values, one of which is actual. Changing the value of the variable from the actual value to one of the alternatives makes a difference to the outcome but changing it to the other doesn't. The variable in **Railroad Switch** is the setting of the switch, its possible values *express*, *local*, *obstruction* and the actual value *local*. If the value were changed to *express*, the train would arrive safely, so there is no counterfactual dependence. If it were changed to *obstruction*, there is. Similarly, in **Greasy Spoon** the variable is the location of S.'s lunch, its possible values *coffee bar*, *Mensa*, *Fryer's Delight*, and the actual value *coffee bar*. Changing the value from actual to *Mensa* does not make a difference to the outcome whereas changing it to *Fryer's Delight* does.

What differs between **Railroad Switch** and **Greasy Spoon** are the associated stories. In **Railroad Switch**, the unrealised alternative *obstruction* was a live possibility and in fact likely. We have to consider it a relevant contrast event because it was only due to the track worker's special diligence or perhaps sheer luck that this contrast was *not* realised. In **Greasy Spoon**, *Mensa* is a remote alternative at best. Importantly, it is not S's intended action. Abstracting from the details of the case, *Mensa* a seems like a possibility because S. usually has lunch there and so do most other people. But attending to the details, *Mensa* was not a possible course of action for S. *in that situation* – because he had formed a firm intention to have Chinese for lunch. Having lunch at Mensa as the contrast event is therefore inadmissible.

Unfortunately, the literature on contrastive causation as good as ignored the issue of admissibility. A notable exception is Northcott 2008 who argues that *C*/*C** and *E*/*E** must be 'nomologically incompatible'; that is, there is no world in which the same laws are true as in our world and the alternatives co-occur.[5]

Nomological incompatibility, however, is neither necessary nor sufficient for admissibility. Having a smoothie for breakfast is certainly *not* nomologically incompatible with eating of the poisoned porridge but eating of the poisoned porridge can be admissible in the right circumstances (see below). By contrast, the drinking of the smoothie is nomologically incompatible with perishing in a terrorist attack but it is inadmissible – there is no reason to suspect that I *could* have perished in a terrorist attack this morning.

Schaffer and Northcott argue that the context determines the contrasts (Schaffer 2005: §7; Northcott 2008: §6). They are effectively saying that there are two functions from context $\mathbf{X}$ to contrasts of the following kind:

f: $\mathbf{X} \to \mathbf{C}^*$, where $\mathbf{C}^*$ is the set of all alternative cause events/alternatives
g: $\mathbf{X} \to \mathbf{E}^*$, where $\mathbf{E}^*$ is the set of all alternative effect events/alternatives.

This idea seems right. But the interesting question is *how* context determines contrasts. The next section will examine what kinds of contextual features influence the causal judgement and how.

4. What Features of Context Determine Causal Judgements

Contextual features that influence our causal judgements loosely fall into two categories: situational features and analysts' features. The former can be found in the situation about which the causal judgement is made. The latter are contributed by the language user who makes the causal judgement. Let us begin with situational features.

4.1. SITUATIONAL FEATURES

In some cases, the admissible contrasts are fully determined by features found in a causal situation. By 'causal situation' I mean, roughly, the spacio-temporal region around the actual causal relation at issue. In **The Escapee Gardener**, Billy had made a *promise* to water Suzy's plants and Suzy was justified in expecting that he would because of the commitment a promise entails. By contrast, the Queen had made no promise and Suzy was in no position to expect her to do so. Two *behavioural generalisations* therefore help us to determine whether or not a contrast event is admissible: *people honour promises* and *queens do queenly things*. Neither of these generalisations constitutes an exceptionless law and it is dubious whether they would be laws in Lewis' best-systems analysis (Lewis 1973b). But they do determine what people can be expected to do in a given situation – and thereby influence causal judgements.

