Bo Rode Meinertsen

EVENTS, FACTS AND CAUSATION

Abstract. The paper is concerned with the semantics and metaphysics of events and facts, particularly when they are claimed to be causal relata. I relate these issues to various well-known analyses of causation. The approach to the analysis of events is the property exemplification theory. I defend Kim's fine-grained individuation of events against most of Bennett's objections to it, but agree with Bennett that it is too fine-grained to provide a description of our ordinary thought and talk about events, including causal statements. In the final part of the paper, I attempt to show that we need to distinguish between two different senses of 'fact': the term can mean both a true proposition and a situation (truthmaker). I try to show that Bennett seems to hold that facts in the first sense are causal relata. I argue that this view either amounts to a causal irrealism or to a conflation of epistemology with ontology.

1   Introduction

Our concepts of causes and effects are fundamental to our conception of the world, in science as well as in common sense. The concept of causation is so closely associated with explanation of the world in science and common sense, that Hume is often cited for having claimed that causation to us is the cement of the universe. Two important philosophical questions immediately arise: (1) how much are we supposed to read in "to us"? That is, how independent of mind is causation; is it only a mental phenomenon or does it have an ontological correlate? And (2) what is the nature of the entities that the cement connects? In this paper we will be concerned with the latter question, but we will see that it is not independent of the first.

Analyses of singular causal statements divide into two groups according to choice of analysandum, and each group again divides in two according

to choice of analysans. As to analysandum, the distinction consists in what one chooses as causal relata. One group of theories construes events as causal relata and, as a consequence, has semantic data like 'the lightning caused the fire', where 'the lightning' and 'the fire' refer to events.

The other group construes facts as relata and their semantic data are statements like 'the house's burning was caused by the fact that it was struck by lightning', where there is reference to facts.

As regards analysans, the theories divide into relational and counterfactual. The first group analyses singular causation statements in terms of expressions like 'necessary condition', 'sufficient condition', and 'laws' (perhaps probabilistic). The counterfactual analysis analyses 'x caused y' in terms of the counterfactual 'if x had not been the case, y would not have been the case'.

In this paper, I shall present some formulations of these theories in order to evaluate the question of facts versus events as relata for the causal relation. This task requires an investigation of the nature of events and facts, the semantics of their names, and the relationship between the semantics and the metaphysics. Since one often construes events as causal relata and tries to connect theories of events with theories of causation, the most important subgoal of the paper is to investigate events. Hence, in contrast to the analysis of facts, the treatment of events is relatively extensive. We shall focus on macro-events encountered in ordinary life and, as far as possible, not discuss whether actions, natural-kind events, micro-events, and putative non-spatial events, as for instance mental events, obey *sui generis* principles.

Among other things, I shall try to show that an adequate analysis of event causation demands a criterion for the distinctness (and hence identity) of events and a demarcation between relational and non-relational events.

The discussion of events is centred on Jaegwon Kim's and Jonathan Bennett's influential theories of these entities. In accordance with these philosophers, and especially the latter, semantic issues will play a prominent role in this discussion, as elsewhere in the paper. (Recently, interesting and more ontologically orientated approaches to the problem of causation and its relata have appeared, e.g. (Mellor 1995), (Fales 1990), and (Armstrong 1997), but because of limited space they cannot be investigated here.) I shall show how important it is to distinguish between semantics and metaphysics when we try to individuate events. (Even though it is not uncontroversial in the literature, we will, as do Kim, Bennett and many others, also include "unchanges" in our metaphysical event concept, since our main goals are independent of this issue.) Bennett is a theorist who thinks of facts and fact causation as primary compared to

events and event causation. I shall try to show that such a view seems to be due either to a confusion of causal relations with causal explanation or to a sort of irrealistic conception of causation.

2 Sentence Nominals

2.1 Sentence nominals for facts and events

In ordinary discourse we often name[1] particular events with expressions like 'the explosion', 'the fire', 'the fight', 'the party', 'the talk'. These expressions all satisfy a test which Bennett has formulated, a test that gives the conditions under which a name N is probably an event sortal: (i) does it allow for (in)definite article and pluralis, (ii) does it allow qualification of the form [adjective][N][2], (iii) does it make sense in sentences like 'we saw the [N] when it occurred', 'one or more [N]s took place on this island', 'there have been two [N]s during the period from ...to ...'. These three conditions capture semantically our intuition that physical events are located in space and occur at a time T[3].

Vendler (1967, pp. 122 ff.), Thomason (1984, p. 74) and Bennett (1988, p. 4 ff.) have described an important semantic difference between two types of nominals which are often used in English ordinary language and anglophone literature on events. Consider the two following expressions that are nominalizations of the sentence 'Quisling betrays Norway':

D: Quisling's betrayal of Norway.

G: Quisling's betraying Norway.

The 'D' stands for 'derived', the latter signifying that 'betrayal' is derived from the verb 'betray'. The 'G' stands for 'gerundive' and although gerundives like 'betraying' are created by adding 'ing' to the verb's infinitive, we will let 'derived' be reserved for the first type. We shall call D a 'derived (sentence) nominal' and G a 'gerundive (sentence) nominal'.

As Bennett (1988, pp. 4–5) observes, there are four relevant grammatical differences between D and G:

(1)   D, but not G, takes a definite article and can be pluralized.

(2)   D takes adjectives in the attributive position, G takes adverbs.

(3)   In G the gerundive can be negated, temporalized and modalized: Quisling's not betraying – having betrayed – being (un)able to betray – Norway.

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[1] I use 'name', 'refer to' and 'designate' as stylistic variants.

[2] 'N', 'S', etc. and '[N]', '[S]', etc. are substitution places for the concerned expressions, respectively mentioned and used.

[3] 'a time' and 'T' are in this paper used neutrally with respect to points versus intervals.

(4) In D the relation to the object is expressed through 'of', in G the relation is expressed directly.

(1)–(4) can be generalized.

These syntactical differences show us that the derived nominal is the most name-like of the two, and we will therefore call it a 'perfect nominal' ('PN') and the gerundive nominal an 'imperfect nominal' ('IN').

There are also semantic differences (cf. Bennett 1988, pp. 4–5). Certain contexts that take D do not take G, or only take it somewhat artificially; for instance, the mentioned sentence contexts in the test for event sortals. Other contexts that take both emerge with different meanings, for example, '[D]/[G] surprised us'. In the first case, the surprise can be simply due to the fact that Quisling betrayed Norway, or from the way he did it. By contrast, 'Quisling's betraying Norway surprised us' is true only if the fact that he betrayed Norway surprised us.[4]

2.2   Fact language and event language

In most event names in English the descriptive part is a PN (Bennett 1988, pp. 6–7). By contrast, we know of no cases in which INs are functioning as event sortals, given our test for these and our common semantic intuitions.

With Vendler, Bennett, Thomason and others we will contend that an IN refers to the same fact as it expresses (extension = intension). For a start, we shall follow much philosophical folklore in defining a fact as a true proposition which is identical with an obtaining state of affairs, viz. the state of affairs that is expressed by the (indicative) sentence of which the IN is a nominalization. If the sentence is false, it expresses a state of affairs that does not obtain. In part 5 of this paper, we will show that this definition of a fact is insufficient. From now on we will understand that an IN does not refer to a fact if the corresponding sentence is false. (In general, when I speak of sentences, nominals, etc. as expressing and referring, I shall mostly understand that (often, if not always) they do this as used in particular contexts, i.e. as occurring in statements.) With Bennett we shall hold that any IN is synonymous with an imperfect sentence nominal of the form 'the fact that [S]' or 'that [S]'.[5]

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[4]There are also examples of gerundives which have to be interpreted as perfect, e.g. in the sentence 'I have been to three weddings'. However, they are irrelevant to our concerns.

[5]There are, however, according to Bennett, fact names of the form 'fact which is F', e.g. 'fact which had been discovered by John over the past month', which can function as sortals. But they are not sentence nominals and for that reason we are not interested in them here.

3   Facts and Causation

3.1   Fact-causation statements and event-causation statements

Fact-causation statements are statements which relate two facts and say that the one was a cause of the other. They do not have to include terms like 'a cause of' and 'causes'; many other expressions seem to involve the concept of causation, e.g. 'leads to', 'results in', 'consequence', 'because of', just as the concept of a physical thing most often occurs without the term 'physical thing'. Fact-causation statements do not have to refer to facts; it is sufficient that they contain strings that *express* them, as in 'the fire went out because the rain came' where the cause and effect are facts that are expressed; or 'as a consequence of the rain's coming, the fire went out' which refers to one fact and expresses the other. This difference is irrelevant to the information value of the statement, and we will to start with follow Bennett in representing both kinds of statement with '$C(f_1, f_2)$'. (In part 5, I shall point to problems associated with this formal representation of statements where the facts are only expressed.) Event-causation statements relate two events, as in 'the storm caused the flood', and we will represent their form with '$C(e_1, e_2)$'. We also have statements of the form $C(e, f)$, like 'the accident caused our missing the train' and $C(f, e)$, like 'the rain's coming resulted in the flood'. Vendler (Vendler 1967, pp. 163–169) has claimed that '... is the cause of' or '... is a cause of' always has the form $C(f, e)$ and that 'cause' is not used to designate an event. Vendler supports this asymmetry thesis by noting that we do not say that a cause took place, lasted for a while, etc. Bennett objects to this with the, in my view plausible, claim that the reason for this is partly that statements of the form 'the cause...' are rarely true, and partly that calling an event 'a cause' lacks informational value because possibly any event is a cause. In addition, Vendler refers to the fact that 'effect of' seems reasonable as or in a subject noun phrase. But as Bennett (1988, p. 30) points out, this can also be explained by the fact that when an event takes place, a language user has less knowledge about its effects than about its causes. There seems to be no reason why this epistemological asymmetry should imply a metaphysical asymmetry between causes and effects.

