

Prevention, Independence, and Origin

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In ‘A New Route to the Necessity of Origin’ (2004, henceforth ‘NR’), we offered an argument for the thesis that there are necessary connections between material things and their material origins. Much of the philosophical interest lay in our claim that the argument did not depend on so-called sufficiency principles for crossworld identity. It has been the verdict of much recent work on the necessity of origin that valid arguments for the thesis require some such sufficiency principle as a premise but that such principles are deeply problematic.¹ Finding an argument free of such principles would advance both our understanding and the plausibility of that thesis. These claims are now the subject of a pair of insightful critiques by Teresa Robertson and Graeme Forbes (2006, henceforth ‘RF’) and by Ross Cameron and Sonia Roca (2006, henceforth ‘CR’), and we welcome the opportunity to clarify and improve our account of the matter.

The argument we offered comes in two parts. One is a derivation of a model necessity of origin thesis for tables from what we called an *independence principle* for tables:

(T-IND) Necessarily, given a table, T_1 , made from a hunk, H_1 , for any table, T_2 , which might be made from a hunk, H_2 , distinct from H_1 , it is also possible that both T_1 is a table made from H_1 and T_2 is a table made from H_2 .

Independence is a compossibility principle about the production of particular tables from particular hunks. It claims that any separately possible productions of particular tables from distinct hunks are also jointly possible. The argument

¹See, *e.g.*, Salmon (1979); Robertson (1998); Forbes (2002); Hawthorne and Gendler (2000); MacKay (1986); Chihara (1998); Della Rocca (1996); Sarkar (1982); Noonan (1983).

requires two auxiliary premises, the necessity of distinctness and the uniqueness of origin (within a world) for tables.

Importantly, we observed that (T-IND) is false in cases involving overlapping origins, such as those in which H_1 and H_2 share matter. The modal entanglement of such processes prevents their being run together in the same world. Since these are also cases in which the origin thesis is implausible, we suggested that a similar inference would take you from a more plausible version of independence restricted to disjoint hunks,

(RT-IND) Necessarily, given a table, T_1 , made from a hunk, H_1 , for any table, T_2 which might be made from a hunk, H_2 , *disjoint* from H_1 , it is also possible that both T_1 is a table made from H_1 and T_2 is a table made from H_2 ,

to a similarly restricted origin thesis, to the effect that no table can come from a hunk disjoint from the hunk it actually came from.

Our commentators do not question the validity of these inferences or their freedom from sufficiency principles. Independence principles are obviously compatible with the alternative production of any number of tables from H_1 and H_2 . Indeed, this feature was a source of our attraction to the argument, as it promises to set our reasoning apart from others extant in the literature. It has seemed to many, however, that independence principles are question-begging in this context. This places critical focus on the second part of our argument, in which we claim to infer independence principles from a more basic principle, *the locality of prevention*, for which we offered intuitive support distinct from any intuitions about the necessity of origin itself. Both commentaries focus on this second part of our argument.

Our basic idea was that the truth of independence principles could be traced to a plausible answer to a different sort of question, ‘What factors can prevent the production of a particular material object from a particular hunk of raw material?’ Our admittedly informal discussion developed three points. First, all prevention is local. Any factor which prevents the production of T_1 from H_1 can only do so through a mechanism which affects either H_1 or other elements of the process by which T_1 actually emerged. Leaving those elements unaltered allows T_1 to eventuate as it actually does. Second, the locality of prevention implies independence. Since making a table from some hunk disjoint from H_1 is clearly a possibly non-local factor, it need not prevent T_1 ’s coming from H_1 .

But if T_1 's coming from H_1 is not necessarily prevented by this factor, then it is compossible with it, just as (RT-IND) claims. Third, these ideas are compatible with a position we called the *bare identities view*, according to which a table's originating from H_1 just as T_1 actually did is not a sufficient condition for being T_1 ; the product might simply have been some other table. We reasoned that the compossibility of producing T_1 from H_1 with any non-local factor was not threatened by allowing other worlds in which some table other than T_1 comes from an otherwise indiscernible process. Thus the bare identity theorist need not deny the locality of prevention.