In **Potent Breakfast**, it is not only behavioural generalisations that determine admissibility but also *physical opportunities*. To assess whether 'eating of the poisoned porridge' is admissible it is relevant is whether I had the opportunity to eat poisoned porridge for breakfast and whether there was a realistic chance I would have done so. As it happens, I don't normally eat porridge. But not having any in my kitchen would, at any rate, be sufficient for making the alternative inadmissible (unless there is a good reason to believe I should have porridge in the kitchen). Also, terrorist attacks in my flat are rather rare, so neither alternative event is admissible. But this may change in a slightly different context. Suppose a counterpart of me was staying in a hotel where a bowl of poisoned porridge was on the breakfast buffet. Moreover, a waiter recommended the porridge. Now, supposing also that my counterpart often eats what the waiter recommends, his eating of the poisoned porridge would indeed be admissible – even though on this occasion he did choose the smoothie. The decision to ignore the waiter's recommendation would correctly be judged a cause of the later writing.

A third set of cases shows that people's *actual intentions* also matter. In **Purple Fire**, Ehring did not tell us why Smith would add potassium salts to the fire. But perhaps Smith just likes unusually coloured flames and on this occasion chose potassium rather than copper chloride. Or he had some potassium chloride in his pocket and wanted to get rid of it. We can assume that he never had the intention to put the fire out or perhaps there was no water or fire extinguisher handy. From these situational features contrasts such as 'adding copper chloride' or 'leave the fire as it is' are admissible but 'putting the fire out' is not. In **Greasy Spoon**, Professor S. had both the physical opportunity to eat at Mensa and could be expected to do so given is usual behaviour. However, because in the particular situation he was resolved to have meat and chips for lunch, it is this actual intention that matters and not what he could have done physically or would normally do.

4.2. ANALYSTS' FEATURES

Consider the following example:

> **The Empire Jamaica** (Hart and Honoré 1985; *cf.* Schaffer 2005). The owners of the ship sent it to sea without properly licensed officers. The ship was later involved in a collision. The pilot, though unlicensed, was generally competent but napping at the time of the collision. Did the owners' action *cause* the collision?

The relevant contrast in this case is given by what would have constituted lawful action. To determine whether the owner's sending the ship to sea caused the collision, one has to determine what would have happened had the captain been licensed. In this particular case, it was judged that having a licence did not affect whether the captain would have napped and therefore the owner's action was not judged to be a cause.

It is important to see that the relevant contextual features – lawful action – is contributed to the analysis from outside rather than found in the situation analysed. It is even irrelevant whether the defendant knew the law or not – *ignorantia juris non excusat*.

Thus, normative considerations extrinsic to the situation analysed may matter. **Empire Jamaica** shows that relevant contrasts may not be found in a situation but rather contributed by the analyst on the basis of what would have constituted lawful action.

In **Leonike's Theft**, the analyst clearly faces one and the same event – Leonike's stealing of a bike – but selects the relevant aspect or contrast, features she contributes to the analysis.[6] In this case, the relevant analyst feature is a *presupposition*. If the analyst presupposes that Leonike obtained the bike, she will select 'legally acquired the bike' as relevant contrast. If on the other hand she presupposes that Leonike stole something, she will select 'stole the scooter' as relevant contrast.

In **The Crooked Bridge**, the analyst's *explanatory interest* is the feature that selects the contrast (effect) event. Explanatory interest can also be cashed out in terms of presuppositions. Someone who is interested in the collapse *per se* selects 'bridge does not collapse' as the alternative because she presupposes that floods occur in the winter; someone who is interested in the timing of the collapse will select an event such as 'bridge collapses at a time when the water levels are low' as alternative, presupposing the damage inflicted during the war.

4.3. OBJECTIVE POSSIBILITY, ADMISSIBILITY AND CAUSATION

Building on this analysis of relevant contextual parameters, I now proceed to define a concept of *objective possibility*, a term I borrow from Max Weber (Weber 1949[1905]). An event φ is objectively possible in a conversational context if and only if the causal judge[7] could have expected it to happen on the basis of his beliefs about situational features such as the commitments

(**Q**), intentions (**I**) and physical opportunities (**O**) of the agents involved in the causal situation S as well as the causal judge's own presuppositions (**P**) and beliefs about behavioural generalisations, moral norms and laws (**N**). Let us call the sextuple $\mathbf{X} = \{S, \mathbf{Q}, \mathbf{I}, \mathbf{O}, \mathbf{P}, \mathbf{N}\}$ the *conversational context*.