It has been claimed by some that $C(x, y)$ is transparent if the values for x and y are events and opaque if they are facts, but this is not true. If 'x caused y' is an extensional expression, we can salva veritate substitute co-referential names for both events and facts: Assume that Kim falls 3 m. down from a ladder and because of this sprains her foot. 'Kim's sprain

was caused by her fall' and 'Kim's sprain was caused by her 3 m.-fall' have the same truth value, but 'because she fell 3 m., she sprained her foot' and 'because she fell off the ladder, she sprained her foot' need not have it. The reason is simply that the fact nominals are not co-referential or, in other words, the fact that she fell 3 m. is non-identical with the fact that she fell off the ladder' (cf. Bennett 1988, p. 24). But how do we individuate facts?

3.2 Individuation of facts

Bennett (1988, pp. 35–37) writes (rather briefly) that the nature of facts can be analysed with the help of two well-known views on linguistic meaning:

A "Fregean" proposition is constituted by the meaning of the words that are contained in the sentence used to express it. This might be concepts that the words express by convention or, in the case of proper names and pronouns, the meaning that the speaker associates with them. Hence, two sentences express the same Fregean proposition if and only if they are "*a priori* interderivable" (by which he means logically equivalent).

"Russellian" propositions are expressed by sentences which contain a Russellian name, i.e. a name whose meaning is identical with the referent of the name. Granted the definition of a fact as a true proposition, we have two types of facts. Bennett is here expressing himself hypothetically: "if there are Russellian names..." (Bennett 1988, pp. 35–37). Therefore, I am inclined to interpret the propositions, and thus the facts, which he analyses, as abstract (non-spatiotemporal) entities which are "about" the world. If there are Russellian propositions and the referent of the name is a concrete physical entity, they can hardly be claimed to be abstract: how could a concrete object be a constituent of an abstract entity?

3.3 Analysis of fact causation

Let us very briefly sketch how an analysis (Bennett's) of fact causation can look. Where P and Q are true propositions about something that is the case at a time T, f_P is the fact that P and f_Q is the fact that Q. Let L be the totality of causal laws. $C(f_Q, f_P)$ is analysed as:

There is a true R such that $(P \wedge R \wedge L)$ entails Q, and $(R \wedge L)$ does not entail Q.

This means that f_P is what Bennet calls an *NS condition* for f_Q, i.e. f_P is a necessary part of a sufficient condition for f_Q: "One fact is a cause of another if the former is an operative part of some total cause of the latter." (Bennett 1988, p. 44). (It is understood that the relevant sufficient condition concerns the same time as f_P.)

Bennett has here borrowed from John Mackie's INUS-condition analysis. However, he thinks – quite correctly – that what the vowels stand for is superfluous. By removing what the 'I' represents, we do not exclude the possibility of having '*the* cause' as a limit case of our analysis of 'a cause'. And by removing what the 'U' represents, we allow the possibility that f_P could not have been caused by other facts than f_Q.

Analogously to what we shall have to do later for event causation, we must build *continuity* into our analysis in order to explain asymmetrical overdetermination (i.e. pre-emption) and to capture the transitivity of causation:

f_1 is an NS condition of f_2, and for every time t_j between the time to which f_2 pertains, there is a fact f_j pertaining to t_j such that f_j belongs to a temporally ordered sequence of facts, running from f_1 to f_2, each member of which is an NS condition of the next. (comp. Bennett 1988, p. 46)

Instead of analysing each fact in the sequence as an NS condition of the following, one could claim that each fact is counterfactually dependent on the immediately preceding one. As we shall see, this possibility is (ironically) used by David Lewis in his analysis of *event* causation.

4 Events and Causation

4.1 Problems in Mackie

Kim (1971) has pointed out that some of the problems associated with Mackie's 1965 analysis of singular event-causation statements are results of an insufficient ontological conception of causal relata. Mackie's analysis of statements of the form 'A causes P' is:

(i) A is at least an INUS condition for P, i.e. there is a necessary and sufficient condition for P which has one of the following forms: $(AX$ or $Y)$, $(A$ or $Y)$, AX, A,

(ii) A was present in the situation,

(iii) The factors represented by 'X', if any, in the formula for necessary and sufficient conditions were present in the situation,

(iv) Each disjunct in 'Y' which does not contain 'A' as a conjunct was not present in the situation. (Mackie 1965, p. 37).

One of the problems is that (ii)–(iv) concern the occurrence or non-occurrence of events. But, of course, these formulations are only meaningful if generic events are at issue. Hence, Mackie has not succeeded in

analysing singular causation statements.

A more serious problem is that Mackie performs truth-functional operations on event names and talks about complex events represented by compound names as, for instance, 'ABC', i.e. a name that is the conjunction of the simple names 'A', 'B', 'C' – presumably names for "simple" events. However, it is evidently meaningless to apply truth-functional connectives on names for events and other particulars. It might be that there corresponds a mereological sum of Socrates and Xantippe to 'Socrates and Xantippe', as Kim points out but, as regards negation and disjunction, there is no negative or disjunctive referent. As suggested by Kim (1971, p. 64), and hinted at by Mackie himself (Mackie 1965, p. 37), we might be able to correlate "simple" events with the complex "names", since to each particular event e, there corresponds the sentence 'e occurs'. Because material implication is not strong enough to guarantee unicity, Kim uses a necessity operator, N. Let I be the operator for definite descriptions. Then we get, for instance:

$A \vee B = (Ie)[e$ occurs iff A occurs or B occurs].

Analogously for conjunction and negation.

Given the assumption that truth-functionally equivalent "event names" "designate" the same event, there is no ontological correlate to the complexity of event names. The problem for Mackie's analysis now is that we get, e.g., $A \vee \overline{A}B$ and $B \vee \overline{B}A$ as representations of the same event because they are equivalent – but the INUS conditions are different! (Kim 1971, p. 67).

Kim guesses – in my view, quite reasonably – that Mackie's confusion is based on our prevalent use of sentence nominals as event names. A better relational analysis must be available.

4.2   A relational analysis of event causation

We shall here sketch Bennett's (1988, pp. 51–54) development of a relational analysis of event causation. A first candidate might be the following. Let '$F(x)$' represent a property of an event.[6] Let F and F' be properties and L causal laws. Then:

$C(e_1, e_2)$ if for some F and F':

$F(e_1)$ and $F'(e_2)$ and the statements 'every F event is followed by a F' event' or 'for all x, if Fx, then for some y: $F'y$ and x are followed by y' is entailed by causal laws.

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[6]The notation has 'F' as a property symbol, although '$F(x)$' strictly speaking requires 'F' to stand for a predicate.

However, this analysis is false since it implies this: if $F(e_1)$, and it is causally necessary that every F event is followed by an F' event, then e_1 is a cause of e_2. This is false (cf. Kim 1973a, p. 20) because a potential cause can be pre-empted by another. We solve the problem, as earlier in the analysis of fact causation, by means of the continuity condition and get:

$C(e_1, e_2)$ iff there is a chain of events, where any successive pair $\langle e_i, e_j \rangle$ satisfies $R(L, e_i, e_j)$, where R is a relation.

But this is still not enough. Because of transitivity, $C(e_1, e_2)$ can be true even though $R(L, e_1, e_2)$ is false. The problem is solved by replacing $R(L, e_1, e_2)$ with the continuity condition:

RAEC $C(e_1, e_2)$ iff there is a chain of events, where each successive pair $\langle e_i, e_j \rangle$ satisfies: there are properties F and F', such that $F(e_i)$ and $F'(e_j)$ and L entail that every F event is followed by an F' event.

There is, however, a problem with this analysis that is relevant to our purposes. It concerns which F and F' are allowed. If F and F' are entirely intrinsic properties, i.e. properties which do not involve an event's relation to something else, then the majority of event-causation statements will be false, because L does not exist.

On the other hand, if F and F' are too relational, then too many event-causation statements will be true: assume that a body is heated and therefore expands. We are then able to define a property F which a substance instantiates if and only if there is a substance 50 miles due south of it that is heated. In that case we have the following law: for any substance S, if S instantiates F, then a substance 50 miles south of it will expand (Kim 1973a, p. 16 ff.). Given RAEC, event F is a cause of the substance's expansion (cf. Bennett 1988, p. 53). This problem (which Kim calls "the parasite problem") cannot be solved by letting F and F' be totally intrinsic, mentioning the surroundings separately, and recoursing to fact causation. In that case, the analysans for $C(e_i, e_j)$ would be approximately: e_i has an intrinsic property F and e_j has an intrinsic property F', such that there is a class of jointly sufficient conditions of the occurrence of an F' event, a class that would not be sufficient if the fact that an F event did not occur were removed from it (Bennett 1988, p. 54). This analyses $C(e_1, e_2)$ as meaning that a certain fact about e_1 is an NS condition of the existence of a fact about e_2. But, according to Bennett, this analysis is false; it it too weak. There is no constraint on the intrinsic property. This implies, for instance, that a puff of wind could cause a fire, because the fact that the puff occured was an NS condition

for the existence of a fire with precisely that mean temperature rather than a slightly lower one (Bennett 1988, p. 54).

