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Needs as Causes*

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Facts about need play some role in our causal understanding of the world. We understand, for example, that people have basic needs for food, water, and shelter, and that people come to be harmed because those needs go unmet. But what are needs? How do explanations in terms of need fit into our broader causal understanding of the world? This paper provides an account of need attribution, their contribution to causal explanations, and their relation to disposition attribution.

Keywords: need; necessity; causal explanation; dispositions.

Many philosophers hold that the concept of need should play an important role in theorizing about our fundamental moral and political obligations to each other (e.g. Wiggins 1997; Brock 1998; Miller 1999; Reader and Brock 2004; Brock 2012). Whether or not one is optimistic about developing an ethics centred on the concept of need, it is natural to take attributions of basic needs seriously in figuring out what is ethically required. Why? We understand that people suffer and perish *because* their basic needs go unmet. Assuming a *prima facie* moral duty to prevent the suffering and death of persons, attributions of basic needs are apt to determine moral duties. For this reason, invocations of need are familiar in everyday moral thought and talk. Take press releases from humanitarian aid charities like the following from Care International:

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> People are fleeing because if they stay, they die....[T]hey die because they need dialysis and can't get it.
>
> (Dowling 2018)

Within the philosophical literature on need, we also find similar explanations using the words 'cause' and 'because':

> The frustration of needs will inevitably cause harm.
>
> (Thomson 1987: 89)

> If I take the pill, then, I will have an absolute need for the antidote. That situation has come about because—and this is a causal 'because'—I took the poisonous pill.
>
> (McLeod 2011: fn. 7)

The first example is an explanation of harm by appeal to unmet needs, and the second example is an explanation *of* a need by appeal to some fact. Both explanations may be called *need explanations*, though I reserve the label for the former unless otherwise stated since they will be the main focus of this paper. Need explanations like these are ubiquitous. But what, ontologically speaking, are needs? What makes need explanations like the ones quoted true? How, if at all, do these explanations fit into our broader causal understanding of the world?

Despite extensive work on need in moral and political philosophy (for overviews, see Brock and Miller 2019; Pölzler 2021), foundational questions like these about the *metaphysics* of need remain under-investigated.[1] This dearth of work is striking when contrasted with the comparatively high degree of metaphysical sophistication we find in contemporary meta-ethical discussions of other moral concepts, for example, evaluative concepts like goodness. The significance of the concept of need, it should be emphasized, extends far beyond understanding morality and justice. It is of importance in biology to understand the process of natural selection and in the philosophy of mind to understand the nature of (appetitive) desire.

This paper aims to take some early steps towards a metaphysics of need, with an emphasis on understanding how need attributions feature in causal explanations. This paper focuses on providing an account of causal explanations by needs. I will pursue a wide-ranging approach, synthesizing work from a range of areas, in particular, the semantics of modal expressions and the metaphysics of causation and causal explanation. Given the prevalence of the concept of need in everyday thought and talk, this work will be important regardless of whether one thinks that the concept holds a special moral or political significance (an issue on which I remain neutral).

[1] Stampe (1988) is a pioneering discussion on the metaphysics of need. This paper is indebted to Stampe's early discussion of these questions. See also White (1975), Thomson (1987), Reader (2012), and more recently, McLeod (2011).

Since these are early steps, my focus will be on the causal relevance of need as it applies *generally*, and in a way that does not exclude simple organisms without the complex capacities required for thought, reasoning, or consciousness. Plants, too, need things without which they can be harmed and their survival or flourishing jeopardized. So, my interest here will be on how, in the first instance, need—as opposed to *representations* of need, *feelings* of need, or *reasoning* about needs—can be causes or causally explain.

The plan is as follows. Section 1 develops an analysis of need ascriptions as involving the attribution of modal properties concerned with *necessity*. Section 2 outlines a distinction between causation and causal explanation. Drawing on the analysis of need ascriptions, I argue that while needs are not the right kind of entities to be causally related, they nevertheless contribute to informative causal *explanations*. I discuss how explanatory appeals to unmet needs relate to explanations that appeal to absences. Section 3 further explores how needs might be causally relevant and argues that need explanations satisfy two common sufficient conditions for causal relevance. Finally, Section 4 expands on how need ascriptions contribute to causal understanding by comparing the kind of information need and disposition attributions communicate. I argue that need ascriptions possess greater *directive* or *action-guiding* significance.

I. Need ascriptions

To know the role that appeals to needs play in our causal understanding, we need to know what needs are. But it is not obvious that needs are the kind of thing that we can investigate through observation, like physical objects can be, or through introspection, like conscious experiences. I propose to begin in a time-honoured fashion by reflecting on the meaning of 'need' and examining the form that need attributions take. This section investigates the two main forms that need ascriptions come in. First, where 'need' occurs as a verb (verbal 'need') as in sentences of the forms 'A needs to V' and 'A needs DP', where *A* is a subject, *V* is a verb (e.g. 'drink') and DP is a determiner phrase (e.g. 'some water'). Second, where it occurs as a noun (nominal 'need') in sentences of the form 'A has a need to V' or expressions like 'A's need'.

I outline how verbal and nominal 'need' sentences are analysed in contemporary linguistic semantics (Sections 1.1–1.2). To be clear, my aim in canvassing these analyses is not to endorse or defend them. My central aim is to extract from considerations about their analysis two ways of thinking about the ontology of need: as *proposition/fact*-like, and as *object*-like. This will directly inform the account of how we should conceive of the causality of need outlined in Section 2.

I.1 Ascriptions with verbal 'need'

Let us start first with sentences involving verbal 'need'. Suppose you see that Tom is dangerously dehydrated and know he will die if he does not drink some water soon. You might ascribe a need to Tom as follows:

1. Tom needs to drink water.

A common analysis of sentences like (1) holds that 'need' expresses a *relation*.[2] When it is an ascription of need to Tom, the structure of the sentence is such that 'Tom' contributes a subject argument to the verb 'need'—that is, a value to a function—at both a syntactic level and a semantic level.