What I mean by 'behavioural generalisations, norms and laws' essentially plays the same role that laws of nature play in alternative accounts of causation such as Lewis' 1986a. Rough behavioural generalisations such as 'people do what they have promised' or 'queens do queenly things', social, moral and legal norms as well as natural laws are included in this category. Contrast events C^*, E^* are then admissible if and only if they are objectively possible but not actual.

A corresponding theory of causation can now be formulated:

Contrastive Causation with Admissible Alternatives. In a conversational context $\mathbf{X}$, C rather than C^* causes E rather than E^* if:

- C and E are actual events or absences;
- C^* and E^* are objectively possible, non–actual events or absences in $\mathbf{X}$; and
- E^* counterfactually depends on C^*.

5. *Picking Out Alternatives*

As mentioned above, ideally we would like to have two functions:

f: $\mathbf{X} \rightarrow \mathbf{C}^*$, where $\mathbf{C}^*$ is the set of all alternative cause events/absences

g: $\mathbf{X} \rightarrow \mathbf{E}^*$, where $\mathbf{E}^*$ is the set of all alternative effect events/absences

that tell us *how* context determines alternatives. Unfortunately, I do not have much to say about this issue at a high level of generality. Let me nevertheless make a number of points about what such functions could look like here.

The main Weberian idea is that the alternative course of events from which actual history deviates has to be *expectable* on the basis of what is known about the situation, its agents and the norms describing their behaviour as well as certain presuppositions the causal judge makes. It has long been understood that causal judgements are shaped by people's understanding of what happens under 'normal circumstances' (Hart and Honoré 1985). Recently, Christopher Hitchcock and Joshua Knobe have explained in detail how statistical norms, moral norms and norms of proper functioning play this role (Hitchcock and Knobe 2009). They report an experiment from Knobe and Fraser 2008 in which subjects are given the following vignette (Hitchcock and Knobe: 594):

> *The receptionist in the philosophy department keeps her desk stocked with pens. The administrative assistants are allowed to take pens, but faculty members are supposed to buy their own.*

> *The administrative assistants typically do take the pens. Unfortunately, so do the faculty members. The receptionist repeatedly e-mails them reminders that only administrators are allowed to take the pens.*

> *On Monday morning, one of the administrative assistants encounters Professor Smith walking past the receptionist's desk. Both take pens. Later that day, the receptionist needs to take an important message … but she has a problem. There are no pens left on her desk.*

Subjects are then asked whether Professor Smith or the administrative assistant caused the problem. A majority of respondents judged that Professor Smith and not the administrative assistant caused the problem (Hitchcock and Knobe: 594). In this case, a statistical norm, or what I call a behavioural generalisation ('faculty members take pens'), conflicts with a moral norm ('faculty members are not supposed to take pens'). In this context, the objectively

possible alternative is picked out by satisfying the moral norm and violating the behavioural generalisation. Thus, if C = 'Professor Smith did take a pen', C^* = 'Professor Smith did not take a pen' is objectively, whereas if C = 'The administrative assistant did take a pen', C^* = 'The administrative assistant did not take a pen' is *not* objectively possible. It is therefore that respondents do not judge the administrative assistant's taking the pen to have caused the problem.

In other cases, case-specific background knowledge can override a behavioural generalisation. In **The Greasy Spoon**, Professor S. would have gone to Fryer's Delight in violation of behavioural generalisations about both himself as well as professors at his university (recall that both he and most of his colleagues normally go to Mensa; it was only in this case that he intended to break his regular pattern). Therefore, if C = 'Eating at the coffee bar', C^* = 'Eating at Fryer's Delight' is objectively possible whereas 'Eating at Mensa' is not.