However, I am not so sure that the analysis is false. The puff of wind is a cause (although non-salient) of the existence of the actual fire if this fire is non-identical with the counterfactual fire, that is, if the determinate mean temperature of the actual fire is an essential property of it. On the other hand, if the determinate mean temperature is only an accidental property of the actual fire, the actual fire and the counterfactual fire might be identical. If so, the puff of wind only *affects* the fire rather than causing it. (See Mellor 1995, ch. 12 for more on the distinction between causing and affecting.) Furthermore, if this distinction is correct, there is perhaps no reason to doubt the existence of the laws required by RAEC when F and F' are intrinsic, and therefore perhaps not even a need for recoursing to fact causation.

4.3   The counterfactual analysis of event causation

We are now going to sketch Lewis's version of the counterfactual analysis of event causation.

Lewis 1973a analyses causation by means of the concept of causal dependence. The latter is defined in terms of counterfactual dependence. Causal and counterfactual dependence are first defined for propositions; however, a formulation for events can trivially be obtained, since to every possible event e there corresponds a proposition $O(e)$, which is true in those and only those worlds where e occurs.[7]

In agreement with Lewis (1973a, p. 197), we will give the following truth conditions for $A\square\rightarrow C$, where A and C are propositions and A-worlds and C-worlds are worlds in which respectively A and C are true: $A\square\rightarrow C$ is true in a world w iff either (1) there are no possible A-worlds ($A\square\rightarrow C$ is vacuously true) or (2) there is an A-world where C is true which is closer to w than any A-world where C is false.

The definition of causal dependence is as follows: Let e_1 and e_2 be two possible, particular and distinct events; e_2 is causally dependent on e_1 iff the family $\langle O(e_2), \sim O(e_2)\rangle$ is counterfactually dependent on the family $\langle O(e_1), \sim O(e_1)\rangle$, i.e. iff (i) $O(e_1)\square\rightarrow O(e_2)$ and (ii) $\sim O(e_1)\square\rightarrow O(e_2)$ are both true. There are two kinds of situation. In cases where e_1 and e_2 are actual events (i) is automatically true, so there is causal dependence iff (ii) is true. If e_1 and e_2 are possible events, then (ii) is automatically true, so there will be causal dependence iff (i) is true.

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[7]Cf. Kim's suggestion for Mackie's analysis – though Mackie's simple event names would have to be rigid, cf. Lewis 1973a, p. 199 f.

Since counterfactuals are not transitive (cf. Lewis 1973b, pp. 32–35), we will have to build in continuity in order to capture the transitivity of causation and get for distinct, actual events (cf. Lombard 1990, p. 195):

CAEC Event e_1 is a proximate cause of an event e_2 iff it is true that if e_1 had not occurred, e_2 would not have occurred. And e_1 is a remote cause of e_n iff there is a chain of events, $e_1, e_2, \ldots, e_{n-1}, e_n$, so that e_1 is a proximate cause of e_2, ... and e_{n-1} is a proximate cause of e_n.

An evaluation of counterfactuals about events presupposes knowledge about their essential properties. Bennett claims that in ordinary talk and thought we seldom find examples of counter-factual reasoning about events, and that we therefore lack data about event essences. In section 4.8, we shall see examples of events which Lewis's theory about event essences imply the existence of – events so remote from our pre-theoretical event concept that Bennett, who assumes Lewis's theory to be the best candidate for a theory of event essences, finds them sufficient for a rejection of CAEC as a viable analysis. I have no particularly justified opinion about this view of Bennett's, but it is certain that the discussion of essences in connection with events and causation is a large and difficult topic, which due to lack of space cannot be contained in the present study. Still, I shall in the next section lend credence to certain intuitions about events' transworld identity.

Another objection to CAEC is that counterfactual dependence is insufficient for causal dependence. This objection is made by Kim.

4.4   Kim's examples

Those of Kim's examples (Kim 1973b, pp. 205–206 and Kim 1974, pp. 25 ff.) which we want to investigate are (with minor adjustments):

(1)   If it had not been Monday yesterday, it would not have been Tuesday today.

(2)   If I had not written 'r' twice in a row, I would not have written 'Larry'.

(3)   If George had not been born in 1950, he would not have become 21 in 1971.

(4)   If John's sister had not given birth to a child at T, he would not have become an uncle at T.

(5)   If Socrates had not died at T, Xantippe would not have become a widow at T.

And we could add (cf. Lewis 1986a, p. 259):

(6) If I had not written 'Larr', I would not have written 'rry'.

Apparently, these are examples of counterfactual dependency without causation. Kim himself doubts that (1) is about events, but let us suppose that it is. We will also assume that the events in (1)–(6) are actual. Since CAEC is concerned with distinct events, we obviously have to ask if the two events in each example are distinct. This requires a criterion for event distinctness.

Swain (1981) first proposes this: e_1 and e_2 are distinct iff they are not identical; e_1 and e_2 are identical iff necessarily, $O(e_1)$ iff $O(e_2)$. Hence,

(S) e_1 and e_2 are distinct iff it is not necessary that $O(e_1)$ iff $O(e_2)$.

But, quite correctly, he finds counter-examples to (S) by contemplating *part-whole* related events as in (2) and *overlapping* events as in (6) and gets (Swain 1981, p. 68):

(DS) two events, e_1 and e_2, are distinct iff:
  (i) e_1 and e_2 are not identical, and
  (ii) neither e_1 nor e_2 is a complex event which has the other as a part, and
  (iii) e_1 and e_2 do not overlap.

But we can simplify (DS) in an illuminating way. Swain's (i) is, granted his identity criterion and a simple modal intuition, equivalent to

(i_1) possibly, non-($O(e_1)$ iff $O(e_2)$).

If we read the 'iff' as material equivalence, (i_1) is clearly equivalent to

(i_2) possibly, $[(\sim O(e_1) \wedge O(e_2)) \vee (O(e_1) \wedge \sim O(e_2))]$.

(i_2) enables us to see why (i) is not sufficient for distinctness: $O(e_1)$ and $\sim O(e_2)$ are compossible in cases like (2) and (6). But the first disjunct does not hold, so we get:

(DC) e_1 and e_2 are distinct iff $\sim O(e_1)$ and $O(e_2)$ are compossible.[8]

Hence, we can reject (1) as a putative counter-example. Also, (2) can be dismissed as a genuine counter-example, for the writing of 'rr' was a part of the writing of 'Larry', so that the latter could not occur without the former (if there is a world in which he can write 'Larry' without writing 'rr', it would not be the actual event (we have not assumed

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[8] A criterion like this is proposed by Yagisawa, Yagisawa 1979, p. 101.

counterpart theory)). Similar reasoning applies to (6). Also (3) can be rejected immediately if we assume that the time of the event's duration necessarily is the entire year of birth.

What about (4) and (5)? Could Socrates' death at T occur without Xantippe's being widowed at T? The property *becoming a widow* is a relational property[9], and relational properties made trouble for RAEC. Let 'SD' and 'XW' (rigidly) name respectively Socrates' death at T and Xantippe's being widowed at T. The question is, then, whether $\sim O(SD)$ and $O(XW)$ are compossible.

XW is an example of what Yagisawa (Yagisawa 1979, p. 103) calls "complexes", of which he rightly says (with adjusted terminology):

(a) For any complex c, there is an event e and a proposition p, so that for any time T: c occurs iff it occurs at T and p is true at T.
(b) Any complex occurs iff it occurs at a time.

Hence, we can say that XW exists iff SD and f_5 exist, where f_5 is the fact that Xantippe is Socrates' wife. From this it is easily seen that $\sim O(SD)$ and $O(XW)$ are non-compossible. Similar considerations apply to (4).

Becoming a widow and *becoming an uncle* are relational generic events, which resemble those that gave rise to the parasite problem. As does Kim (inspired by Peter Geach), we will call these relational events (complexes) 'Cambridge events' and their counterfactual dependency on the events necessary to their existence 'Cambridge dependence'. Can these events be causes and effects? Apparently, they can be effects; it seems intuitively correct to say that Socrates' drinking of hemlock caused not only SD but also XW. Yagisawa (1979, p. 105) has no intuition about whether they can be causes, but the following seems to satisfy CAEC's requirements for causation: 'if Xantippe had not become a widow at T, her friend would not have cried at T'.

We have found that SD and XW are non-distinct, although non-identical. But someone of a semantic bent may object to the claim of their non-identity, since perhaps 'SD' and 'XW' could be said to be co-referential if 'becoming a widow' and 'death of husband' are synonymous and 'Socrates' rigidly names Xantippes husband. If this objection is sound, we must reject the Cambridge-event analysis according to which they are non-identical. In my judgment, however, it is obvious that 'Socrates' does not rigidly name Xantippes husband: there are worlds in which Socrates is married to another woman or unmarried. Moreover,

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[9] In this context, we do not need to distinguish between relational properties and relations.

'becoming a widow' and 'death of husband' are not synonymous, since the former applies to widows, while the latter applies to their husbands.

Kim (1974, p. 23 ff.) has further reasonable arguments for their non-identity. First, he points to the strangeness of asserting an identity, since their spatial location (if XW has one at all) could be very different. Second, as it will become obvious later, his theory of events plainly entails their non-identity.

There are other reasons than CAEC in conjunction with (DC) for rejecting a causal relation between SD and XW (cf. Kim 1974). Firstly, they occur at exactly the same time (if the death is a process, we can choose the instant of its end), and how should the causal interaction then take place if their spatial locations are different? Secondly, according to RAEC and a Humean account of laws, causation presupposes the existence of a contingent regularity between the two generic events. But what could such a regularity possibly be for SD and XW?