There are reasons to treat the verb 'need' as relating subjects with *propositions*. Consider first examples where the verb embeds a fully saturated complement, as in:

2. Tom needs Lucy to drink water.

In this case, the object of the verb 'need' is plausibly the proposition that Lucy drinks water. When we turn to consider cases like (1) which lacks a surface subject in the infinitival clause, there are strong syntactic reasons to posit a *hidden* subject PRO in infinitival clauses. Landau (2013, ch. 3) outlines a range of syntactic phenomena that jointly exerts considerable theoretical pressure to posulate PRO including secondary predication, floating quantifiers, agreement, case concord, instances of binding and so on.[3] We have good empirical basis, then, to hold that the object of the verb 'need' in sentences like (1) is displayed in the following:

3. Tom$_i$ needs [$_{\text{CP}}$ PRO$_i$ to drink water].

Here, the hidden pronoun PRO is *controlled* by, and refers to, the subject of the sentence, Tom ('subject-control PRO'). Call this the *control* parse of (1), though, as I outline shortly, an alternative syntactic parse is possible.[4] The semantic values of clauses like 'PRO to drink water' are standardly taken to denote *propositions*.[5] With this detail about infinitival clauses in view, we can see, then, how the sentence (1) expresses the proposition that Tom stands in the relation expressed by 'need' to the proposition *that he drink water*.

[2]See for example, Fodor (1987), Schiffer (1992), and King *et al.* (2014). While this analysis is plausibly regarded as standard, it is not uncontroversial; see Moltmann (2003) and Matthews (2020).

[3]Note that there are also equally good reasons to posit PRO in (2), but where PRO is controlled, not by the subject, but by an element in the verb's object (Tom needs Lucy$_i$ PRO$_i$ to drink water.) See Landau (2013).

[4]Further linguistic evidence for the existence of the control parse is provided in Shaw (2023) and Abenina-Adar and Angelopoulos (2016).

[5]I will be setting aside details concerning the temporal specification of the propositional object of the need. For discussion, see Stampe (1988: 133–4).

Consider now cases where 'need' embeds determiner phrases like:

4. Tom needs some water.

Despite this sentence's surface form, there are reasons to think a propositional object is recoverable. A central one is that there is plausibly hidden clausal material whose existence can be observed through interaction with temporal adverbials (McCawley 1974; Partee 1974; Stampe 1987). Consider:

5. (a) Tom needed some water tomorrow.
   (b) # Tom drowned in some water tomorrow.

(5a) is well-formed unlike (5b). We can naturally explain this by positing hidden clausal material for 'tomorrow' to modify, for example, Tom needed to *have* some water tomorrow. More generally, we can think of this clausal material as something contextually supplied (cf. Schwarz 2006). In general, it seems possible to recover from any need ascription some proposition that the subject is related to.

With these clarifications in place, we turn to the key question: what is it to for a subject to stand in the relation expressed by 'need' to something?

An ancient idea is that needing is connected with *necessity* (e.g. Aristotle *Metaphysics*, 1015a15).[6] Drawing on this insight, the proposal would be that (verbal) 'need' sentences express claims about *relative necessity*. For example, (1) is true at the stipulated context *c* iff it is necessary that Tom have water if Tom is to avoid harm or death. Here, Tom's avoiding harm or death represents the relevant *ideal* at *c*. Where necessity is analysed in terms of universal quantification over possible worlds, (1) is true at *c* iff Tom drinks water at every accessible future possibility where Tom avoids harm, other things being equal. This further restriction to *accessible* possibilities reflects that we are interested in possibilities that share the same world history, causal and natural laws, and where no other intervention is made (Wiggins 1997: 12).

The context described for (1) concerns a kind of welfare-relative necessity. This corresponds to what political/moral philosophers call 'basic' or 'absolute' needs: necessities for survival, harm avoidance or flourishing.[7] But it is possible for 'need' sentences to express differently 'flavoured' necessities. A nearly standard contextualist semantics treats the elements that determine the relevant restriction as contextually *variable* (Kratzer 1977).[8] For example, suppose (1) is evaluated not in a context where Tom is dehydrated but one where Tom, who has eaten something spicy, intends to avoid hiccuping in his work

[6]For recent views along these lines, see Thomson (1987), Stampe (1988), Wiggins (1997), Hacker (2008: 128), Reader (2012), McLeod (2015), and Fletcher (2018).

[7]See for example, Anscombe (1958), Thomson (1987), Wiggins (1997), and McLeod (2015).

[8]For versions of a contextualist semantics for 'need' specifically, see Rubinstein (2012), Abenina-Adar and Angelopoulos (2016), Fletcher (2018), and Shaw (2023).

meeting and knows he can avoid this by pre-emptively drinking water. Relative to this context, (1) can be used to express a claim about *teleological* necessity. Here, the contextually salient ideal concerns, not Tom's welfare, but some *goal* of his not to hiccup. This corresponds to what is called in the needs literature 'instrumental' needs (*supra* fn. 7). More generally, then, a verbal 'need' sentence where subject *A* stands in the relation expressed by 'need' to the proposition *P* at *c* is true at context *c* just in case *P* obtains at every element of some restricted set of possibilities contextually salient at *c*.[9] The flexibility of this approach rather elegantly shows how various classes of need invoked in moral and political contexts (e.g. absolute vs instrumental) can be understood as instances of a general notion—*necessity*.

There is an important qualification to be made. 'Need' is a very flexible word and can be used to express claims about a whole range of necessities. I am focusing on what I have called *ascriptions* or *attributions* of need *to* subjects. To illustrate that not all 'need' sentences are attributive, imagine an official who is decreeing a city ordinance:

6. The noise needs to be below 50 dB.

This is a perfectly good 'need' claim, but it is not attributive. It is not attributive because the salient way to parse (6) is one on which syntactically 'the noise' is not the semantic subject argument of 'need', that is 'need' does not relate 'the noise' as its subject with the object expressed by its complement. Rather, 'the noise' originates as the subject of the verb in the *lower* clause but is 'raised' to be the subject of the sentence. This is to say that sentences of the form '*A* needs to *V*' are syntactically ambiguous between what is called a 'raising' parse (where '*A*' is raised to subject position from the subordinate clause) and the earlier discussed 'control' parse (where '*A*' is the subject argument of the main verb 'need' controlling a hidden pronoun PRO that is the subject of the subordinate clause).[10] The proposition expressed by (6) is the one expressed in this context by the non-attributive form:

6′. It needs to be that the noise is below 50 dB.