Knowledge about case-specific intentions can be trumped by legal considerations. If we amend **The Escapee Gardener** by making Billy's promise to water Suzy's plants legally binding and let Suzy sue Billy for neglect of her plants, it surely doesn't matter to the law whether or not Billy ever formed an intention to water the plants to making 'Billy waters the plants' an objectively possible event alternative. (Arguably, the same is true when the promise entails a mere moral obligation. But this will depend on further moral norms and behavioural generalisations that determine to what extent we can expect people to honour their promises and therefore be more controversial. In the original case, Billy stuck to his promise initially and could therefore be expected to continue doing so.)

The complex interplay between case-specific background information and behavioural generalisations in determining whether or not an alternative is objectively possible can be illustrated by causal claims from political history. Consider the claim 'John F. Kennedy's failure to show greater resolve in Spring 1962, caused the Cuba Crisis'. Suppose that it is true that if JFK had shown greater resolve, Khrushchev would not have sent missiles to Cuba, thereby averting the crisis. But is the antecedent objectively possible? Lebov and Stein 1996 argue that it's not. For instance, JFK was not in the possession of intelligence that Khrushchev was about to send missiles and therefore had no reason to show greater resolve. Moreover, there was currently no election campaign and thus JFK had no need to display strength. Behavioural generalisations at best play a role in helping to determine under what conditions JFK might have had reasons to show resolve. Case-specific information rules out that any of these conditions apply.

Evidently, then, there is no simple algorithm that takes us from context to contrasts. What makes causal judgements unequivocal in many cases is that there are unique salient alternatives. When we imagine what Billy would have done had he not thrown a rock, we do not normally imagine him having thrown a boulder instead. Chances are that he didn't have the physical opportunity, people don't normally throw boulders and there is no moral norm prescribing the throwing of boulders. We are not given the information that Billy in fact intended to throw a boulder. All considerations then point towards the same alternative: a simple absence of throwing a rock (where Billy might have sat still or scratched his nose or kissed Suzy or whatever). When it is not clear what alternative(s) is (are) objectively possible, causal judgements are correspondingly uncertain. Historians face precisely this problem: to determine which of a range of alternative histories would have enfolded, had this or that event (not) taken place. The choices they make are often hard to underwrite with good evidence, and so it is not surprising that research on the causes of singular events is very controversial (see Reiss 2009; 2012).

My aim here was the modest one of describing what kinds of contextual factors help to shape causal judgements. I hope to have made some advance on that issue. Before concluding, let me discuss some implications for the semantics and pragmatics of causal claims.

6. Semantics, Pragmatics and Adequate Causation

Let's backtrack for a moment. As mentioned above, Lewis was interested in developing a non-discriminatory concept of cause, one that picks out all events that make a difference to the effect. He did see that ordinary language (and history, and the law) distinguish among the difference makers or causal conditions but he relegated that aspect to pragmatics. Contextual elements in a conversation determine which of a large number of true causal claims would be appropriate to make.

With Schaffer and others, I reject this picture. While it works for some cases (such as **The Crooked Bridge**), it fails for others (such as **Flight 447**). The winter floods and war damage are both conditions, only one of which it is appropriate to call 'cause' in a conversational context. To call the other condition 'cause' too in that context would lead, perhaps, to surprise but not to indignation. By contrast, to call the presence of oxygen a cause of a house's burning down or to make gravity causally responsible for a plane crash is simply false.

Proponents of contrastive causation think that contrasts are part of the semantics of causation and that the selection of contrasts is pragmatic. Given the contrasts, causation is an objective, mind-independent relation (see Schaffer 2005; 2013; Northcott 2008). Contrarily, selection is a contextual, pragmatic affair.

Thus, according to this view, the claims

> *Leonike's stealing the bike rather than acquiring it legally, caused her to be arrested rather than remain free.*
> *Leonike's stealing the bike rather than the scooter did not cause her to be arrested rather than remain free.*

are equally true. If in a conversational context the presupposition is made that Leonike obtained a bike, in whatever manner, the first sentence is conversationally appropriate. In that context to utter the second causal claim would be weird, but the claim would be no less true. The reverse is the case when in a different conversational context the presupposition is made that Leonike stole something, no matter what.

According to the theory of causation presented in the last section, this is way of putting the matter is mistaken. According to that theory, context is part of the semantics of causal claims. That is, the meaning of causal claims shifts with the context in which it is uttered.