As Kim observes, we can also reject the suggestion that the fact that $O(SD)$ in conjunction with f_5 is logically equivalent to $O(XW)$ could explain the relationship between SD and XW, for the Cambridge dependence is, by constrast to the equivalence, not symmetrical; we would evaluate $\sim O(XW) \square\!\!\rightarrow \sim O(SD)$ as false.[10]

We have started to discuss the connections between properties (generic events), the occurrences and identity of events, and reference of event names, in relation to causation. It is now high time to make a more detailed and systematic investigation of events and theories of events. We will do this in section 4.5–4.11.

4.5   Individuation conditions: metaphysics and semantics

From a metaphysical point of view, individuation conditions (identity criteria) for events are attempts to define a relation R, such that the following holds:

(IE) For any events e_1 and e_2, $e_1 = e_2$ iff e_1 resembles e_2 exactly in respect R.

The left-right conditional is a trivial instance of the Indiscernibility of Identicals. The right-left conditional is an individuation condition. A famous example of such a condition was proposed (and is now rejected)

[10] In addition, one can mention that it seems counterintuitive to identify SD and XW, for SD is a natural (natural kind) event, while XW seems to be a socio-cultural event because f_5 is a socio-cultural fact, or because the property of *being married* is a socio-cultural property (cf. Faye 1986, p. 13). Perhaps one could also defend a supervenience of XW on SD, but we do not need to continue this question here.

by Davidson: "No two events can be exactly alike in respect of what their causes and effects are." (Davidson 1969, p. 179), i.e. if e_1 and e_2 have the same causes and effects, then $e_1 = e_2$. This principle is viciously circular: If all or some causes and effects are events, the evaluation of the antecedent demands (among other things) evaluation of statements of the form '$C(x, e_1)$ and not-$C(x, e_2)$' and hence knowledge that an event x has a certain effect and the *same* event x does not have another effect (Bennett 1988, p. 98). We do not have to elaborate on Davidson's proposal in this paper, since his conception of events is very different from the property exemplification theory. And as we shall see in the next section, the latter can individuate events non-viciously.

From a semantic point of view, individuation conditions for events are the necessary and sufficient conditions for the co-reference of event names. However, the semantics and metaphysics are intimately connected. For example, if one asks whether the match that John takes part in is identical to the match that Peter takes part in, the question stands and falls with the question whether 'the match in which John takes part' and 'the match in which Peter takes part' are co-referential. But the relationship between them is not generally as trivial as this: as we shall see, a metaphysic does not imply any particular semantics (Bennett 1988, p. 100).

4.6   Kim's metaphysics and semantics

According to Kim, an event is an exemplification of a property by a substance S at a time T (straightforward extension to n-tuple of substances and n-adic relation). Since S and T define a spatiotemporal zone, we can alternatively say that an event is an exemplification of a property in a zone. The time constituent captures our intuition that (non-instantaneous) events are temporally extended entities, i.e. that they possess temporal parts. Kim represents an event with the form '$[x, P, t]$' (e.g. Kim 1976, p. 35), but to keep continuity in style we shall write '$[S, P, T]$'. The expression 'the exemplification of P by S at T' is a functor for the function from triples $\{S, P, T\}$ to exemplifications by substances of properties at certain times. The functor entails trivially:

(I_1) If $P = P'$, $S = S'$ and $T = T'$, then $[S, P, T] = [S', P', T']$,

but *not*

(I_2) $[S, P, T] = [S', P', T']$ only if $P = P'$, $S = S'$ and $T = T'$.

Kim seems, though, to endorse the conjunction of (I_1) and (I_2). Hence, the respect R of (IE) from the previous section is *having identical constituents,*

which does not imply any circularity.

What then, does an event name refer to, according to Kim? He defends a prima facie obvious "bridge" from metaphysics to semantics:

(K) An event name with the canonical form 'the exemplification of P by S at T' refers (if it refers) to the event that is the exemplification of the property, which 'P' refers to, by the substance, which 'S' refers to, at the time, which 'T' refers to.

(We shall also represent Kim's canonical names with '$[S, P, T]$'.) (K) is a simple consequence of Kim's view of an event as an exemplification of a property by a substance at a time and the truism:

(R) 'The exemplification of P by S at T' refers (if it refers) to the exemplification of P by S at T. (Kim 1991, p. 643)

As evidence for his metaphysics and semantics, Kim appeals, among other things, to this causal statement: "the collapse was caused, not by the bolts giving way, but by the bolts giving way so suddenly." (Kim 1976, p. 42). 'Giving way' is neutral as regards fact or event interpretation, but the adverb 'suddenly' shows that the first nominal is an IN, and hence, we must for charity reasons interpret the second as an IN as well. Mostly, Kim names events with INs. In the presentation of his theory, we shall sometimes follow him in this mistake.

If we formulate the example with PNs, we get 'the collapse was caused, not by the bolt's failure, but by its sudden failure', which sounds strange. Indeed, Kim's example is taken from Davidson (1967, p. 161), where it explicitly concerns facts.

Kim's individuation of events, and hence his interpretation of the causal example, is based on a distinction between *constitutive* and (what we shall call) *characterizing* properties.

4.7   Constitution, character and causation

Assume that John kisses Lisa tenderly on the cheek, only once, and at noon. Now, consider the following event names:

(1) 'the tender kiss that John gave Lisa at noon'
(2) 'the kiss that John gave Lisa on the cheek at noon'
(3) 'the tender kiss that John gave Lisa on the cheek at noon'

Each of the names prima facie has the form $[(John, Lisa), P, at\ noon]$ with each their own value for P. That is why, in Kim's theory, there are three events. If we now ask whether event (2) was tender, or whether

event (1) was given on Lisa's cheek, and assume that Kim would answer no, it follows that it is only possible to predicate something truly of an event if it is already included in (the descriptive part of) its name. This clashes violently with common practice, where we attribute contingent properties to events, for instance 'it was a funny excursion', 'the match was boring', 'the physicians' operation on the victim was successful'.

However, Kim does allow contingent event predication, so that event (2) was tender and event (1) was given on Lisa's cheek. Still, he wants to hold that event (1) and event (2) are non-identical. It is here that Kim distinguishes between constitutive and characterizing properties of events (e.g. Kim 1973a, p. 12). To any event there corresponds one and only one constitutive property which is represented by 'P' in $[S, P, T]$, and two events which totally occupy the same zone cannot have the same constitutive property. (Similarly, we shall also speak of the constitutive substance S and constitutive time T; or the constitutive zone.)

The general picture here is the following (cf. Bennett 1988, pp. 80–81). There are some events in the zone which the constitutive substance(s) and the constitutive time delimit. These events possess the same properties with one exception; they are all different when it comes to that part of the common character which corresponds to their constitutive property. According to this construal, we can correctly predicate *being tender* and *being a tender kiss* of a constitutively tender kiss (here, the constitutive property is not *being a tender kiss*, which is a property of events, but *kissing tenderly*, which is a relation between the constitutive substances). Obviously, it is also a property of the constitutively tender kiss that its constitutive property is *kissing tenderly* (cf. Kim 1976, p. 43).

However, there is a problem with this theory, when it is stated in this way. If the constitutively tender kiss literally exemplifies the property *being tender* (or *being a tender kiss*), is seems that the property *being tender* is somehow involved in the same event twice. For *kissing tenderly* is a complex relation which in some way includes *being tender*, so that this property is both exemplified by the constitutive substances and by the constitutively tender kiss. Or to take a monadic case, e.g. the bolt's sudden failure, which might be clearer than a relational: the property *being sudden* is a constituent of the complex property *failing suddenly*, so that the former is both exemplified by the constitutively sudden failure and by the bolt. This doubling of property exemplifications is strange and uneconomical. To avoid this, I think we should say that the predicates 'is tender' and 'is sudden', although truly predicated, do not pick out properties of the corresponding constitutively tender kiss and sudden failure, but applies *in virtue* of their being constituents of the constitutive properties of these events. This option is possible, for, as Armstrong (e.g.

Armstrong 1997) has argued, there is not a one-to-one correspondence between predicates and properties: for instance, 'game' may apply in virtue of many properties, and 'gravitational rest mass M' and 'inertial rest mass M' may apply in virtue of the same property. In a slightly different way, a corresponding argument holds for the events that are constitutively a kiss and constitutively a failure. Although 'is tender' and 'is sudden' are truly predicated of them, they do not literally exemplify *being tender* and *being sudden*, respectively. Instead, these predications are true in virtue of the fact that they are intimately related to the constitutively tender kiss and the constitutively sudden failure, respectively. What this relation is, we shall see in the next section.

In short, the modified version of Kim's theory has it that:
(i) two or more events which occupy the same zone and which allow of the same predication are distinct, because their constitutive properties are distinct,
(ii) which event a given event name refers to depends only on how it relates to the constitutive property.

Thus, Kim's theory interprets the causal example as follows. Even though 'the bolt's giving way' refers to an event that was sudden, this event did not cause the collapse, since it was not a constitutively sudden giving way. Bennett claims that this view of the constitutive property as being the only causally relevant property is fatal to Kim's theory, since he believes it is evident – and a common trait to all popular theories of event causation – that the causal role of an event depends on which properties it possesses, on its character. This objection is probably question-begging, I think, since it does not take Kim's theory seriously. If the theory does not cohere with popular analyses of event causation in this way, the reason is simply that these presuppose a conception of events, according to which there is no distinction between constitutive and characterizing properties.

