



Explanatory presupposition

Elliott Sober

To cite this article: Elliott Sober (1986) Explanatory presupposition, *Australasian Journal of Philosophy*, 64:2, 143-149, DOI: [10.1080/00048408612342351](https://doi.org/10.1080/00048408612342351)

To link to this article: <http://dx.doi.org/10.1080/00048408612342351>



Published online: 02 Jun 2006.



[Submit your article to this journal](#)



Article views: 61



[View related articles](#)



Citing articles: 10 [View citing articles](#)

EXPLANATORY PRESUPPOSITION¹

Elliott Sober

Requests for explanation advanced in the form of why-questions contain presuppositions. Most obviously,

(1) Why is it the case that *P*?

presupposes that the proposition *P* is true. In addition, when it is recognised that explanation is a contrastive activity (Dretske 1973, van Fraassen 1980, Garfinkel 1981), an additional source of explanatory presupposition becomes evident. Suppose we seek to answer (1) by showing why *P*, rather than some contrasting alternative *C*, is true. The resulting question

(2) Why is it the case that *P* rather than *C*?²

presupposes that *P* and *not-C* are both true.

Why-questions with the structure given in (2) make explicit an often tacit relational element in the activity of explaining a proposition. A given proposition may be embedded in different sets of contrasting alternatives, thereby giving rise to different explanatory problems. We may, to use Garfinkel's [1981] example, provide different readings of the question 'why did Willi Sutton rob banks?' One device for bringing out these alternative formulations is in the use of emphasis (either via spoken stress or written italics/underlining). We may wish to explain why Sutton *robbed* banks, why he robbed *banks*, or why *he* (Sutton) robbed banks. These alternatives may be fleshed out in the form of three different questions conforming to pattern (2):

(3a) Why did Sutton rob banks rather than deposit money into them?

(3b) Why did Sutton rob banks rather than candy stores?

(3c) Why did Sutton, rather than one of his accomplices, rob banks?

Besides the use of emphasis and formulations conforming to pattern (2), there is another way of posing explanatory questions in which the presuppositions are made evident. One may ask 'given *X*, why is it the case that *P*?' The above three questions concerning Sutton may then be expressed as follows:

¹ I am grateful to Ellery Eells for comments on an earlier draft. Also, I thank the National Science Foundation and the University of Wisconsin, Madison Graduate School for financial support.

² In this paper, I will suppose that rather-than questions contrast a focal proposition *P* with a single alternative *C*. This, of course, is not generally true. The normal form is 'Why is it the case that *P* rather than *C*₁, or *C*₂, . . . , or *C*_{*n*}?' My remarks about (2), however, carry over to the case of multiple contrasting alternatives.

- (4a) Given that Sutton interacted with banks, why did he rob them?
 (4b) Given that Sutton was going to rob something, why did he do this to banks?
 (4c) Given that someone in Sutton's gang was going to rob banks, why did Sutton do it?

I cite these three linguistic devices – emphasis, the rather-than locution, and the given locution – in order of increasing expressive power. Emphasis allows one to vary only one constituent of the focal proposition at a time. If the focal proposition is that Sutton robs banks, one may emphasize 'Sutton', 'robs', or 'banks', thereby generating the questions otherwise formulatable as (3a), (3b), and (3c). But the focal proposition can be embedded in many other contrast spaces. For example, suppose Sutton's gang deliberated over whether Sutton would rob banks or Jones would burn barns, these both being promising sources of cash. One then might ask:

- (5) Why was Sutton robbing banks rather than Jones burning barns?

The rather-than locution allows this question to be posed, but emphasis does not.

Similarly, one might wish to know how the fact that Sutton had a tormented adolescence contributed to his career in crime. So one might say: Given Sutton's upbringing, why did he become a robber? But this question is not expressible in terms of the rather-than locution alone.

Regardless of which syntactic device one uses in formulating a why-question, it is clear that two types of presupposition are involved. In general, a question presupposes a given proposition if and only if the proposition must be true for the question to have an answer. Thus, question (3a) presupposes that Sutton robbed banks and also that there was such a person as Sutton. The difference I want to note between these two presuppositions is this. The former cannot be inserted into an answer to the question, on pain of having the reply beg the question. The latter, however, is insertable. As a partial characterisation of this difference, we may say that a question with the structure given in (2) has *P* and *not-C* as *non-insertable presuppositions*; however, the disjunction, *P or C*, and all that it implies are insertable presuppositions. Each of these insertable propositions is, as it were, a common element shared by both *P* and *C*. The question assumes that *P* and *not-C* are true; in addition, it stipulates that the answer may include any proposition implied by both *P* and its contrasting alternative *C*.³

Every why-question has its presuppositions. This was already evident when we considered (1) above. But does every why-question have *insertable* presuppositions? Put differently, this is to ask whether every why-question is *directive* – that is, must it contain nontrivial indications of what a proper answer will assert?