Making context part of the semantics and not merely the pragmatics of causal claims is necessary in order to deal with the examples introduced in the second part of this paper. As long as the queen has no business with Suzy, it is false and not merely inappropriate to call her inaction a cause of the wilting of the plants. If Professor S. had no intention to go to Mensa today, it is false and not merely inappropriate to deny that his meeting B. was a preventer of food poisoning. It is false and not merely inappropriate to call the presence of oxygen in the air a cause of Sleepy Smoker's house burning down. And it is false and not merely inappropriate to call Smith's adding potassium chloride to the fire a cause of Jones' death.

In cases in which a certain utterance is true albeit inappropriate to make the pragmatic mistake that was made can be explained, for instance, by using Grice's maxims (Grice 1975: 47).

A: *How many peanuts did you eat?*
B: *Some.*

If B ate all the peanuts, she is violating Grice's maxim of quantity here because she is not as informative as would be required in the situation. At the same time, what she says is true – 'I ate all peanuts' entails 'I ate some peanuts'.

C: *I need petrol.*
D: *There is a garage around the corner.*

If D believes that the garage around the corner is closed, he violates Grice's maxim of relation because, given that the garage is closed the fact that there is one around the corner is irrelevant when someone is in need of petrol. At the same time, what he says is true – 'There is a garage around the corner, which is closed' entails 'There is a garage around the corner'.

E: *When does your plane arrive?*
F: *Sometime in 2011.*

If F believes that she'll arrive on February 11, 2011, at 2:30 PM, she violates Grice's maxim of manner because she is too vague relative to the context in which the utterance was made. At the same time, what she says is true – 'I will arrive on February 11, 2011, at 2:30 PM' entails 'I will arrive sometime in 2011'.

No such simple explanation can be given with respect to the failed causal claims. Consider the following exchanges.

G: *What caused the crash of AF 447?*
H: *The earth's gravitational field.*

H's response is not merely uninformative. Suppose it is true that had the earth's gravitational field been different the plane would not have crashed. How could someone who believes that gravity is (causally) responsible convince someone who doesn't? This is impossible without invoking a Lewis-style counterfactual theory of causation. To see that, recall that causation comes with a variety of connotations. Causal claims (not always but for the most part) support effective strategies. Not so in this case: no-one would attempt to tinker with the earth's gravitational field in order to prevent future plane crashes.[8] Causal claims (not always but for the most part) underwrite claims about probabilistic relevance of causal factors. Not so in this case: gravity is probabilistically independent of the occurrence of plane crashes because it is constant.[9] Causal claims (not always but for the most part) are explanatory. Not so in this case: that the plane was subject to gravity does not explain the crash.[10] Causal claims can sometimes help in assigning praise and blame. But it would be absurd to blame gravity for the crash. He who thinks that gravity was a cause of the crash after all, derives this intuition fully from the (simple) counterfactual account of causation. If that account is what is at stake and one cannot use it on pain of begging the question, a defender of gravity as cause of the crash has not much else to add.

This is entirely different for the claim that the malfunctioning pitot probes caused the crash. Replacing the type of probes that were used in flight 447, as Air France did, is an effective strategy to prevent future plane crashes. Plane crashes are more likely when velocity-measuring devices malfunction. The malfunction helps to explain the crash: to learn that the pitot probes did not work properly is informative. We can use the claim about the probes' malfunctioning in order to assign blame to Air France, its technicians or Airbus for negligence.

G: *What caused the wilting of Suzy's plants?*
H: *The queen's doing queenly things.*

This exchange highlights that the queen's failure to water Suzy's plants it is not simply irrelevant to their wilting. We can use the same reasoning as above. The only way to convince someone to accept the truth of 'the queen's inaction caused the wilting of Suzy's plants' if she is not already convinced is to invoke the counterfactual theory. But doing so would beg the question.

I: *Did bumping into B. prevent S. from getting food poisoned?*
J: *Yes and no. S's bumping into S. prevented him from getting food poisoned relative to the alternative in which he has Chinese food for lunch but not relative to the alternative in which he eats at Mensa.*

It is not simply a violation of the maxim of manner to give the answer J gave. Given there was no chance that S. would have eaten at Mensa, the second contrastive causal claim is false. To say otherwise presupposes the contrastive theory and would therefore also be question begging.