There is, however, another possibility, which Kim himself (Kim 1976, pp. 44–45) contemplates, even though it deviates considerably from his standard theory. It might be that the adverb 'suddenly' does not modify a constitutive property and thereby creates a new constitutive property, but that the corresponding adjective simply denotes a property which is exemplified by the event in question. Thus, according to this line of thought, 'the bolt's giving way' and 'the bolt's giving way suddenly' denote the same event, viz. the bolt's giving way. I shall mention two arguments against this suggestion. First, as Kim seems to notice, this proposal of *coarse-graining* events is highly incomplete without a systematic identification and account of the conditions under which predicates refer to constitutive properties and the conditions under which they do not. Second, one may agree with Kim that when we want to explain events, for

instance, the collapse, it seems insufficient to mention the bolt's giving way or, if we want to explain why the event was sudden, then – given the possibility here – we would not be explaining why a certain event (the bolt's giving way suddenly) occurs, but instead why an event (the bolt's giving way) has a certain property (*being sudden*). Kim remains in doubt about letting desiderata from explanation theory influence the theory of events, but sees no reason to reject his standard theory.

4.8   Cardinality and mereology

Kim (1976, pp. 46–47) suggests an interpretation of his standard theory to meet the counterintuitive result about the number of events in a zone. He holds that he can acknowledge that 'when John kissed Lisa at noon there was one and only one kiss' is true and still claim that there is a constitutive property for each correctly, non-contingently predicated property of the kiss. He appeals to the concept of an *inclusion*. Any event occupies a zone and can therefore be said to include all the temporally or spatially lesser "slices". But Kim not only wants to slice quantitatively, but also qualitatively: for instance, the kiss that John gave Lisa is included in the tender kiss that he gave her. He refers to the calculus of individuals, according to which it is (in Kim's construal), in a certain sense, incorrect to say that, e.g. I am now sitting at only one table, since there is also the table we get if we remove a couple of molecules from it, the table we get by removing a few more molecules, ..., etc. Only in this sense are there many tables in my room.

Kim (1976, p. 46) is aware of the fact that there is a difference between the quantitative and the qualitative inclusion. Bennett thinks that it is simply senseless to make these qualitative slices in a spatiotemporal particular which an event is – also in Kim's own theory. Kim commits an elementary category mistake: "it is as wrong as it would be to say that the largest brown desk in my study room has the largest desk as a part." (Bennett 1988, p. 83). In my judgment, however, there *is* an ontological sense in which an ordinary concrete particular (substance or event) can be said to include its properties, although it is not recognized in everyday thought and talk. Borrowing from Armstrong (Armstrong 1997, pp. 123–126), we can call the ordinary particular with all its properties the "thick" particular; and this particular in abstraction from all its properties the "thin" particular. The ordinary particular is identical to the thin particular's exemplification of the former's "nature", i.e. of the property that is the conjunction of all the properties ordinarily attributed to the thick particular. It follows that the properties of the thick particular are not exemplified by it, but are included in it. Hence, the thick particular

can also be said to include the "thinner" concrete particulars which are identical to the thin particular's exemplifications of the properties that are conjunctions of fewer than all of the properties included in the thick particular.[11] It seems to me that despite this metaphysical way in which a thick event can be said to include (indefinitely) many other events, the former is more fundamental than any of its metaphysical part events, a fact that is not implied by Kim's theory. Furthermore, I do not consider this account of inclusion to be an argument in favour of Kim's theory (*qua* a theory of causal relata), but merely a manner of making sense of it.

It might be thought that a metaphysically better version of the property exemplification theory can be provided. Unwin (1996, p. 324) has this opinion. He holds that neither Kim's inclusion interpretation nor the coarse-grained alternative mentioned in the previous section should be the standard strategy of the property exemplification theory . (His article is centred on the analysis of some artificial events and their names and what he says makes most sense in connection with these. But he also considers more common cases.) Discussing the adverbially modified predicate 'strolls leisurely', he claims that Kim should instead have said that it does indeed pick out a constitutive property, but one whose instantiations are not leisurely strolls but "sums of strolls and leisurelinesses". He finds this analysis less implausible than the two others. To me it seems to be the most implausible. For "leisurelinesses" are not events; they are neither entities with temporal parts nor instantaneous limits of such entities. However, Unwin provides some evidence for the view that the implausibility is due to this particular example, and that his proposed strategy analyses other adverbially modified predicates to be terms for properties whose exemplifications are sums of genuine events. For instance, 'stabs fatally' would refer to a property the exemplification of which is a sum of a fatality (death) and a stab. But the problem with this analysis is, as Unwin shows, that there does not seem to be any general way of distinguishing the different kinds of example.

But perhaps the mentioned implausibility of Unwin's analysis of the first example should be considered a counterexample to his proposal. However, according to Unwin, there is yet a possibility which he thinks is the least implausible of all. One might maintain that 'strolls leisurely' does refer to a constitutive property (*strolling leisurely*, I take it), but one whose exemplifications are strolls in the ordinary sense, i.e. strolls (which are leisure). But this proposal is wrong too. It implies that the constitutive substance in one and the same event can instantiate more than one con-

stitutive property. Strangely, even though Unwin seems to be aware of this, he finds the option reasonable. But obviously, this implication goes against the very sense of Kim's basic distinction between constitutive and characterizing properties. The suggestion simply deprives the constitutive property of its metaphysical role – the individuation of an event.

In short, we must still consider Kim's fine-grained theory to be the standard version of his property exemplification theory. But as we shall see later, Kim's metaphysics of events needs to be separated from his interpretation of event names.

Turning to Lewis, we also find two kinds of event mereology. Firstly, he has a spatiotemporal one: because zones can be spatiotemporal parts of each other, and (1) an event according to Lewis is a class of zones, no two of which occur in the same possible world, and (2) the mereology for the class members can be transferred to the class, it follows that events can be zonal parts of each other. The definition is as follows: An event e_1 is essentially part of another event e_2 iff necessarily, if e_2 occurs in a zone, then e_1 also occurs in a subzone included in this zone (Lewis 1986b, pp. 258-59).

Secondly, Lewis's conception of events as a class of zones plus his thesis that the parts of a class are its subclasses, makes it possible for him to introduce a class-subclass mereological relation. This logical relation is:

df.   An event e_2 *implies* an event e_1 iff necessarily, if e_2 occurs in the zone, then e_1 also occurs in the zone. (Considered as classes: e_2 is a subclass of e_1) (Lewis 1986b, p. 255)

Let us now consider two events which he thinks instantiate this relation. An event occurs: John says 'hello' loudly. Lewis thinks that there really are two events: e_1: essentially a saying-'Hello'; accidentally loud and e_2: essentially a saying-'Hello'-loudly (Lewis has stipulated INs as (non-rigid) names for his events). Both e_1 and e_2 with the "richer" essence occur actually, and e_2 implies e_1. Notice that there is a counterfactual dependence of e_2 on e_1 in virtue of this implication: $O(e_1) \Box \!\!\rightarrow O(e_2)$ and $\sim\!O(e_1) \Box \!\!\rightarrow \sim\!O(e_2)$ hold. Without his principle that 'non-identical' does not mean 'distinct' this would, given CAEC, imply that e_1 causes e_2. Lewis considers it to be a general principle that, when an event implies another, they are not distinct, and their counterfactual dependence is not causal. I shall not discuss this theory any further, since, for our purposes, it is sufficient to note that *if* Lewis' description of the situation is correct, then it is compatible with (DC) (see section 4.4), since $\sim\!O(e_1)$ and $O(e_2)$ are obviously not compossible.

4.9   Are Kim's events facts?

Bennett's substantial thesis about Kim's theory of events is that it can be true, but as a theory of facts. Since for facts it holds that they have a qualitative mereology – a given fact is included in the richer fact and implied by the latter – and they are precisely as fine-grained as the corresponding sentence nominal says (extension = intension), i.e. that their sentence nominal expresses their entire intrinsic nature and, hence, that it is impossible to predicate non-contingently about the intrinsic nature of a fact denoted by such a nominal. There is no doubt that the fact that John kissed Lisa is a fact other than the fact that John kissed Lisa tenderly on her cheek.

Bennett has this view even though Kim treats, for instance, the S-component in an event name in a Russellian manner and therefore claims (Kim 1969, p. 202) that 'Socrates' dying' and 'Xantippe's husband's dying' are co-referential. However, Bennett finds that this treatment is inconsistent with Kim's wanting events to figure as relata in explanations. If this is to be satisfied, the names have to occur transparently (Fregean) in the explanation context, since to explain Socrates' death is not necessarily the same as to explain the death of Xantippe's husband.

To this argument two responses can be made. First, as we saw, Kim has doubts about letting desiderata from explanation theory play such a decisive role in event theory. In this, I think, he is justified; explanation is in my view a relatively subjective matter. Second, and more important, Kim writes to Bennett:

> What you say here is right only if we view explanation as logical inferences involving sentences, and not consider what these sentences are about. I would say, contra you, that whatever explains why Socrates died also explains why Xantippe's husband died, why Plato's teacher died, etc. For these are the same fact (or event in my parlance). (Bennett 1988, p. 85)

If we change the sentences a bit around in this quote, it seems that Kim is saying that sentences are "about" the same fact. But in our definition of 'fact' earlier in this paper we spoke about sentences expressing facts, and facts being about the world. Is the discussion here muddled by an equivocation of 'fact'? We shall return to this question in section 5.2. Until then, we shall continue to follow our present definition.

Kim (1976, p. 40) says that his events are "dated" particulars; that they in contrast to facts are spatiotemporally located, i.e. that they are *in* zones, and that they are not, as facts are, *about* zones. Bennett agrees that facts are about zones, but also holds that Kim's "events" (he polemically puts them in quotation marks) are so fact-like that they are able to be

about their constitutive zones. If Kim should argue against this, Bennett continues, he would have to use expressions of the form '[IN] is in zone ...', and hence not be using true English ("strange and possibly defective English") (Bennett 1988, p. 86).