If a question of the form given in (2) is such that *P* and *C* are logical negations of each other, the only implications they have in common will be

³ Notice that I have left it open whether (2) has insertable presuppositions beyond the ones just mentioned. I'll argue below that it does.

logical truths. But as the questions considered in (3) show, it is hardly uncommon for P and C to fail to be so related. More usually, it will turn out that a focal proposition and its contrasting alternative are contraries, not contradictories. What is more, they usually will be contraries only relative to certain contingent assumptions. No law of nature asserts that Sutton could not have robbed both banks and candy stores. These are contrary alternatives, as in (3b), only relative to contingent assumptions about Sutton himself.

Not that a focal proposition and its contrast must always have joint implications beyond the logical truths. A quite natural class of why-questions that do not concern existence. A biologist may ask why there are tigers; here, the focal proposition simply contrasts with its logical negation. The question does not indicate which of the following reformulations is the one to pose and answer:

Given that there were ancestral felines, why are there tigers?

Given that there were mammals, why are there tigers?

Given that there were animals, why are there tigers?

The question posed—why does the world contain tigers rather than not—does not indicate where the answer should begin. Yet, an answer must begin with the existence of *something*, as long as it's true that out of nothing, nothing comes. The verbal question does not settle this, but leaves the matter to be decided by the context of inquiry. Here, then, is a class of intelligible why-questions in which the joint implications of the focal proposition and its contrast are logical truths and nothing else.

This would settle the matter of whether why-questions must always be directive, if we could assume that the insertable presuppositions of (2) are limited to the joint implications of P and C . But I want to suggest that why-questions of the form given in (2) make two additional assumptions, ones not implied by the conjunction of P and *not-C*.⁴

The following question, I claim, has a false presupposition and is thereby unanswerable, even though the focal proposition is true and its contrasting alternative is false:

(6) Why is Kodaly a Hungarian rather than a vegetarian?

Kodaly is a Hungarian and that fact is explicable; the same holds for his not being a vegetarian. Why, then, should (6) be unanswerable? I suggest that (6) implies that these two properties of Kodaly's have a common cause. This is an assumption not implied by Kodaly's being a Hungarian and a non-vegetarian.⁵

⁴ Although Garfinkel [1981] discusses both the presuppositions of why-questions and the presuppositions that individuals bring to bear in their explanatory projects, he asserts (p. 40) that a question's presuppositions are limited to the joint implications of the focal proposition and its contrasting alternatives. Van Fraassen, on the other hand, [1980, pp. 144-145] holds that (2) presupposes that P is true and C is false and that 'at least one of the propositions that bears its relevance relation to its topic and contrast-class, is also true'. What may count as a relevance relation goes unspecified in his account, although *causality* is offered as one example.

⁵ Thus, the presuppositions of (2) parallel the implications of assertions that employ terms

Further evidence for this claim comes from considering the given-locution. Questions of the form ‘given X , why is it the case that P ?’ can have false presuppositions, even when X and P are both true. I list a timely (and controversial) evolutionary question as an example:

Given that males in species X produce many small gametes whereas females produce fewer and larger ones, why do females in species X perform a disproportionate amount of parental care?

This question presupposes that the difference between male and female gametes *makes a difference* when it comes to explaining parental care. The question assumes not just that the two propositions are true, but that one is explanatorily relevant to the other. I suggest that the idea of explanatory relevance here means *causal* relevance.

I want to spell out this presupposition of a common cause in a way that may appear slightly redundant, but will turn out not to be. There are two parts to the common cause presupposition. First, questions that have the form given in (2) presuppose that P and *not-C* trace back to a common cause. Second, it is assumed that this common cause discriminates between the alternatives P and C , i.e., makes P more probable than C . I will call these the *tracing back* and the *discrimination* assumptions, respectively. Together, they form the common cause presupposition of why-questions.

It is, of course, often no *a priori* matter whether this presupposition is satisfied in a particular case. Only on the basis of empirical evidence can one know that Sutton’s bank robbing and Jones’ abstention from barn burning trace back to a common cause, as (5) demands. Symmetrically, one may imagine that nationality and diet were bound up together in Kodaly’s life. But on the assumption that they were quite independent issues, (6) will not be a well-formed question.