If I am correct in assuming that the context is part of the semantics of causal claims, one may ask if it is still necessary to include explicit contrasts. In general, I think not, for three reasons. In many cases, namely in those where the context either picks out a unique admissible alternative event for cause and effect, or when it picks out a set admissible alternative events such that changing from one alternative to another does not make a difference to the causal judgement, making causal claims contrastive is simply redundant. If there is only one admissible alternative for cause and effect each, such as 'having lunch at Fryer's Delight' and 'getting food poisoning', respectively, there is no need to make contrasts explicit. The same is true when there are many admissible alternatives but they all lead to the same causal judgement. If, say, Smith had the opportunity to either add copper chloride or nothing to the fire and the contrast on the effect side is 'not turn purple', again there is no need to make contrasts explicit.

Moreover, leaving contrasts implicit is more parsimonious. Contrastive causal claims are often clumsy and awkward, and making them may violate Grice's maxim of manner because they do not communicate information very efficiently. Third, the surface grammar of causal claims is not contrastive. Contrastive causal claims appear technical rather than natural.

Nevertheless, there remain the cases where contrasting is necessary, namely when the context underdetermines the choice of alternative events and different alternatives lead to different judgements. In other words, in all cases discussed in the first part of this paper. My final theory, Adequate Causation, also a term borrowed from Weber (*op. cit.*) therefore reads as follows.

Adequate Causation. In **X**, C causes E if

- C, E are actual events or absences and either:

    - C^*, E^* are the unique objectively possible, non-actual event/absence alternatives in **X** and E^* counterfactually depends on C^*; or
    - $C_i^* = \{C_1^*, C_2^*, \ldots, C_n^*\}$, with $C_i^* \neq C_j^*$ for all $i \neq j$, E^* are the unique objectively possible, non-actual event/absence alternatives in **X** and E^* counterfactually depends on every event C_i^* in $\{C_1^*, C_2^*, \ldots, C_n^*\}$.

Adequate Contrastive Causation. In **X**, C rather than C_i^* causes E rather than E_i^* if

- C, E are actual events or absences;
- $C_i^* = \{C_1^*, C_2^*, \ldots, C_n^*\}$, with $C_i^* \neq C_j^*$ for all $i \neq j$ and $n > 1$, $E_i^* = \{E_1^*, E_2^*, \ldots, E_m^*\}$, with

$E_i^* \neq E_j^*$ for all $i \neq j$ and $m > 1$, are the unique objectively possible, non-actual event/absence alternatives in $\mathbf{X}$; and
- and either:

  - there exists a C_i^* such that if C_i^* had been the case, E would have been the case; or
  - there exists an E_i^* and an E_j^* and a C_i^* and C_j^* ($i \neq j$) such that E_i^* is counterfactually dependent on C_i^* and E_j^* is counterfactually dependent on C_j^*.

In many contexts, the former, non-contrastive theory will suffice. In **Greasy Spoon**, there is only one objectively possible alternative cause-event, having lunch at Fryer's Delight, and one objectively possible alternative effect-event, getting food poisoned. Thus the first clause of the former theory applies. We can also imagine cases in which there is a plurality of objectively possible alternative cause-events such that each of them counterfactually entails the same unique objectively possible effect-event. Shlomo's wife Shlomskaya never smoked in her life. Suppose that if she had, she would have smoked at least a pack a day, and had she done so, she would have contracted lung cancer. There is no need to formulate indefinitely many contrastive causal claims of the form 'Not smoking rather than smoking x cigarettes a day (where $x > 19$) caused Shlomskaya not to develop lung cancer rather than develop the disease'. A simple 'Not smoking prevented Shlomskaya from getting lung cancer' conveys as much information (in that context).