Here, 'it' is expletive: it contributes no meaning but satisfies the requirement that English sentences have subjects (compare: 'it is raining'). Further, while it makes sense to say *of* Tom that *he* is in need of water, it does not seem to make sense to say *of* some noise that *it* has a need to be below 50 dB. One way to force an attributive reading is with the use of 'have' in a nominal 'need'

[9]This is done via relativization to two contextually supplied elements: a *modal base* (a set of accessible worlds) and an *ordering source* (propositions that determine ideality); for details, see Kratzer (1977).

[10]See Abenina-Adar and Angelopoulos (2016) and Shaw (2023).

sentence, for example, 'Tom has a need to drink water'. We can see that an analogous treatment of (6) results in an anomaly:

7. # The noise has a need to be below 50 dB.

The class of necessities I am interested in are expressed by attributive 'need' claims and can be demarcated as those that are *subject-oriented*: necessities that obtain in virtue of ideals centred on *needful* entities, for example, what is required for their survival, avoiding harm or flourishing.

Reader (2005: 22–3) suggests that needs are *de re* necessities, that is, what is necessary given the essential nature of the subject. For example, Reader suggests that we might speak of the needs of triangles: 'the necessary conditions for their [triangles'] being, that is their needs, are necessarily met' (p. 22, *ibid.*). Though nothing hangs on this, I confess that describing the logical necessity that triangles have three sides as a *need* of triangles or some particular triangular figure sounds quite odd to my ear. If there is sense to be made of the claim that triangles need to have three sides, it amounts simply to the non-attributive claim that *it is necessary that triangles have three sides* (given their geometrical definition).[11]

So, while it is not clear that *every* de re necessity qualifies as a need, it is clear that the proper subset of need claims I am interested in—properly *attributive* ones—are *de re* necessities in at least three senses (the relevant *re* being the subject ascribed the need). Following Szabó (2011: 267–8) and Nelson (2022), we may say that they are *syntactically* de re in the sense that they involve a pronoun within the scope of a modal verb that is controlled by a singular term outside that scope. They are *semantically* de re in the sense that the singular term permits substitution *salva veritate*. And they are *metaphysically* de re in the sense that such sentences directly attribute a property to the sentence's subject.

What do these considerations about the logical form and semantics of verbal 'need' sentences suggest in the way of metaphysical commitment, at least as far as natural language theorizing is concerned? Notice that when 'need' functions as a verb, we are focussed, not on need as a kind of thing or object, but on the phenomenon of *someone needing something*, which is expressed at the level of a full sentence. The minimal commitment, then, is to a certain kind of *modal proposition or fact (if true)*, in particular, one concerning the (relative) necessity of a certain state of affairs. We will return to consider the significance of this in the context of understanding causal statements that appeal to need in the following section.

[11] For further discussion, see McLeod (2011: 220) and Fletcher (2018: 176).

I.2 Ascriptions with nominal 'need'

A different linguistic form pushes us towards thinking of needs as more object-like, namely sentences involving the nominal form of 'need' like the following:

8. Tom has a need to drink water.

In English, the pair 'needs'/'has a need' is, in many cases, interchangeable in ordinary conversation and is an instance of the general phenomenon of 'heavy-light' verb alternation. For example, 'smokes'/'has a smoke', 'desire'/'has a desire', or 'believes'/'has a belief'.[12] One reason to pay attention to the nominal 'need' construction is that it is the only construction available in many languages (e.g. French, Italian, Russian, etc.) and there are some (inconclusive) empirical reasons to think that verbal 'need' is derived from the nominal form (Harves and Kayne 2012).[13]

How should such sentences be analysed? One treatment of nominalizations of modal verbs draws on existing treatments of nominalizations of action verbs (Davidson 2002). For example, sentence (9a) and (9b) are analysed as having a common logical form (9c) involving quantification over a domain of *events*:

9. (a) Tom giggled.
   (b) Tom had a giggle.
   (c) $\exists e$(Giggled(e, Tom)).

With this analysis, the meaning of 'Tom's giggle' can be given via the implicit event argument, that is, as the event e that is a giggling by Tom:

10. [Tom's giggle] = ιe(Giggle(e, Tom))

Moltmann (2020) pursues an analogous treatment of nominalizations of modal verbs as involving quantification, not over events, but entities that she calls 'modal objects'. Indeed, just as Davidsonian event semantics can account for both verbal and nominalized forms like (9a) and (9b), Moltmann (2020) pursues a modal-object-based account of modal verbs and nominalizations. For example, (1) and (8) are analysed as having the common logical form (11):

1. Tom needs to drink water.
8. Tom has a need to drink water.

[12] Only 'in many cases': there are contexts which draw out subtle syntactically conditioned truth-conditional differences between the two forms. *Supra* fn. 10.

[13] Harves and Kayne (2012) present cross-linguistic evidence that a language has the verbal form only if it has a verb of possession like 'have'. Harves and Kayne argue that the verbal 'need' construction is *derived* from an underlying 'have a need' construction via a morphosyntactic process where nominal 'need' is raised and incorporated into the verb position occupied by 'have' whereupon 'have' becomes unpronounced (Harves and Kayne 2012: 126).

11. $\exists d(\text{Need}(d, \text{Tom}) \wedge [\text{Tom to drink water}](d))$.

Notice that according to Moltmann, the clausal complement which gives the 'object' of Tom's need serves as a *predicate* of the modal object *d*. Just as on the Davidsonian view, the meaning of possessive noun phrases like 'Tom's need' is given by the implicit modal objects argument, that is, the modal object *d* which is a need whose subject is Tom (though see Section 3 for further discussion):

12. $[\text{Tom's need}] = \iota d(\text{Need}(d, \text{Tom})$.