Can one ever know *a priori* that the common cause presupposition is satisfied? Of course, if it is not *a priori* that every event has a cause, then the assumption that pairs of events have *common* causes can hardly be *a priori*. But let us reformulate the question: Suppose one assumes that every event has a cause and assumes the resources of logic and definitions. Are there why-questions for which this information settles the issue of whether the common cause presupposition is satisfied? This may seem to be true when P and C are logical contraries. In this case, whatever makes P true apparently must prevent C from being so. Isn’t one on safe ground in asking why a ball is red all over rather than blue all over, as far as the presupposition of the common cause is concerned? Although this may seem entirely straightforward, in fact it is not. If causality were deterministic, the cause of the ball’s being red (and thereby not-blue) would have to make red more probable than blue. But since determinism isn’t decidable *a priori*, one can never know *a priori* that the common cause presupposition of (2) is satisfied, even when P and C are logical contraries.

like ‘but’ and ‘instead’. To say that someone is F but G for some pair of characteristics (e.g. poor but honest, bloodied but unbowed, etc.) is to imply that there is some sort of conflict between the two traits, and this goes beyond the mere claim that the individual has F and G .

To see why, let us abandon the assumption of determinism and consider the relation of probabilistic causality discussed by Good [1961-2], Suppes [1970], Cartwright [1979], Skyrms [1980], Eells and Sober [1983], and Sober [1984b]. A positive causal factor, roughly, is one that raises the probability of its effect in every causally relevant background context. So, for smoking to be a positive causal factor in the production of heart attacks, what is required is that each individual should have a higher chance of a coronary if he smokes than he would have if he did not.⁶ There is no requirement that smokers always (or even ever) have heart attacks.

This probabilistic construal introduces a special wrinkle into the issue of explanatory presupposition. A positive causal factor, though it must raise the probability of its effect, need not make one of its possible effects more probable than another. That is, although P and $not-C$ trace back to a common cause, it need not be true that this common cause makes P more probable than C . This is why I listed the tracing back and the discrimination assumptions separately.

Consider an example, which I'll first sketch formally and then flesh out with some physical details. P and C are exclusive and exhaustive possible causal consequences (the one positive, the other negative) of a factor F . F raises the probability of P and lowers the probability of C as follows:

$$\Pr(P/F) = 0.5 > \Pr(P/not-F) = .25$$

$$\Pr(C/F) = 0.5 < \Pr(C/not-F) = .75$$

Suppose an event that has trait F produces effect P . Since the event made P true, and P and C , we are imagining, are incompatible, the event also made $not-C$ true. Yet the occurrence of the event did not make P more probable than C . Invoking that event, I claim, does not explain why P as opposed to C came true. The explanation of this fact, besides citing a common cause, must cite a common cause that discriminates. This is why I stated the common cause presupposition in two parts.

Now for a physical realisation of this set-up. I will throw a switch either up (F) or down ($not-F$). If I push up, a fair coin will be tossed, so that the chance of heads (P) and the chance of tails (C) are both 0.5. If I push the switch down, however, a coin biased against heads will be tossed, so that the chance of heads (P) is .25 and the chance of tails (C) is .75.

Pushing the switch up increases the chance of heads and decreases the chance of tails. I push the switch up, the fair coin is tossed, and it happens to land heads. You see the result and ask why the result was heads rather than tails. This question is unanswerable, even though the occurrence of heads and the nonoccurrence of tails trace back to a common cause, namely my pushing up on the switch. The common cause fails to discriminate.

There is an additional complication concerning the probabilistic construal of causality that affects the formulation of the tracing back condition, but

⁶ A weaker, 'Pareto version', of this criterion has been advocated by Skyrms [1980], Eells and Sober [1983], and Sober [1984b]: the causal factor must raise the probability of its effect in at least one background context and must not lower it in any other.

not the ultimate conclusion of this argument. An event may trace back to an earlier event that is its cause, even though the properties of that earlier event did not raise the probability of the effect. Thus, for example, the genetic characteristics of a child trace back to the genetic characteristics of its parents, even when the parental traits were *negative* causal factors with respect to the offspring characteristics. Similarly, if I had pushed down on the switch in the above example, and the coin had (improbably enough) landed heads, it would be true that that (token) outcome traced back to my push, even though this *reduced* the chance of getting heads. But the main point still remains: two events *P* and *not-C* tracing back to a common cause do not have to trace back to one that discriminates.⁷

There is no need to state the tracing back and the discrimination conditions separately when the system considered is deterministic. For if a factor *deterministically* causes *P* to be true (confers on it a probability of unity), and if *P* and *C* cannot, in the circumstances, be true together, then the factor must *deterministically* prevent *C* from being true (conferring on it a probability of 0). With determinism, a common cause of *P* and *not-C* is a cause that discriminates between *P* and *C*. Without determinism, this need not be so.