This is different when either one of the objectively possible alternative cause-events counterfactually entails the actual effect-event, or when different objectively possible alternative cause-events counterfactually entail different objectively possible effect-events. In **Railroad Switch**, there are two objectively possible alternative events on the cause side: 'setting the switch to express' and 'obstructing the switch', and one objectively possible alternative event on the effect side: 'train derails'. Had the switch remained in express, the train would have arrived as safely as it did actually. But had the switch been obstructed, the train would have derailed. Here, the second clause of the contrastive theory applies. Discussing **Purple Fire**, it was argued that adding water to the fire was not objectively possible. In the given context, there is no $C_i^* = \{add\ water\}$. The contrastive causal claim 'Smith's adding potassium chloride rather than water caused the fire to turn purple rather than choke' is therefore false and the intransitivity problem is avoided. It is easy of course to imagine other contexts. We can suppose, say, that Smith, who enjoys colourful flames, had a whole battery of chemicals on him so that all of 'adding copper chloride', 'adding boric acid', 'adding strontium chloride' and so on are all objectively possible, and so are the effect events 'flame turning blue', 'flame turning green', 'flame turning red' and so on. In this case too, the causal claims should be contrastive: 'Adding copper chloride rather than boric acid caused the flame to turn blue rather than green' *etc.*

7. Conclusions

That causal explanation is context-dependent is a relatively familiar idea. According to this view, there is an objective, human interest-independent network of causal relations in the world, which science is to provide for us. When explaining certain events of interest, context comes into play for instance because explanation-seeking why-questions are often contrastive: Why did the sample burn green (rather than some other colour)? Why did the water and copper reach equilibrium temperature 22.5°C (rather than some other temperature)? Why did I visit Melbourne in 1979, rather than Oxford or Uppsala or Wellington?[11] The resulting picture is a two-stage view. It is the job of sciences to provide us with information about that

objective, interest–independent causal structure of the world. But for satisfactory explanations, specific causes must be selected by human interests. This is, on the one hand, due to the fact that typical events have vast numbers of causes in their history. To be explanatory *to humans*, an account cannot cite more factors than can be managed by humans. On the other hand, factors differ with respect to their importance for humans and therefore with respect to their saliency. Humans are interested in control and therefore select factors that can be manipulated. Humans are interested in prediction and therefore select factors that vary a lot albeit systematically. Humans have normative interests and therefore select factors that deviate from norms.

According to the account given here, human interests enter much earlier, namely in the determination of actual causation. What I aimed to show was what kinds of factors influence causal judgements, and that these factors play a role in determining what is a cause and not just in selecting 'the' cause or the set of salient causes from the network of all causes. Of course actual causation is only one kind of causal relation and whether the same holds true of other kinds of causal relation – most notably generic causal relations – remains to be seen.

Short Biography

Julian Reiss is a Professor of Philosophy at Durham University. He has a degree in economics and finance from the University of St Gallen and a PhD in philosophy from the London School of Economics. His main research interests are methodologies of the sciences (especially causality and causal inference, models, simulations and thought experiments, and counterfactuals), philosophy of economics and science and values. He is the author of *Error in Economics: Towards a More Evidence-Based Methodology* (2008), *Philosophy of Economics: A Contemporary Introduction* (2013) and some 40 papers in leading philosophy and social science journals and edited collections.

Notes

* Correspondence: Department of Philosophy, Durham University, 50 Old Elvet, Durham DH1 3HN. Email: julian.reiss@durham.ac.uk

[1] Unless, perhaps, background information tells us that I was so undernourished that without the smoothie I would not have had the strength to get to the office and write. I will talk about the role of background information below.

[2] This is also true in Lewis 1979 semantics. A miracle to divert the actual world onto a path where S.'s resolution to have Chinese for lunch is successful can be inserted much later than a miracle to change his resolution, so that there is more exact match of particular fact between the actual world and the former than between the actual and the latter world.

[3] I repeat the example here for easy reference:

The Crooked Bridge. An explanatory plaque near the Crooked Bridge in Mostar, Bosnia, reads: 'The Crooked Bridge collapsed on 31st December 1999 during the winter floods but mainly because of damage inflicted during the war (1992–1995)'.