Bennett's argument here seems to presuppose an unreasonable form of semantic idealism. Why is it not just possible to stipulate (as does Lewis) that INs name events? Or one could perhaps appeal to the distinction between speaker's meaning (reference) and semantic meaning (reference), for it seems implausible to deny that we in many concrete contexts are able to identify the event that a speaker refers to with an IN. And, as we shall see, Bennett himself holds that the reference of an event name is connected with an indeterminacy that can be reduced in concrete contexts of language use. (In addition, it is in principle possible to use INs as proper names for events. Against this Bennett might object that proper names are only applicable if the referents can be identified by means of definite descriptions, cf. Bennett 1988, p. 3.) However, if one independently of this dispute about INs and reference objected to Bennett's criticism by saying that Kim *has* excellent names for events, namely names of the form $[S, P, T]$, Bennett could reply by referring to his descriptive methodology: this form is a technical invention that cannot be endowed with pre-theoretical meaning (cf. Bennett 1991, p. 659). I am inclined to agree with Bennett on this issue of methodology, but shall not discuss it further.

In short, if we reject this semantic idealism and attach importance to those of Kim's statements that go against Bennett's thesis, there seems to be no convincing reason to construe Kim's events as facts. Still, it is clear that Kim's events have a similarity to facts in their being fine-grained.

Thus, Bennett understands most of what Kim says about events as valid if taken to concern facts; in particular, that his semantics is true as a semantics for facts. Nevertheless, Bennett shares Kim's view about the fundamental structure of an event – that it is an exemplification of a property by a substance at a time.[12] However, Bennett (Bennett 1988, p. 94) does not find that this metaphysics by itself implies a semantics for event names. This means, he argues, that it is possible to say, for instance, that in our earlier example the kiss and the tender kiss are identical, since these events need not be instantiations of different constitutive properties (*kissing tenderly* and *kissing*, respectively). In general terms it can be put like this. Assume that there corresponds one, and only one, constitutive property to each event. Let 'Con' and 'Char' abbreviate 'constitutes' and 'characterize', respectively. Then we can say:

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[12] What Bennett calls "tropes". But cf. e.g. Campbell (Campbell 1981, p. 479 and Campbell 1990, *passim*) for the much more prevalent use of the word as a term for simple entities – properties construed as particulars.

(B) There are two relations Con and Char, such that for any event
e there is exactly one property P^* so that $Con(e, P^*)$, and any
property P, such that $Char(e, P)$, is part of P^*. ('part of' in the
sense that necessarily, what is characterized by P^* is characterized
by any part of P^*).

What does this metaphysics imply for the conditions of co-reference of
event names? Let 'S-P-T name' denote the perfect nominalisation of a
sentence of the form [NP][VP][temporal adverb]; we can then say with
Bennett (comp. Bennett 1988, p. 94):

> If e is an event constituted by property P^* and exactly occupying
> zone z, and the S-P-T name refers to an event that exactly occupies
> z, and the S-P-T name contains a name of the property P, then it
> names e iff P has the relation R to P^*.

(If R was identity, we would have both Kim's semantics and metaphysics.)
Before we see which value Bennett ascribes to R, we must have a brief look
at *Quineian* or *coarse-grained* events, in order to show the plausibility of
his theory.

4.10   Quineian events

A Quineian event (e.g. Quine 1985, p. 167) is constituted by all the
properties exemplified in the zone which the event occupies. Therefore,
one only has to mention a zone when one intends to refer to an event.
But this mapping between events and zones does not imply that a zone
is only capable of containing a single event, only that at most one can be
entirely contained in the zone; i.e. other events can partially occupy the
zone.

The theory might seem to imply the following semantics:

(Q) An S-P-T name refers (if it refers) to the event that exactly occupies
the zone, which S and T delimit.

However, this semantics is false, since it is intuitively clear that an S-P-T
name sometimes refers to an event that only occupies S at a part of T,
or a part of S at T, or both. For instance, it seems unreasonable that
'Quine's headache on December the 25th 1996' and 'Quine's breathing
exercises on December the 25th 1996' should refer to events that occupy
exactly the same zone, and which thus, according to the Quineian view,
are identical.

Yet, we do not have to reject (Q) to illuminate Quine's theory. Let us
first consider some strange semantic consequenses. A woman S swims at
T where she also catches a cold. Is the swim the onset of the cold? (If one
thinks that a cold begins in a proper part of the body, one can probably
find another disease.) If the answer to this is confirming, and we can
substitute co-referential terms, then we have a problem in explaining a
sentence like 'the onset of the cold became famous'. As Bennett (Bennett
1988, pp. 109–110) observes, there are at least three possible explanations:

(1) The sentence is literally true, but we are disinclined to state it, be-
cause it suggests something false: that there can be a causal relation
between the onset of the cold and the swim's becoming famous.

(2) '...became famous' is an opaque context.

(3) The sentence 'the onset was circular and three miles long' is literally
true, but its strangeness is due to the fact that we do not ordinarily
think that way, just as someone drawing a house does not think of
its weight.

However one evaluates the theory's semantic implications, consider-
ations about causality show it to be false, given Bennett's descriptive
methodology and RAEC. (How it connects with CAEC, I do not know.)
Let the sentence 'the swim was healthy' be an elipsis for 'the swim caused
health-bringing events in her body'. By substitution we get 'the onset
of the cold was healthy', which is true, but only seems false because our
ordinary causal discourse is ruled by conversational principles about infor-
mativity, and the sentence suggests that the onset of the cold *qua* an onset
of a cold is attributed with causal power (cf. Bennett 1988, p. 112). But
now we know that we can refer to an event with a nominal which only
mentions some of its intrinsic properties. In the example, the causally
relevant properties are among those that are not mentioned in the name.

In short, according to Quine's theory a true $C(e_1, e_2)$-statement only
reports the location of the causal relata; while, according to Kim's stan-
dard theory, it is true only if it mentions all causally relevant properties of
the events concerned (strictly speaking: of the constitutive substances).
Bennett thinks the truth is somewhere in the middle of these extremes.
In my judgment, this is reasonable.

4.11   Bennett on the semantics of event names

Bennett's theory consists of two elements:

(i) The trope thesis: Any S-P-T name refers to an event that is the
exemplification of P^* by S at T, where P^* most often includes P, but

seldom includes all properties exemplified in the zone. (Epistemologically, the contingency regarding which property that is constitutive of an event relative to its name means that we have to understand the name and investigate the zone in order to know which property is constitutive.)

(ii) The indeterminacy thesis: Our language contains indeterminacy as regards which property is constitutive. Bennett has no real argument for this thesis, but proposes it as a conjecture to explain the high amount of fuzz in our talk and thought about events. Consider, for instance, a parachutist spiralling downwards. Because he moves in circles (and only because of this) he feels dizzy; because he moves downwards (and only because of this) he feels sick. In answer to the question 'Does the descent cause him to feel dizzy?' an "intelligent audience" could reply both confirming and disconfirming (Bennett 1988, p. 128). Bennett does not think that there is an either-or answer to the question, but exactly indeterminacy. He claims, however, that a speaker in concrete contexts of language use is able to reduce the indeterminacy if he "has sharply made up his mind what event he is using a given name to refer to" (Bennett 1988, p. 129). This indeterminacy thesis seems plausible, but we do not have to investigate it in this paper.

Kim (1991) criticizes the trope thesis for contradicting his truism:

(R) 'The exemplification of P by S at T' refers (if it refers) to the exemplification of P by S at T.

In his answer, Bennett rejects that it does so. He argues that the exemplification of P by S at T can be understood in two ways. According to a "thick" reading (or as I would prefer to call it: a "loose and popular" reading) it is meaningful to say that an event that is the exemplification of P can be the exemplification of Q, even though P is not identical to Q. According to the other "thin" reading, such an identity is only possible if $P = Q$. This is Kim's reading. Bennett accepts both readings, but does not think that this commits him to Kim's semantics. Consider the situation that John gives Lisa one and only one kick on the leg and thereby assaults her. Intuitively, it is correct to say that there is *one* kick and *one* assault and, according to a thick reading, that the kick was identical with the assault. But according to a thin reading, the kick which John gave Lisa is not an exemplification of the property *kicking*, but instead of a richer property. In other words, the kick which he gave her was an exemplification of *kicking hard with the right foot as an assault* ..., etc. Similarly for the assault; the assault which he made on her was an exemplification of *assaulting by kicking hard with the right foot ...*,

etc. Then, when we have investigated the zone sufficiently and are able to finish the two descriptions, they will be equivalent. This thin reading is clearly based on (B) of section 4.9 and the trope thesis.

(I think the expression "investigated the zone sufficiently" seems obscure and strongly idealized, like, for example, "justification under ideal circumstances", but we seem to be able to associate some meaning with it. Its character is probably connected to the fact that events, like other concrete particulars, possess indeterminately many properties.)