We believe these basic ideas to be sound. However, we think our critics show that our informal presentation of the argument from locality of prevention to the independence principle was inadequate to the task. This will be clearest if we first set out the reasoning more carefully than we did in our original paper. Our reflections on the nature of prevention suggested a modally necessary condition on factors which prevent T_1 's emergence from H_1 :

(LOP) For any possible factor F , necessarily, if F prevents T_1 's coming from H_1 , then F makes a difference in the locale of the original production of T_1 from H_1 .²

Any such condition on preventing factors implies, in turn, a necessary condition on *necessarily* preventing factors. The inference turns on the fact that necessity operators distribute over conditionals. This gives us the necessary locality of necessary prevention:

(NLONP) For any possible factor F , if F necessarily prevents T_1 's coming from H_1 , then F necessarily makes a difference in the locale of the original production of T_1 from H_1 .

We took for granted a conceptual connection between the idea of necessary prevention and the idea of compossibility. A factor F which does not necessarily prevent something is compossible with it. Thus we may reformulate (NLONP) as an explicit compossibility principle:

(COMP) For any possible factor F , if it is not necessary that F make a difference in the locale of the original production of T_1 from H_1 , then F is

²This reflects our first formulation (NR, p. 707), discussed by Cameron and Roca.

compossible with the production of T_1 from H_1 .³

From this, we may derive the independence principle, (RT-IND). Start with some T_1 made from H_1 and consider any T_2 possibly made from some H_2 disjoint from H_1 . By taking T_2 's production from H_2 as our factor F , we are given the compossibility of both table-productions required by (RT-IND), so long as we are given the extra premise that it is not necessary that, if T_2 is made from H_2 , then there is some effect in the locale of the original production of T_1 from H_1 .⁴

The problem identified by our commentators stems from the case envisioned by the bare identity theorist in which a process indiscernible from that which actually led from H_1 to T_1 leads instead to some other table. In such a case, it will no longer be possible to produce T_1 from H_1 , since H_1 will already have been used up. By hypothesis, however, the locale of the original production is unaffected: H_1 , the tools, the workers, and other circumstances of production are just as they actually were. If the bare identities view is correct, then we have a factor that need have no local effects but is not compossible with the production of T_1 from H_1 . One among (LOP) and its entailments, the bare identities view, or the claim that H_1 's producing a different table necessarily prevents the H_1 - T_1 production must be abandoned.

At this point, our commentators diverge in their diagnoses of the problem. Cameron and Roca charitably choose to hold fixed (LOP) and the bare identities view. Instead, they distinguish prevention from the kind of phenomenon involved in bare identities case, which they call 'exclusion'. On this interpretation, (LOP) is true because, 'it is essential to the notion of prevention that

³This reflects our second formulation (NR, p. 708, n. 6), discussed by Robertson and Forbes.

⁴ This extra premise has been noted by some commentators, including Tony Martin, Timothy Williamson, and Bill Harper. We breezily used it in (NR, p. 711), writing, 'Table productions can be isolated from the effects of other table productions in most cases'. It is precisely this premise which fails in the overlapping origin cases. Here is another example of how this extra premise might fail. Suppose that time and place of manufacture are necessary for the identity of the product. Let $\langle t, p \rangle$ be the actual time and place of T_1 's production from H_1 . It is possible that some H_2 be substituted into H_1 's place at the crucial moment, so that some T_2 is produced from H_2 at $\langle t, p \rangle$. By hypothesis, T_2 could not have been produced at any other time or place, so it is impossible that T_2 be produced from H_2 without some difference in the locale of the actual table-production. Competition for spatio-temporal location, then, would ruin the argument from locality of prevention to (RT-IND). Fortunately for the argument, it's intuitively implausible to suppose that spatio-temporal location is necessary to table-productions.