[4] This is also indicated by the – very carefully phrased – statement of the plaque that the bridge collapsed *mainly* because of the damage inflicted during the civil war.

[5] This is similar to Lewis' 1973a[1993] requirement that C/not-C and E/not-E must not be compossible.

[6] To those who regard Leonike's stealing *the bike* and Leonike's *stealing* the bike as two different events, one can respond by making essentially the same point. The analyst faces one situation (let us say), Leonike's stealing the bike, which contains two events. One event is essentially a stealing and accidentally involves a bike, the other event is essentially an acquisition of a bike and accidentally a theft. It is still the analyst who selects which of these two is the relevant event.

[7] A causal judge is, naturally enough, a language user making a causal judgement in a given conversational context.

[8] Of course, we could argue that 'Had we tinkered with the gravitational field (in the just right way), the crash would have been avoided' is true. It probably is. But that just proves my point: the response begs the question because it presupposes a counterfactual conception of causation.

[9] Once again, we could argue that actual frequencies do not matter but rather the probabilistic dependencies that would ensue if we were to vary the Earth's gravitational field. And again I would object that that response begs the question.

[10] Someone might be interested in the precise trajectory the plane took after it hit turbulence, and the earth's pull will certainly play a role in explaining *that*. But this is a different explanandum.

[11] The first two examples are from van Fraassen 1980: 127, the third is from Lewis 1986b: 229.

Works Cited

Armstrong, David. 'The Open Door.' *Causation and Laws of Nature*. Ed. Howard Sankey. Dordrecht: Kluwer Academic Publishers, 1999. 175–85.

Ehring, Douglas. 'Causal Relata.' *Synthese* 73 (1987): 319–28.

Grice, Paul. 'Logic and Conversation.' *Syntax and Semantics*. volume 3: Speech Acts. Eds. P. Cole and J. L. Morgan. New York: Academic Press, 1975. 41–58.

Hart, H. L. A. and Anthony Honoré. *Causation in the Law*. 2nd ed. Oxford: Clarendon, 1985.

Hitchcock, Christopher and Joshua Knobe. 'Cause and Norm.' *Journal of Philosophy* 106(11) (2009): 587–612.

Knobe, Joshua and Ben Fraser. 'Causal Judgment and Moral Judgment: Two Experiments.' in *Moral Psychology: Cognitive Science of Morality: Intuition and Diversity* (vol. 2). Walter Sinnott-Armstrong (ed.), Cambridge (MA): MIT Press, 2008 441–8.

Lewis, David. 'Causation.' *Journal of Philosophy* 70 (1973a [1993]): 556–67. Reprinted in Sosa and Tooley 1993: 193–216.

——. *Counterfactuals*. Cambridge (MA): Harvard University Press, 1973b

——. (1979), 'Counterfactual Dependence and Time's Arrow.' *Noûs* 13(4): 455–476.

——. 'Postscripts to "Causation".' *Philosophical Papers*. volume II. Oxford: Oxford University Press, 1986a. 172–213.

——. 'Causal Explanation.' *Philosophical Papers*. volume II. Oxford: Oxford University Press, 1986b. 214–40.

Menzies, Peter. 'Difference-Making in Context.' *Causation and Counterfactuals*. Eds. John Collins, Ned Hall, and Laurie Paul. Cambridge (MA): MIT Press, 2004. 139–80.

Northcott, Robert. 'Causation and Contrast Class.' *Philosophical Studies* 139 (2008): 111–23.

Reiss, Julian (2009), 'Counterfactuals, Thought Experiments and Singular Causal Analysis in History.' *Philosophy of Science* 76: 712–23.

Schaffer, Jonathan. 'Causal Contextualisms: Contrast, Default, and Model.' *Contrastivism in Philosophy*. Ed. Martijn Blaauw. New York: Routledge, (2013).

——. (2005), 'Contrastive Causation.' *Philosophical Review* 114(3): 297–328.

van Fraassen, Bas. *The Scientific Image*. Oxford: Clarendon, 1980.

Weber, Max (1905[1949]), Objective Possibility and Adequate Causation in Historical Explanation. In: Shils and Finch 1949: 164–188.