What are modal objects? According to Moltmann, they are a certain kind of content-bearing entity. As we see in (11), the content of a modal object that is Tom's need is specified by a clausal complement, which is treated as predicate *of* the modal object. As bearers of content, modal objects have *content-related* properties: they can be (partly) satisfied or not satisfied and stand in relations of similarity (Moltmann 2020: 13). Moltmann also briefly suggests that modal objects are 'particular and concrete' and 'may enter causal relations' (Moltmann 2020: 17). I will return to this in Section 3.

To sum up, we have considered two main forms of 'need' sentences and considered existing analyses of their structure and meaning. According to the standard modal account, sentences where 'need' functions as a verb express *true propositions* or *facts* about relative necessity. According to a non-standard object-based account, sentences involving both verbal and nominal 'need' sentences are to be analysed in terms of an ontology of modal objects. The latter approach, in particular, allows one to provide a semantics for nominal 'need' as referring to a certain kind of *object*.

While distinguishing linguistic theorizing from metaphysical inquiry, I wish to take the superficial ontological commitments of 'need'-talk as a defeasible starting point for our metaphysical inquiry. Our investigation into the relationship between need and causation, then, will have to examine the grounds for positing entities of these two distinct ontological forms and then to investigate their causal nature.

II. Needs, causes, and explanations

This section begins by introducing a distinction between singular and sentential causal explanation (Section 2.1). Metaphysical discussions of need explanations have not been sensitive to this distinction, which I believe to be absolutely central to understanding the nature of need explanations (and causal explanations more generally).[14] Drawing on Section 1, I argue that need explanations

[14] See fn. 1. The notable exception is Stampe (1988: 137), who 'trades' the question of whether needs are causes with whether needs can be causal *explanans*. As will be clear, the foregoing constitutes an argument for why Stampe was astute to do so.

do not plausible constitute *singular* causal statements that relate causal particulars; rather, they more plausibly constitute *sentential* causal statements that assert causal explanations (Section 2.2). I then explore how need ascriptions contribute to informative sentential causal explanations.

II.1 Causation and explanation

Consider the kinds of sentences we use to make claims about causal relationships:

13. Fido caused John's crying.
14. The explosion of the house caused Fido to bark.
15. The fact that Tom did not turn off the stove caused the house to explode.

There is an apparent liberality in what can feature as the subjects and objects of causal statements, in particular, we find that 'cause' can be used to form *singular* and *sentential* causal statements. On a well-known treatment due to Davidson (1967), 'cause' in the context of singular causal statements expresses an extensional two-place predicate that applies to singular terms. These singular terms stand for particular individuals (e.g. 'Fido') or events (e.g. 'the explosion') and allow substitution for co-extensive terms, though this has been disputed (e.g. Anscombe 1993). For example, if the house, the exploding of which caused Fido to bark, was owned by Jane, then it follows that:

14′. The explosion of the house owned by Jane caused Fido to bark.

In the context of *sentential* causal statements, 'cause' expresses a two-place intensional relation between the semantic values of *that*-clauses, standardly identified with *propositions*. Sentential causal statements can usually be paraphrased with 'because' sentences. For example, instead of (15), we can say:

15′. The house exploded because Tom did not turn off the stove.

This liberality raises a corresponding question about the nature of the *relata* of the *causal relation*. What category or categories of entity relate to each other as cause and effect? Despite there being deep disagreements about how to answer this question, the following constraint is common ground among many theorists:

Concreteness Constraint. Where there is an *n*-place causal relation *R*, *R* relates *c* and *e* as cause and effect only if *c* and *e* are spatiotemporally located particulars that are apt to be spatiotemporally related to each other.

The Concreteness Constraint is motivated by what many take to be plausible features of causation. First, only spatiotemporal entities can be causes and effects, in contrast with *abstracta* like universals, numbers, sets, functions, or

propositions that exist outside of space-time, and so are not apt to causally interact. Second, causes and effects have a *single* spatiotemporal location, in contrast with repeatable or multiply exemplifiable entities like universals. This prohibits so-called 'action at a distance', that is, causation unmediated by any kind of empirical connection at any spatiotemporal intermediate location.

The Concreteness Constraint is deliberately neutral on the *number* of relata involved in causal relations, as well as *what it is* to stand in the causal relation. Moreover, it is neutral about the precise nature of causal relata, for example, whether they are objects, events, or property instances (tropes). Davidson privileged *events* (unrepeatable spatiotemporal entities that unfold over time) as sole causal relata (Davidson 1967).[15] Other views allow causal relata to be property instances (Ehring 1997) or the concrete truth-makers for true propositions (e.g. Mellor (2002)'s 'facta', or Menzies (1989)'s 'real situations'). For present purposes, I want to assume the Concreteness Constraint while remaining neutral about which of the views that satisfy the constraint is true.

What is the implication of this constraint on how we should understand singular and sentential causal statements? Adherents of the Concreteness Constraint typically distinguish *causation* from *causal explanation* (Davidson 1967; Strawson 1992; Steward 1997; Beebee 2004; Strevens 2011). Causation, as Strawson (1992: 109) writes, is 'a natural relation which holds in the natural world between particular events' or as Strevens (2011: 4) writes, 'a raw metaphysical relation between two events'. Given such a relation relates concrete particulars, it is *singular* causal statements expressing an extensional relation between terms naming concrete particulars that are apt to express such a relation. Sentential causal statements which relate propositions, on the other hand, express the relation of causal *explanation* 'an intellectual or rational or intensional relation' concerning the various causal dependencies between truths (Strawson 1992: 109).

This is an important distinction because I will argue that apparently causal statements that invoke states of need are more plausibly understood as contributing to causal *explanations* and not describing a causal relation that relates concreta.

II.2 Are needs causes?