Thus, even if we assume that every event has a cause and even if we formulate our why-questions so that *P* and *C* are logical contraries, we still cannot know on the basis of this that the common cause presupposition of (2) is true. Determinism would suffice here, but the issue of determinism cannot be decided *a priori*.

I have used the term 'insertable' to describe the presupposition of a common cause as well as the joint implications of *P* and *C*. This is a term of permission, not obligation. An explanation may fail to assert one or the other of these. One interesting example of how this is possible concerns a style of explanation that is not, properly speaking, causal. An *equilibrium explanation*, I have argued elsewhere (Sober 1983), does not say what the cause of the *explanandum* event was, but merely shows how that event would have taken place regardless of which of a range of alternative possible causes had occurred. The present point, however, is just that why-questions presuppose the existence of common causes; this may or may not be explicitly endorsed in the reasonable answers those questions receive.

In conclusion, I should say a bit about the relationship of this set of claims about explanatory presupposition to philosophical discussion of the so-called principle of the common cause (see, for example, Reichenbach 1956, Salmon 1975 and 1978, van Fraassen 1980, and Sober 1984a). That literature, it should be stressed, was interested in identifying the circumstances in which it is reasonable to advance explanations of a certain sort. My points here, in contrast, do not concern this epistemological issue, but rather are intended to show how the questions we put to nature are loaded with assumptions of a certain sort, whether these assumptions are warranted or not.

⁷ The distinction involved here between individual causality (as a relation between token events) and population-level causality (as a relation between properties in populations) is discussed in Good [1961-2], Skyrms [1980], Eells and Sober [1983], and Sober [1985].

This is not the occasion to consider when it is reasonable to treat pairs of events as stemming from a common cause. Details aside, it should be quite obvious that this will not always be appropriate. Yet, I have suggested that the why-questions we ask presuppose that a common cause structure is forthcoming. We have control over the sort of contrast space in which we choose to embed a focal proposition. We get to choose the values of P and C that flesh out schema (2). But no matter how we do this, there is an overarching assumption—one given, I would suggest, by the nature of the activity of explanation itself. The existence of pairs of events linked by common causes is necessary for the possibility of explanation.⁸

University of Wisconsin, Madison

Received November 1984

REFERENCES

- Cartwright, N. [1979]: 'Causal laws and effective strategies', *Nous* 13; pp. 419-437.
- Dretske, F. [1973]: 'Contrastive statements', *Philosophical Review* 81; pp. 411-437.
- Eells, E. And Sober, E. [1983]: 'Probabilistic causality and the question of transitivity', *Philosophy of Science* 50; pp. 35-57.
- Garfinkel, A. [1981]: *Forms of Explanation: Rethinking the Questions of Social Theory*, New Haven: Yale University Press.
- Good, I. J. [1961-2]: 'A causal calculus I and II', *British Journal for the Philosophy of Science* 11; pp. 305-318; 12; pp. 43-51; 13; p. 88.
- Reichenbach, H. [1956]: *The Direction of Time*. Berkeley: University of California Press.
- Salmon, W. [1975]: 'Theoretical explanation'. In S. Korner (ed.), *Explanation*. Oxford: Blackwell.
- Salmon, W. [1978]: "Why ask 'Why?' an inquiry concerning scientific explanation". In *Hans Reichenbach: Logical Empiricist*. Dordrecht: Reidel.
- Skyrms, B. [1980]: *Causal Necessity*. New Haven: Yale University Press.
- Sober, E. [1983]: 'Equilibrium explanation', *Philosophical Studies* 43; pp. 201-210.
- Sober, E. [1984a]: 'Common cause explanation', *Philosophy of Science* 51; pp. 212-241.
- Sober, E. [1984b]: *The Nature of Selection: Evolutionary Theory in Philosophical Focus*. Cambridge: Bradford/MIT Press.
- Sober, E. [1985]: 'Two concepts of cause'. In P. Asquith and P. Kitcher (eds.), *PSA 1984*, volume 2. E. Lansing, Michigan: The Philosophy of Science Association, forthcoming.
- Suppes, P. [1970]: *A Probabilistic Theory of Causality*. Amsterdam: North Holland Publishing Co.
- van Fraassen, B. C. [1980]: *The Scientific Image*. Oxford: Oxford University Press.

⁸ A consequence of the view developed here is that the question 'why is there something rather than nothing?' will be unanswerable, as long as the 'things' in question obey a conservation principle. The common cause presupposition demands that the universe's non-emptiness trace back to a cause, which the conservation principle says must itself involve the existence of something. But since the focal proposition and its contrasting alternative are logical negations of each other, no such existence claim can be inserted in the explanation without begging the question.