it involves a change in the world other than a mere haecceitistic switch', while exclusion does not. (CR, p. ??) So too, the bare identities view is compatible with (LOP) simply because (LOP) doesn't say anything about exclusion; an excluding factor need make no local difference. The inference from (LOP) to (RT-IND) fails, however, because there is no longer any conceptual connection between necessary prevention and compossibility. A factor which does not necessarily prevent T_1 's coming from H_1 may yet fail to be compossible with it because that factor excludes it. Thus they conclude that, '(T-IND) is stronger than what can be supported by the locality of prevention ... Our objection is that it begs the question. For, the extra strength that (T-IND) has ... can come only from assuming the necessity of origin'. (CR, p. ??)

In contrast, Robertson and Forbes are content, in effect, to understand 'prevention' as we do, so that any factor which could not obtain while T_1 is made from H_1 necessarily prevents that production. They also charitably choose to hold (LOP) fixed, and so conclude that the bare identities view must go.⁵ On their diagnosis, (LOP) implies a sufficiency principle. Again, take as our factor F the production from H_1 of some table distinct from T_1 in a process otherwise indiscernible from T_1 's actual production. If F were possible, (LOP) would require it to be compossible with the production of T_1 from H_1 . Since it evidently is not, (LOP) implies that F is not possible, *contra* the bare identities view. On this diagnosis, the inference from (LOP) to (RT-IND) remains valid, but does not represent an alternative to the sufficiency-based reasoning found and roundly criticized elsewhere in the literature.

Both commentaries are united by a common challenge they pose: What intuitively plausible principle both allows the necessary prevention of the production of T_1 from H_1 by an otherwise indiscernible production of a *distinct* table from the *same* hunk, and rules out (by implying (RT-IND)) such prevention by the production of the *same* table from a *distinct* hunk H_2 ? Both commentaries assumed that the formulation (LOP) and its entailments were to be held fixed; we think the right lesson to draw is that this formulation is inadequate to express the underlying intuitions about prevention that were our starting point.

⁵To be precise, Robertson and Forbes focus on (COMP) rather than (LOP). Finding our original presentation of the inference up to (COMP) unclear, they pick up the thread where it becomes visible. We hope to have made the connection of (COMP) to (LOP) through (NLONP) clear. Here then, we put their objection in terms of (LOP) for simplicity of presentation.

We think there is a straightforward answer to this challenge. Although (LOP) does imply a sufficiency principle, our reasoning never uses one to identify the result of some given possible table production, the key move in sufficiency-style reasoning.⁶ For this reason, a weakening of (LOP) that neither implies a sufficiency principle nor depends on one for its plausibility will serve just as well in our argument. Let us begin by thinking about the bare identity theorist’s troublesome switch case and how that case stands in relation to other cases of prevention. The switch case stands at one end of a spectrum of cases involving table-production processes which are less and less similar to the actual case in which T_1 comes from H_1 . The most similar cases are virtually indistinguishable from the actual case, while more distant cases will involve grosser local differences in the materials, tools, agents, and their actions. Our formulation of the locality of prevention, (LOP), gives a necessary condition on prevention which permits all of these cases to prevent, up to, but not including, the limit case of a bare switch. However, the underlying idea demands a condition which captures this entire range of cases and not just, as it were, the open interval which converges on but fails to include the limit case. This is the root of (LOP)’s inadequacy for our purposes. We think of all these cases as involving local factors and, thus, potentially preventing, but talk of ‘local differences’ fails to capture this idea at its limit.

We suggest that our earlier reflections on the way cases of overlapping origins falsify (T-IND) and push us to (RT-IND) provide resources for a more adequate formulation. In these cases the production of T_1 from H_1 may be prevented because too much of H_1 was used up in the process of making some other table for us to still craft T_1 alongside it. The bare identity theorist’s switch case stands as a limit to this kind of case as well, for cases of overlap are ordered by similarity to the actual production. At the limit, making some other table from H_1 in a manner just like the way T_1 actually came from H_1 , uses up too much of H_1 , *i.e.* all of it, for us to still craft T_1 . Importantly, characterization in terms of ‘overlap’ does include the switch case, for H_1 overlaps itself (though it does not include other cases of prevention which are not due to pre-emptive competition). This suggests that we may capture the intended range of cases by