Need explanations do not seem to take the form of singular causal statements. Let us start with explanations involving *verbal* 'need' as the explanans:

16. That Tom needed to drink water and did not receive any caused Tom to die.

[15] A rival view of events due to Kim (1976) identifies events with exemplifications of properties by individuals at times, though Steward (1997) raises doubts about whether such a view meets the Concreteness Constraint.

(16) is not a singular causal statement. First, note the sentence's syntactic-cum-semantical features: the main verb 'cause' relates two clauses whose semantic values are *propositions*. Suppose we accept the plausible claim that propositions are not concrete particulars (Menzies 1989; Hausman 1992). Then, the modal *proposition* that is the semantic value of the first clause of (16) is not a spatiotemporally located particular. So, by the Concreteness Constraint, the modal proposition that Tom needs to drink water and did not receive any is not a suitable *relatum* of the causal relation. Need propositions do not denote particular causes; instead, I will later motivate in Section 4 that they identify *causally relevant facts* which are to be distinguished from *causes*.

While the distinction between propositions qua truth-bearers and their worldly truth-makers is dominant, some endorse the identity theory of truth on which true propositions are identical with their truthmakers (see Gaskin 2021 for an overview). So, one might object that true propositions may be identical with concreta (e.g. Mellorian facta) and so are apt to be causally related. However, even granting this, it remains unclear whether true propositions about *need* as relative necessities are apt to be causal relata. It remains highly contentious what the truth-makers are for propositions about relative necessities. Many views still render them inapt to be causal relata. For example, on modal realist views, concrete worlds are the truth-makers for modal propositions, and they are causally isolated from each other (Lewis 1986). A more promising view is available to those who would provide (non-reductive) actualist accounts of necessity, for example, in terms of dispositions. I explore the relationship between attributions of need and dispositions in Section 4; for present purposes, it suffices to note that the idea that truths about relative necessity are concreta that stand in spatio-temporal relations just as events do requires stacking up highly controversial commitments to even make sense of.

Following Davidson, it is plausible that the verb 'caused' in (16) is 'not the "caused" of straightforward singular causal statements, but is best expressed by the words "causally explains"' (Davidson 1967: 703). The explanatory contribution of such claims more aptly takes the form of a *sentential* causal explanation, which we could paraphrase in terms of a 'because' statement:

17. Tom died because he needed to drink water and did not receive any.

These points about verbal need explanations mirror points we made about the earlier discussed sentences (15) ('The fact that Tom did not turn off the stove caused the explosion'), which can be paraphrased as (15′) ('The house exploded because Tom did not turn off the stove'). Here, 'the fact that Tom did not turn off the stove' expresses an explanatory background condition and does not single out some causally efficacious particular.

Turning now to need explanations in which nominal 'need' features. Consider the example:

18. Tom's unmet need to drink water caused Tom's death.

On Moltmann's analysis, sentences featuring such nominalizations have a logical form involving quantification over entities she calls 'modal objects'. Now, it is one thing to posit certain entities in the course of providing a semantics for parts of natural language, but quite another to posit those entities as part of the furniture of reality. We might think, then, of modal objects as *abstract* entities employed in semantic theorizing and so *acausal* (at least if the Concrete Constraint is true). But Moltmann suggests that 'modal objects also show properties of concreteness. In particular, they may enter causal relations' (Moltmann 2020: 17). She considers the acceptability of the sentence:

19. John's need pushed him to act in certain ways.

I think we lack a decisive reason to accept that needs are causally efficacious entities. The example Moltmann considers does not provide a decisive reason to think needs are causally efficacious particulars. This is because talk of need in (19) might be plausibly understood as a loose way of talking about causal particulars that are *not* needs. For example, if John is caused to act in response to a feeling of hunger or the judgement that he is hungry, then we might *loosely* refer to the feelings or judgement as a 'need'. But the fact that episodes of feeling or judging can stand as relata in causal relations does not entail that needs *proper* do.

To be clear, I do not assert that every claim involving nominal 'need' must be a loose way of talking about feelings or judgements. As an anonymous reviewer notes, this would be implausible for claims like:

20. The plant's need for sunlight causes it to grow towards the sun.

A more general response to such cases is that causal statements involving nominal 'need' like (19) can be systematically paraphrased in the form of sentential explanations involving verbal 'need'. For example, we can paraphrase (18) and the claim about plant growth as follows:

19′. John acted a certain way because John needed to eat.
21. The plant grew towards the sun because the plant needed (to be in) sunlight.

Even taken at face value, the acceptability of sentences like (19) show at most that we speak *as if* needs were causally efficacious things. Indeed, in other work, Moltmann explicitly distinguishes the enterprise of providing an ontology of natural language and fundamental ontology *proper* (Moltmann 2022), and so her remarks should not be taken as an argument for positing the existence of modal objects as causally efficacious particulars like events and material objects.

Given these responses, I suggest that it would unmotivated to commit ourselves *metaphysically* to the existence of needs understood as causally efficacious particulars, whatever we want to ultimately say about the utility of appeal to such theoretical entities in linguistic semantics (cf. Dummett 1981: 493). It is plausible that we have a comparatively firmer grasp on needs as facts about relative necessity than as causal particulars insofar as we antecedently countenance other modal facts. To note this, though, is not to deny that there remains much work to be done, giving an account of the causal mechanisms that support need explanation (more in Section 4). In trying to understand how need features in our causal understanding, we have reason to *start* by seeking a better understanding of how needs *qua* modal facts contribute to causal explanation, at least in the absence of a compelling case for the coherence of taking needs to be causal particulars.

II.3 Need ascriptions in sentential causal explanation

Need explanations primarily take the form of *sentential* causal explanations. What form do sentential causal explanations that appeal to need take?