I am inclined to hold that Kim and Bennett, without being quite aware of it, are talking at cross purposes in an important part of their discussion. The fact is that 'P' in Kim's [S,P,T] name or in the name 'the exemplification of P by S at T' is understood by Kim as a term for the constitutive property P. Therefore, he refers to the disquotational truism (R) (which together with the property-exemplification theory undoubtedly entails his (K) from section 4.6). But, *of course*, (R) does not imply that we, given the fact that John kisses Lisa plus a PN like 'the kiss that John gave Lisa', are able to read the constitutive property of the referent. Detached from a context, we cannot read anything at all about the constitutive property from the PN – except that it is plausibly richer than the one mentioned in the name – we must, as Bennett says, inspect the zone. The reason is simply that PNs are not canonical names. Kim (Kim 1991, p. 644) knows that his metaphysics and (R) do not throw much light on the semantics of event discourse. But in the same place it can be seen that the reason he thinks Bennett is denying (R) with his trope thesis is Bennett's use of the term 'an S-P-T name'. By that, Kim thinks that he means an [S,P,T] name. But Bennett, who admits (Bennett 1991, p. 662) that he was not clear enough, uses – as we have seen above – the term for PNs, and not at all Kim's technical [S,P,T] names. This shows that Kim and Bennett have been talking at cross purposes, and the former is the main cause of this failure. Kim has, crudely speaking, projected out his canonical form on our language. This has resulted, not only in his confusing S-P-T names and [S,P,T] names, but also in his ignorance of the distinction between INs and PNs. This ignorance caused or played an important role in obtaining the counterintuitive results about the number of events in a zone.

5   Facts again

5.1   Bennett's correlation thesis

On the assumption that we are able to reduce the indeterminacy (in language-use situations), Bennett claims, nevertheless, that every S-P-T name is *correlated* with a unique entity, namely "the fact that P^* is

instantiated at a certain zone" – the event's "companion fact" (Bennett 1988, p. 128). This correlation cannot be replaced by an identity relation, because then we would in a transparent context be able to substitute, salva veritate, any PN with the IN that names the event's companion fact. As we shall see, Bennett thinks this is impossible. Just after Bennett has said this, he proposes that it is not "deeply false" to say that:

> Events are facts of a kind ... We think of facts as "events", when we are naming them with perfect nominals and as facts when we are naming or expressing them with imperfect nominals ... *An imperfect nominal names the fact it expresses; a perfect nominal names a fact that includes the fact it expresses.* (Bennett 1988, p. 128)

(A little later he modifies because of the mentioned failure of PN/IN substitutivity by replacing "names" in the last sentence with "picks out".)

What is going on here? Shall we be so charitable as to grant to Bennett that statements can be "nearly true", so that we can ascribe him a single view, namely that events are a kind of facts? Given that we are, however, it is not really fair to attribute this view to him, because he climbs down somewhat later in the book. Let us first see to what use he puts the correlation thesis (as I call it).

Bennett claims that he can use it to solve RAEC's problem with intrinsic vs. relational properties of events by invoking *parts* of companion facts. Let '$F(x)$' abbreviate 'x's companion fact'. Bennett contends that $C(e_1, x)$ means that there is a fact f_1 that is part of $F(e_1)$ and is a cause of x. Hence, "an event-causation statement is an existentially quantified fact-causation statement." (Bennett 1988, p. 135). Thus, event causation is analysed via fact causation. For example:

> If someone says "The insult caused an uproar", referring to an insult that Schopenhauer launched in the direction of Hegel, the statement will be true if people behaved uproariously because someone insulted someone in Heidelberg at T or because Schopenhauer insulted someone in Heidelberg at T or because someone insulted Hegel in the middle of a lecture or ... or ... and so on. (Bennett 1988, p. 136)

Given application of the NS analysis on fact causation, we can see the reason why events cannot be identified with their companion facts, Bennett claims. For then $C(e_1, e_2)$ would mean that $C(F(e_1), F(e_2))$, but in most cases $F(e_1)$ is much too rich to be an NS condition for $F(e_2)$. Consider, for instance, the statement "just yesterday, the job I did in the garden caused a backache". $F(e_1)$ would here be something like "the fact that without any preliminary warming up I went 40 minutes vigorously raking and carrying leaves from a large maple tree, getting them off the lawn and ... etc." (Bennett 1988, p. 136). But no sufficient condition for my

having a backache needed such a rich fact in order to be sufficient; a part of it, namely that I worked intensely for 40 minutes without a preliminary warm-up, was enough (Bennett 1988, p. 136).

Bennett continues his promotion of fact causation by referring to different types of fine-graining which our event-causal discourse cannot handle. For instance, a classical type of overdetermination, where two switches, each of which is sufficient for the start of a motor, are activated simultaneously: the cause of the motor's start was that at least one switch was on. In addition, he claims that it is the *raison d'être* of event-causation statements that they have a low degree of information value, because that makes them useable in situations where our knowledge is limited. All this seems indisputable, but what is Bennett really saying? In order to answer this question and to understand how Bennett has come from events and event-causation statements to facts and fact-causation statements, we must have a closer look at facts.

5.2   Fair to facts

Bennett draws a parallel between the way a PN takes us to a richer fact than the corresponding sentence or statement expresses and definite descriptions of physical things. As 'John's quiet, homeward, midnight walk', in a particular context of use, brings us to something like "the fact that John walks quietly home at midnight, swinging a stick, following a route across campus, along Euclid Avenue, then along ..., etc." (Bennett 1988, p. 130), we can say that 'the blue book on my writing desk' brings us to the fact that on my brown writing desk there lies a blue book about events and their names, which is $6 \times 9, 5$ inches, which weighs ..., etc. This seems plausible. But, prima facie, nothing speaks against the analogy being so strong that Bennett should also have entertained the thought that physical things are a kind of facts, which seems totally absurd given the definition of facts as abstract objects.

Perhaps the equivocation mentioned in section 4.9 is at work. What do we (i.e. many philosophers) call the entity which a declarative sentence or statement expresses? A 'fact'! What do we (e.g. Kim in the quotation in section 4.9) call the entity that the sentence or statement refers to ('is about', 'describes', etc.)? A 'fact'! Now, if we do not want to deny that a sentence or statement has both expression and reference, there are two possibilities: (1) the sentence or statement expresses and refers to the same entity, or (2) 'fact' is an equivocal term.

The answer is, I believe, that 'fact' is an equivocal term. In the one sense – the one we have used until now – the term denotes a true proposition. Let us call these intensional, abstract entities 'I-facts' or 'truths' (I

ignore the possibility of Russellian facts). In the other sense the term denotes the entity in the world which the sentence or statement refers to or describes. Let us call these worldly entities or situations 'S-facts'.[13] (I here resrict myself to atomic sentences or statements about non-intensional or non-abstract matters.) An S-fact is a complex of the entities which the sentence or statement says are related in a certain way, and it exists spatiotemporally. If an I-fact can be said to be a complex at all, its constituents are other abstract objects. From now on I shall use this terminology, and also when describing the views of others.

One of the reasons why Bennett and many other philosophers overlook this very fundamental equivocation is the nominal 'the fact that [S]'. In a famous stride between Strawson and Austin in the fifties, Strawson claimed pertinaciously that (i) " 'fact' ... is wedded to 'that'-clauses" and (ii) "facts are what statements (when true) state, they are not what statements are about" (Strawson 1950, pp. 37–38). In this he was correct – for the one sense of 'fact'. Austin had implicitly recognized the equivocation when he claimed that we are able to perceive (S-) facts. Austin pointed out, among other things, that the word 'fact' (according to the O.E.D.) had for centuries been used solely for "something in the world", while 'fact that ...' is a grammatical construction of comparatively recent date, one of whose functions is supposed to be avoidance of gerundives as noun phrases (comp. Austin 1954, pp. 163 ff.).

So I still think that our fact nominals, including INs, refer to I-facts.[14] And we can probably also say correctly that they in a certain sense refer to the same I-facts as they express. This reminds us of Frege's thesis that in certain intensional contexts certain sorts of strings refer to their normal intensions. However, I have not lost my "semantic innocence", so I reject the Fregean tradition's idea that sentences or statements refer to truth values.

Hence, those causal statements which only include sentences, we can no longer represent with $C(f_1, f_2)$, but instead will have to use $C(S\text{-}f_1, S\text{-}f_2)$. What kind of entites are these S-facts in, for example, 'the fire went out because the rain came'? The answer is: events! Ironically, we can thus still say that events are a kind of facts.

(If there are S-facts that are not events, their individuation might be very different from the individuation of events but, if so, we do not need

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[13] Menzies (1989) prefers "situations", Armstrong (1997) "states of affairs". Mellor (1995) uses the latin "*facta*" ("*factum*" in singular). Menzies holds that statements denote these entities. However, neither Armstrong nor Mellor seem to contend that sentences or statements denote. Menzies' article, which I became acquainted with after writing this paper, defends views that are highly congenial to my own.

[14] For a rejection of the view that INs refers to I-facts, rather than concrete entities, see McCann's clear article (McCann 1979).

to discuss it, since we are concerned with events versus I-facts as causal relata. Nor shall I defend my intuition that there can be more than one I-fact per S-fact (or, as one might say, more than one mode of presentation per S-fact), discuss problems with the reference of sentences or statements which are false, or negative, or general, etc. However, for our purposes it is sufficient to note something I take to be pretty obvious, namely that any contingent I-fact is correlated with (or corresponds to) an S-fact which makes it true; there is no contingent truth without a truthmaker (cf. Armstrong 1997).)

Let us return to Bennett. He is right in a way, that a PN, given reduction of indeterminacy, brings us to an I-fact that is richer than the I-fact it expresses. If the trope thesis is true, the rich I-fact is the I-fact that P^* is instantiated at T. But it is not this I-fact qua I-fact that we are interested in, rather is it P^*. We are interested in whether P^* really is richer than the P referred to by the S-P-T name; i.e. whether the trope thesis is true, and this is surely not a trivial question. Given the trope thesis and the truth of what has been said above, it is also clear that there exists an S-fact: the one referred to by 'P^* is instantiated at T'. But even though the I-facts correlated with events give us the possibility of fine-grainedness, Bennett ought not to have missed that they are ontologically radically different from events.