⁶What our argument needs from a formulation of the locality of prevention is not that any table coming from H_1 in the relevant fashion be T_1 , but only that at least one table in one world coming in the relevant fashion from H_1 be T_1 . As we expressed the point earlier, leaving the process unaltered *allows* T_1 to eventuate.

characterizing the locality of prevention in terms of both local differences and overlapping productions:

(LOP*) For any possible factor F , necessarily, if F prevents T_1 's production from H_1 , then F either makes a difference in the locale of the original production of T_1 from H_1 or F is the production of a table from some hunk overlapping H_1 .

We believe this principle still deserves its 'locality of prevention' moniker, as talk of both 'local difference' and 'overlap' transparently get at the idea of a factor which operates *around here*.

Since (LOP*) expresses a modally necessary condition on prevention, the pattern of inference we laid out earlier using the ill-starred (LOP) may be reused to derive (RT-IND) from (LOP*). (LOP*) implies a necessary condition on necessarily preventing factors, which in turn implies:

(COMP*) For any possible factor F , if it is not necessary either that F make a difference in the locale of the original H_1 -to- T_1 production or that F is the production of a table from some hunk overlapping H_1 , then F is compossible with the production of T_1 from H_1 .

Once again, letting F be the production of a table from a hunk disjoint from H_1 secures the compossibility required by (RT-IND), as long as we can assume this factor does not necessarily induce some difference in the locale of the production of T_1 from H_1 . With (RT-IND) in hand, the first part of our argument takes hold and delivers the origin thesis. No sufficiency principle is used or implied here, as the switch case involves an overlapping table-production, falsifying the antecedent of (COMP*). In summary, it seems that (LOP*) is the better expression of our original idea, for (LOP*) is as well motivated as (LOP), delivers the crucial distinction between prevention by the production of a different table from the same hunk and prevention by production of the same table from a different hunk, avoids any commitment to sufficiency principles, and grounds a valid argument for the origin thesis.

Two objections to the amended argument immediately suggest themselves. A critic might say (i) that the move from (LOP) to (LOP*) is *ad hoc* and (ii) that our reformulation of the locality of prevention reveals it to be as question-begging as independence principles were said to be. We disagree and will here try to defuse these worries.

The first objection claims that our disjunctive characterization of the locality of prevention is just a way of helping ourselves to the single case we need; it amounts to no more than ‘makes a local difference or is the switch case’. Further, it might be said that while (LOP) enjoyed a degree of intuitive support based on consideration of ordinary prevention cases and talk of local differences, there is no reason to think this support extends to the extraordinary switch case and the overlap talk which includes it. To see why these thoughts are wrong, let’s turn our attention back to the metaphysics of the situation. It’s quite clear that crafting some other table from H_1 under circumstances otherwise indiscernible from T_1 ’s production from H_1 prevents that production *in precisely the same way* that crafting some other table from H_1 under slightly different circumstances does. Indeed, some cases of complete overlap are also cases involving local differences, as when we craft some table other than T_1 out of all of H_1 the day before. The intuitions about the locality of prevention really do cover all cases of overlap, not just those cases in which the overlap is less than complete. This was one point of noting that cases of overlap form a series whose limit is the switch case. The common mechanism of prevention in each these situations is clear: H_1 was used up in the other table production, so it does not remain available for the production of T_1 .

This thought about a mechanism of prevention also suggests a way of unifying the two disjuncts under a single, natural thought: Prevention requires a mechanism which operates in the locale of the prevented production. Usually the operation of such a mechanism makes a local difference. If the bare identities view is correct, however, the switch case shows that the mechanism of prevention operative in more typical cases of prevention may also operate ‘silently’, making no local difference. On this way of articulating the intuitions supporting (LOP*), someone who would uphold the contingency of origin has the burden of specifying a mechanism of prevention. Part of what we regard as the intuitive power of our approach is the suspicion that, in a large class of cases, no mechanism of prevention can plausibly be specified for the alleged possibility that T_1 emerge from some hunk other than H_1 .