A central observation due to Dennis Stampe—though by now obvious, given the numerous examples—is that a core class of cases make explanatory appeal, not to *bare* need ascription, but to that need's going *unmet*. Stampe writes that 'what need-statements explain are the *untoward consequences* that result from a need's going unmet' (Stampe 1988: 137 emphasis added). He describes this as the 'primary pattern' of explanation by appeal to need. To illustrate this pattern, recall an earlier need explanation:

> People are fleeing because if they stay, they die....[T]hey die because they need dialysis and can't get it.
>
> (Dowling 2018)

Needs can be met or unmet. Where a need is met, what needs to be obtains, and where it is *unmet*, what needs to be *fails* to obtain. Determining whether a need is met or unmet requires careful attention to how the object of the need is described. Take a distinction often made between 'occurrent' and 'dispositional' need that is intended to capture the sense in which someone who has gone a day without food *needs* food, and an equally good sense in which, even after a nutritious meal, she might be said to need food in virtue of being a living creature (Wollheim 1974; McLeod 2011; Reader 2012). While widespread, I think this terminology is regrettable as it might misleadingly be interpreted as an exclusive distinction between two distinct ontological kinds of need: a stative property and an *occurrent*. To deny that a dispositional state is an occurrence is not to deny that the *manifestation* of a disposition may be an occurrence (e.g. the glass's fragility may be manifested by an event in which it shatters).

We should not conflate episodes of sensing or feeling a need with needing and, in so doing, dubiously take needs to be occurrences.

We can see this distinction as capturing differences in the *temporal specification* of the object of need: an 'occurrent' need is a need for food *soon*, whereas a dispositional need is a need for food 'every so often' over the course of life (McLeod 2011: 213). The recently nourished subject has had her *occurrent* need met, but her dispositional one remains. This allows us to see that while needing something often involves *lacking* that thing, it does *not* entail that one presently lacks that thing.[16] Tom, who has a respiratory condition, needs a breathing aid even if he does not lack it: his occurrent need for breathing assistance *now* is met, but meeting his dispositional need for breathing assistance will be an ongoing project.

Stampe accords this schema involving unmet need explanatory primacy because he assumes an account of causal relevance in terms of causal sufficiency. If we want an explanation of why some bad result occurred, then appealing to some unmet need *suffices* to explain its obtaining: that Tom didn't get the water he vitally needed is sufficient to explain his death.

Before moving on, I wish to highlight that when it comes to need explanations, explanatory facts about an unmet need should not be identified with the negative fact in virtue of which a need is unmet. For example, that Tom's need for water went unmet during the period $t_1 - t_n$ entails that it is not the case that Tom drank water during $t_1 - t_n$. Still, the converse clearly does not hold, or more cautiously, does not hold *on the interpretation of 'Tom's need' that is relevant in explanatory contexts*.[17]

Properly appreciating this point allays a worry one might have about how unmet needs causally explain. The worry is that appeals to the causal relevance of unmet need somehow involve a commitment to causation by *absences* that many take to be controversial (see Beebee 2004); in this case, the lack of what is needed. This worry, justified or not, is ungrounded because the claim that *facts* about unmet need can be causally relevant does not imply a commitment to the claim that absences or lacks are causes. Facts about an unmet need entail certain negative facts about what is absent or lacking. These negative facts partially contribute to explanations that appeal to unmet need. As discussed, this contribution is *partial* because explanations that appeal to facts

[16] See Thomson (1987) and White (1975), *contra* Wollheim (1974).

[17] To see this, note that some hold that possessive noun phrases are ambiguous or non-specific (Braun 2015: 153; Davis 2020). For example, phrases like 'Tom's desire' might refer to the (1) *object* of Tom's desire, that is, *that he drink water* or (2) the state of his desiring to drink water. Sentences like 'Tom's desire is unattainable' require the first disambiguation, whereas sentences like 'Tom's desire is intense' require the second. *If* there is a similar 'object' reading on which 'Tom's need went unmet' is interpreted to simply refer to the negative fact *that Tom did not drink water during* $t_1 - t_n$, then the converse holds (i.e. it follows that Tom's need went unmet). Whether or not there is such a reading, my claim is, in explanatory contexts, it is the 'state' reading where the converse fails to hold that is relevant.

about unmet need are not equivalent to explanations that appeal to negative facts about what a subject lacks.

III. The causal relevance of need

Having argued that need explanations are centrally *sentential* causal explanations, this section builds on this to further clarify how facts about (unmet) need feature in such explanations. The central question I address is: in virtue of what are unmet needs causally relevant to their associated negative consequences? I argue that appeals to (unmet) need qualify as causally relevant on two well-known criteria for causal relevance—*causal sufficiency* and *counterfactual dependence*—while remaining neutral on whether such conditions for causal relevance are right.

III.1 Minimal sufficiency

Stampe endorses a notion of causal relevance that is tied to causal *sufficiency* writing:

> [C]auses are *sufficient* conditions, in their circumstances, for their effects. So, (deterministic) causal explanations must identify a condition that is sufficient in the circumstances for the phenomenon to be explained. Where this phenomenon is a relevant unhappy situation, a need's going unsatisfied *is* such a sufficient condition.
>
> (Stampe 1988: 137).

Stampe's claim that 'causes are sufficiency conditions' should not be read as expressing commitment to the implausible claim that sufficient conditions are causes. A well-known problem facing accounts of causal relevance in terms of mere causal sufficiency is that it over-generates causally relevant conditions (e.g. Salmon 1998: 95; Yablo 2003). For example, that a rock was travelling more than 50 mph when it struck a window is causally relevant to the fact it shattered. But the fact that the rock was travelling 50 mph *and had also been kissed by Joe Biden* is not causally relevant to the shattering. If conjunctive facts involving irrelevancies compromise causal explanations, then one might seek to place some restrictions on the kind of sufficiency required (e.g. Mackie 1965; Fodor 1989; Segal and Sober 1991). Consider, for example:

Minimal Sufficiency. A condition C is causally relevant in an explanation of the obtaining of some other condition E if, given the physical laws, there is some set of conditions $S = \{C_1, C_2 \ldots C_n\}$ of which C is a member that is sufficient for E (*ceteris paribus*) and there is no proper subset of S that is sufficient for E.

The requirement that there is no proper subset of S is sufficient is the requirement of *minimal* sufficiency and rules out irrelevant conditions such as a

rock's travelling more than 50 mph and having been kissed by Joe Biden as causally relevant for the window's shattering.