5.3 Category mistakes and the real nature of the fact-vs.-event problem

Let us call one who ascribes to the view that causal relations are natural (spatiotemporal) and exist independently of our causal talk and thought 'causal realist' (this is, I suppose, our pre-theoretical view), and one who construes them as purely intensional or explanatory 'causal irrealist'. Let us assume that both consider events to be natural entities that exist independently of our thought and talk about them. Causal realism seems to cohere with statements of the form $C(e_1, e_2)$, and causal irrealism with $C(I\text{-}f_1, I\text{-}f_2)$. The causal irrealist can also endorse $C(e_1, e_2)$, for here, as always, he or she will read 'caused' in 'e_1 caused e_2' as something like 'explains causally', and consider the intensions of the names as relata. But how does the causal realist read $C(I\text{-}f_1, I\text{-}f_2)$? Since both relata are intensional, he or she cannot read it (realistically) causal, but will have to read it explanatory. If we look at the mixed forms $C(I\text{-}f, e)$ and $C(e, I\text{-}f)$, there are no problems for the irrealist, but what about the realist? Which relatum decides whether the relation is causal or explanatory? As we have seen, statements of that type are among our data; so an answer must be provided. Since a (realistically) causal reading seems either to be

a kind of category mistake, where a relatum is placed in a relation that does not allow relata of that type, or a mysticism analogous to Cartesian psychophysical interactionism, it must be read as explanatory.

(Perhaps the realist could have chosen to ignore the I-fact nominal's reference to an I-fact and have just taken the correlated event as relatum, or, conversely, chosen the I-fact correlated with the event as relatum and thereby have avoided a mixed form. But such a proposal seems ad hoc and does not explain the semantic data.)

Because the non-trivial answer is a category mistake or mysticism, we have to (re)interpret the question whether causes and effects are I-facts or events as a question about whether causation is a natural or explanatory phenomena.

But as mentioned, a causal realist also has to include, of course, an explanatory relation in our causal thought and talk. In addition, causal realism does not imply that $C(e_1, e_2)$ statements are unable to possess an explanatory function in concrete contexts of language use. However, the explanatory relation can easily be confused with the causal relation. As Strawson says:

> We use the same range of expressions – for example 'cause' itself, 'due to', 're-sponsible for', 'owed to' – to signify both the natural and the non-natural relation; or we use the expressions in such a way that we may be hard put to say which relation is specified and thus perhaps be led to doubt whether any such distinction exists to be drawn. (Strawson 1985, p. 116)

Also Davidson has emphasized the distinction between causal relations (which he thinks are reported by extensional sentences containing two place predicates), and explanatory relations (which he thinks are expressed by non-truth-functional connectives). Along this road, he has criticized the Humean tradition's construal of causal relations as contingent, arguing that only sentences (statements, propositions) or relations between them belong to that category of entities which are contingent or not (Davidson 1967, p. 85).

Is Bennett with his having I-fact causation as favourite a causal irrealist? There is contradictory evidence. He says in an early part of his book (p. 51) that we ought to use material modus because events can be causally related independently of language, but the subordination of events which he ends up with, and for which he is explanatorily motivated, probably demands that we cannot attach weight to this in the interpretation. Against the objection that I-facts are abstract and thus are unable to be causal relata, Bennett asserts that it is true that I-facts cannot be "pushers", but that in our world it is substances – elementary particles and aggregates of them – which "shove", "force", "push", "behave like

elbows in the ribs" (Bennett 1988, p. 22), and that it is not the purpose of causal statements to report relations between "pushers": "in our world the pushing and shoving and forcing is done by things – and not by any relata of the causal relation." (Bennett 1988, p. 22). This seems to indicate that he is a kind of causal irrealist. In addition, the stressing of substances seems to fit the fact that he construes events as supervenient on substances (and properties), in the sense that all true sentences about events follow from sentences where events are not mentioned. However, a causal realist could in principle try to take substances to be causal relata (an attempt that would fail, I believe). Apparently, not even in that sense is Bennett a causal realist.

Is Bennett sensible at this point? First, his view raises the question as to why transference of energy (and momentum) – his "pushing" – between substances is not causation. Second, even though we shall not discuss here whether events are reducible to, supervenient on, co-ordinated with[15] or primary relative to substances, one can mention that it prima facie seems dubious that it should be possible to conceptualize transference of energy between substances without our event concept. And I have not been able to find an argument for supervenience in Bennett.

It is not certain whether Bennett would be able to understand our emphasis on the distinction between the two types of relations. He cites Strawson:

> If causality is a relation which holds in the natural world, explanation is a different matter. People explain things to themselves or others and their doing so is something that happens in nature. But we also speak of one thing explaining, or being the explanation of, another thing, as if explaining was a relation between the things. And so it is. But it is not a natural relation in the sense in which we perhaps think of causality as a natural relation. It is an intellectual or rational or intensional relation. It does not hold between things in the natural world, things to which we can assign places and times in nature. It holds between facts or truths. (Strawson 1985, p. 115)

Bennett replies: "If it is nonlogically true that f_P explains f_Q, then this *is* a truth about how things are in the natural world and about nothing else. If Strawson is denying this, he cannot be right." (Bennett 1988, p. 32).

This reply is too underspecified for an evaluation; for instance, nothing is said about whether the explanation is an explanation, *because* there is a real causal relation. But in the same place Bennett refers to an article by Davidson (Davidson 1985a, pp. 226 ff.) for a view, which he claims is akin to his own. As far as I can see, the central point of Davidson's article is his – entirely correct – thought, that a sentence like "the fact that his death

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[15] For this option, see Davidson 1969, p. 175.

came when it did causally explains the breakdown of the negotiations" ($C(I-f, e)$) is concerned *both* with the explanatory relation and its relata *and* the causal relation and its relata, since it entails "his death caused the breakdown of the negotiations", which reports a causal relation. This implication is consistent with our distinctions, and a realistic construal of them. But Bennett's statement is still too unclear to enable us to say if that is what he means. However, no doubt there are irrealistic traits in him.

Does the implication pointed out by Davidson mean that the discussion above is a storm in a teacup? No! For it does not change the fact that there are two types of relations. Furthermore, the causal realists can strengthen their position by seeing the implication as a sign that *because* there is a causal relation, there is an explanatory relation. And they do not have to claim that a trivial translation from the explanatory to the causal relation, as in Davidson's example, is possible in general, but just that for any x, if x is a true explanatory relation, then there is a causal relation which x explains. For first, it cannot be excluded a priori that there can be several non-equivalent causal explanations of the same causal relation. And second, and more important, there are presumably true explanations which prima facie imply very dubious causal relata if these are to be categorized as events. This holds, for instance, for statements about overdetermination, statements about the non-occurrence of an event, disjunctive statements, etc. Exactly these kinds of examples are sometimes, as we saw with the first mentioned in section 5.1, put forward as supporting fact causation (cf. Bennett 1988, pp. 139–140 and Pollock 1976, p. 146). Now, it is contentious whether overdetermination is possible and, in addition, it could be claimed that the mentioned kinds of causal statements are incomplete. But even if it turns out that they cannot be translated into statements which report events as causal relata, this will not rebut causal realism. For perhaps there are S-facts other than events, which could serve as relata. All these issues are instances of difficult problems about explanations, causation, S-facts, and their relationship, which we cannot pursue any further here. But I think that we have made a good case for the realists.

We can conclude that true causal statements which contain one or more I-fact nominals express an explanatory relation, but imply the existence of a causal relation. Relata of this causal relation are probably most often events.

Conclusion

In this investigation we have tried to show that analyses of causation demand analysis of the nature of events. We studied critera for distinctness for CAEC and were thereby able to reject putative counter-examples to it. In conjunction with our criterion for distinctness, the notion of Cambridge events could be used to meet another type of putative counter-example, just as it pointed out a resemblance between this and the "parasite problem" of RAEC.

Next, we started a general investigation of events: their metaphysics and the semantics of their names. Our approach was the property-exemplification thesis about events, and its specification of the structure of events turned out to be fruitful in providing insights – not least about the relationship between metaphysics and semantics. Kim's theory needed modification, but none of Bennett's attacks succeeded in showing that it lacks metaphysical sense or support as a theory of events. And we could reject some allegedly better versions of the theory. However, we found that Kim's fine-grained theory, as well as the coarse-grained one of Quine, conflict with our ordinary thought and talk about events, including causal statement. Kim seems to have tried to transfer his truistic semantics to a substantial semantics of natural language, and this played an important role in obtaining the counterintuitive multiplification of events. Bennett's trope thesis therefore seems plausible, at least for the kinds of events we have studied.

In part 5, we introduced the distinctions between I-facts and S-facts, between explanatory and causal relations, and between causal irrealism and causal realism in order to illuminate the debate between proponents of fact causation and proponents of event causation. We tried to show that construing I-facts as causal relata either amounts to a causal irrealism, or – granted the more plausible causal realism – to conflating causal explanations with causal relations – of epistemology with ontology. The explanatory fine-graining that fact causation can give must not make us confuse the two relations, or repress the ontological level. We pointed out that the close connection between the two relations is non-trivial and that the suggestion about causally active S-facts that are not events might be useful where our event concept perhaps is insufficient. It has not been our purpose to study this connection closer, nor to argue thoroughly for the three distinctions which, admittedly, are "pictures" rather than theories. Thus, the present investigation can end in an appeal for new ones.

Acknowledgement

Bo Rode Meinertsen
School of Philosophy
University of Leeds
Leeds LS2 9JT
UK
phlbom@leeds.ac.uk

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