We think these reflections also answer a version of the second objection. Suppose a critic, inspired by Cameron and Roca’s discussion, suggested that the switch case shares a mechanism with the case of contingent origins. Both, in his view, are cases in which making T_1 from H_1 has been prevented by a

mechanism which we might call *exclusion*. Exclusion requires no local difference, while more ordinary kinds of prevention do. Ruling out one case of exclusion but not the other, the critic argues, can only be done by assuming the origin thesis. We believe that our discussion of the mechanism of prevention in the switch case shows that this is not so. In the switch case, as in more ordinary cases of overlap, T_1 cannot be made from H_1 because that hunk has been used up. Using up hunks that provide raw material for table productions is one mechanism by which one may prevent further table productions from those hunks. In the case of contingent origins, H_1 remains available for table-making. Our critic might reply that in the latter case, it is T_1 which has been ‘used up’, so T_1 can no longer be made from H_1 . But literally speaking, only hunks of wood get used up by providing raw material for table manufacture. To speak of particular tables being ‘used up’ by having been produced is to introduce some new and peculiar sense of the phrase, a logical ‘using up’; no common mechanism is on offer here.

The main form of the second objection is that the locality of prevention, as newly articulated by (LOP*), is too close to the necessity of origin to provide independent support for the origin thesis. Robertson and Forbes already suggest that (RT-IND) begs the question. (RF, p. ??) So too, they might charge that (RT-IND) rests solely on (LOP*) in a similarly objectionable way. In a way, we would find this charge surprising. Given (i) that sufficiency principles are a legitimate, non-question begging starting point in this discussion and (ii) that (LOP*) is weaker than (LOP), which we grant to be, in essence, such a principle, it is hard to see why (LOP*) would be thought question-begging.⁷ The problem with arguing from sufficiency principles, after all, was their likely falsehood, not circularity.

Even so, it is surely true that one who wishes to maintain the contingency of origin will now see that she should deny (LOP*), but this isn’t to say much more than that she accepts the argument as valid and recognizes that (LOP*) is where the action is. We think, at the end of the day, the charge that a valid argument is question-begging is to be settled, not by counting controversial premises,

⁷Strictly, (LOP) is not equivalent to a sufficiency principle, but what gap there is between the two is filled by two uncontroversial, if complicated, background assumptions. In one direction, as Forbes and Robertson (??) show, you need the uniqueness of product; in the other, that if it possible that F obtain without making a local difference, then it is also possible that F obtain and no factor makes a local difference. On these assumptions, (LOP) is equivalent to the sufficiency principle.

but by assessing whether those premises articulate some more basic or prior truths and whether those truths have a source of support distinct from mere acceptance of the conclusion. While such determinations are famously hard to pin down with precision, we think it tolerably clear that such a prior and distinct basis has been supplied by our identification of the locality of prevention as the conceptual source of origin theses. In our view, intuitions about the necessity or contingency of origin are intuitions about a highly theoretical issue, one that comes late in the day conceptually speaking. In contrast, our question, ‘What does it take to prevent a particular table’s coming from a particular hunk?’ gets at a lower level issue, and one connected with a vast array of ordinary judgments about ordinary situations. We find it hard to see why someone confronted with the question of how one might prevent the production of a particular table from a particular hunk would deny (LOP*) in the absence of a powerful argument from intuitively very plausible premises.

We thank our commentators for showing that the inference from the locality of prevention to independence principles should have been formulated more carefully. But now that it has, we hope our claim to have tied the truth of origin theses to a prior issue is clear. It turns out that one who denies the origin thesis must deny something basic, plausible, and appealing: Only factors which operate via some mechanism in the locale of the original production can prevent it from transpiring. Perhaps this only, as they say, ‘raises the cost’ of holding on to the contingency of origin, but even so, that price strikes us as dear.

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