If Minimal Sufficiency is right, then facts about unmet need can be causally relevant. To see this, take Tom, an otherwise healthy subject who needs to drink water (now) to avoid death. Let $C_{brain}, C_{blood} \ldots C_n$ name facts about Tom's physiological states (e.g. that Tom's brain is in such-and-such state, that his blood has such-and-such composition, etc.). Roughly speaking, the criterion says that C is causally relevant if C is an element of a set that is sufficient and no smaller set is also sufficient. An irrelevant condition like $C_{fingernails}$, a fact about Tom's fingernails, is not causally relevant on the Minimal Sufficiency criterion. Why? Because while the larger $\{C_{brain}, C_{blood}, C_{fingernails}\}$ is sufficient, there *is* a proper subset that would suffice, say $\{C_{brain}, C_{blood}\}$. But notice that facts about unmet need also qualify as minimally causally sufficient. If it is necessary that Tom have water if he is to avoid death, and it is stipulated that Tom does not receive water, then the fact about Tom's unmet need is sufficient for Tom's death. And it is *minimally* sufficient because this condition is part of a set—the set {Tom has a biological need to drink water that is unmet}—of which there is no proper subset also sufficient to explain the death.

So, at least on the minimal sufficiency criterion for causal relevance, unmet needs can be causally relevant because they can be a member of some minimally causally sufficient set. This accords with observations that dispositions count as causally relevant on the minimal sufficiency criterion (McKitrick 2005); Section 4 draws this connection more explicitly by noting that that need attributions, like dispositions attributions, contribute to 'program' explanations and are not causally screened off by low-level property attributions (Jackson and Pettit 1990).

III.2 Counterfactual dependence

Another family of accounts about what causal relevance consists of concerns counterfactual dependence (see, e.g. Ruben 1994; Steward 1997; Yablo 2003; Woodward 2005). Roughly, the idea is that whether a fact is causally relevant to whether another fact obtains depends on what happens in certain other modally close cases. For our purposes, consider the following sufficient condition on causal relevance:

Counterfactual Dependence. A condition C is causally relevant in an explanation of the obtaining of some other condition E if, *ceteris paribus*, it would not have been the case that E were it not the case that C.

For example, Counterfactual Dependence would count the fact that the rock was travelling more than 50 mph as causally relevant because if the rock had been travelling less than 50 mph, it would not have been the case that the window shattered on impact. Given cases of over-specific conditions

considered previously, a more sophisticated formulation of the counterfactual dependence criterion for causal relevance will be required (e.g. Ruben 1994: 471–3; Yablo 2003). But I will spare the reader a discussion of these more complicated formulations since my aim is not primarily to defend any such criterion.

Are need attributions causally relevant on this criterion? Again, sticking for now to explanations of the negative consequences of an unmet need, we need to consider the following. Assuming no other unmet need, is it true, *ceteris paribus*, that *if it were not the case that a need is unmet, it would be the case that the negative outcome of the unmet need would obtain*? For concreteness, take the case of Tom, an otherwise healthy subject need for water notwithstanding: is it true that if it weren't the case that Tom's vital need for water was unmet (i.e. Tom did get water), then it would not be that Tom died? The answer is surely yes. So, need attributions can be said to be causally relevant on the counterfactual criterion in contexts of explanations of the negative consequences of an unmet need.

IV. Needs and dispositions

To round off the account of how need ascriptions fit into our causal understanding of the world, I want to compare how need ascriptions and everyday disposition ascriptions (e.g. fragility) convey information about causal dependencies.[18]

IV.1 Vulnerability and life's necessities

Consider a simple aquatic organism, Nemo, who will flourish iff its environment is pH-neutral. Otherwise, it will die very soon. Consider the disposition and need attributions:

22. Nemo is vulnerable.
23. Nemo needs to be in a pH-neutral environment.

There is an interesting difference between the modal predicates 'vulnerable' and 'need'. 'Vulnerable' is like other dispositional predicates 'fragile' or 'soluble' in that it wears its (partly) individuative *manifestation* condition on its sleeve semantically, so to speak. Just as 'fragile' is defined in the *Oxford English Dictionary* as 'liable to *break*', 'vulnerable' is defined as 'exposed to the possibility of being *attacked or harmed*'. The *triggering* conditions are not specified as part of the semantics of 'vulnerable' (Aimar 2019).[19]

[18] See McLeod (2011) for discussion of the epistemology of need that is akin to the epistemology of dispositions.

[19] Vetter (2014) argues that manifestation conditions *alone* are individuative.

The opposite seems to be the case for need ascriptions: on the surface, the phrase 'needs *P*' indicates something, *P*, the non-obtaining of which would bring about some non-ideal condition. However, it does not semantically encode the specific identity of this non-ideal condition. This is because this condition is *contextually variable*. So, while many need ascriptions are related to certain dispositions, they are underspecified with respect to *which* disposition. To illustrate, a need to drink water *as such* cannot be mapped to a unique disposition since different contextual factors can make attributions of a need to drink water appropriate. In a context where the subject is dangerously dehydrated, a disposition to be harmed is salient. In a context where drinking water is necessary to avoid hiccups, a disposition to hiccup is salient.

Given this, true disposition and need ascriptions are apt to contribute different kinds of information about causal dependencies between facts. To illustrate, return to the Nemo example: (22) and (23), if true, both contribute information that enables us to flesh out the true counterfactual that *if Nemo were to be removed from its pH-neutral environment, Nemo would soon die*. Each contributes a different piece of information. If the only thing we know about Nemo is (22), then it is informative to learn (23): we now know the *way* in which Nemo is vulnerable by knowing the kinds of conditions that lead to Nemo's being harmed. But if the only thing we know is (23), it can be informative to learn that Nemo needs a pH-neutral environment because (22): Nemo will be *harmed* if it is not in a pH-neutral environment.

While this paper focuses on explanations by appeal to need, I wish to briefly consider explanation *of* need and vulnerability to further emphasize how they are related. Consider explanations of need and vulnerability that appeal to non-modal facts:

24. Nemo is vulnerable because increasing pollution is making its habitat acidic.
25. Nemo needs to be returned to pH-neutral water because increasing pollution is making its habitat acidic.

These explanations draw on background knowledge about modal facts. The contexts where (24) would be accepted as informative typically require some further background knowledge, namely, that Nemo has a biological *need* for non-acidic environments. Similarly, where harm to Nemo is salient, the contexts where (25) would be accepted as informative typically require background knowledge that Nemo is in some way *vulnerable* to harm in acidic environments.[20]

[20]There is an important type of explanation of need and vulnerability; namely, explanations that justify *modalizing* in the first place. For example, suppose we discover some alien life form *K*. What would justify a claim of the form '*K*-s need *x* because *p*' or '*K*-s are vulnerable to *y* because *p*'? Such an account requires developing a modal epistemology that can be applied to need and

Facts about need and dispositions are intimately connected: if one identifies a state of affairs *S*, the non-obtaining of which leads to an organism's being biologically harmed, then one has identified both a vital need (for *S*'s obtaining) and a vulnerability (to *S*'s not obtaining). This should not be surprising given that the modalities of possibility and necessity are interdefinable duals. Assuming that facts are true propositions and a fine-grained view of proposition individuation, the fact that Nemo is disposed to suffer biological harm in a non-pH-neutral environment is *distinct* from the fact that Nemo has a vital need for a pH-neutral environment. Nevertheless, a common truthmaker pertaining to the organism's physiology and environment may support the truth of both those facts.

But despite how intimately connected these facts are, both the disposition ascription (22) and the need ascription (23) play different roles in improving our causal understanding of the world. This mutual informativeness is made available by the fact that natural language sentences involving the verb 'need' and adjective 'vulnerable' can be underspecified. Given knowledge of some disposition of a thing, learning about the related need 'fills out' what it is, the non-obtaining of which, triggers the manifestation of that disposition. Conversely, given knowledge of some need of a thing, learning about the related disposition tells us what negative outcome will result should the need not be met. Given some concrete event, say the death of Nemo, these facts about Nemo's needs and vulnerabilities situate that event within a causal context.

IV.2 The 'screening off' objection

I want to end by considering an objection to my claim that attributions of unmet need can be causally relevant. As we will see, dealing with this objection highlights a further commonality with explanations that appeal to dispositions and sharpens the case for the causal-explanatory relevance of need attributions.

The objection is that where there is a true attribution of an unmet need, there will always be a set of more fundamental causally efficacious properties in the vicinity whose causal relevance 'screens off' the causal relevance of the property of having an unmet need. Here is one formulation of this objection that is discussed (and then rejected) by Jackson and Pettit (1990):

P1. Property *F* is not causally efficacious to the production of an effect *e* if there is some other property *G*, and *F* is efficacious only if *G* is efficacious, but where *F* is not a sequential cause of *G*, nor a coordinate cause with *G* of *e* (Jackson and Pettit 1990: 108).

vulnerability. Such a task is beyond the scope of this paper, though for some steps in a plausible direction, see McLeod (2011).

P2. A causal explanation of *e* by appeal to property *F* is available only if *F* is causally relevant in bringing about *e* and this requires *F*'s being causally *efficacious* in bringing about *e*.

If (P1) is true, then properties like the *fragility* of a glass would not be causally efficacious to its shattering when struck because fragility is efficacious to the shattering only because there is a set of microphysical properties of the glass (and rock) that is efficacious to the shattering. Fragility does not cause the shattering in the way the rock does: there is no delay between the exercise of efficacy by the disposition and that of the microphysical properties of the glass (and rock). And it is not a coordinate causal factor like the *launching* of the rock might be. By (P2), the ascription of fragility would not provide a causal explanation of the shattering.

The worry, then, is that explanations by appeal to unmet need will be similarly screened off. For example, if Nemo needs a pH-neutral environment to avoid harm, then there will be some complex set of physiological properties in virtue of which Nemo is harmed when in a non-pH neutral environment (e.g. being composed of cells that are stable only in certain pH-ranges) which in turn obtain in virtue of some set of more fundamental microphysical properties. If (P1) and (P2) are true, then the property of having an unmet need will not qualify as being causally relevant because they are screened off by these causally efficacious microphysical properties.

Jackson and Pettit (1990) provide a response to this objection that vindicates the causal relevance of dispositions that extends equally to need. With them, I reject (P2) on the basis that causal explanations do not necessarily have to describe a set of causally efficacious properties. To illustrate, take Jackson and Pettit's example: the property *F* that *some* atoms of a piece of uranium decayed is causally relevant, even though the property *G* of some *particular atoms* having decayed would screen off *F*. This is because the instantiation of *F* likely secures that there is some efficacious property that will produce the effect. So, it *would* be the case that if *F* obtained, but *G* did not, some different property concerning different particulars G' would produce the effect. And, if it were not the case that *F*, it would not be the case that *G*.

To use Jackson and Pettit's terminology, we can say that the realization of higher-level property *F programs for* the realization of some or other causally efficacious lower-level property *G*. These higher-order properties provide what Jackson and Pettit call *program explanations*. I suggest that need explanations constitute program explanations too, but they differ slightly from those associated with fragility. To bring out this difference, I want to further distinguish between *intrinsic* and *extrinsic* program explanations.

Many hold fragility to be an intrinsic dispositional property in the sense that an intrinsic duplicate of a fragile object subject to the same laws of nature will also be fragile (e.g. Lewis 1997). But, there are arguably dispositions

that are *extrinsic*, so whether an intrinsic duplicate possesses that disposition depends *also* on extrinsic factors. McKitrick (2003: 161) argues that vulnerability is one such example: whether wimpy Ralph is vulnerable depends on both intrinsic and extrinsic properties. Ralph would be vulnerable walking through a dangerous street alone, but not if he were permanently accompanied by bodyguards. The instantiation of *extrinsic* dispositions program for *both intrinsic and extrinsic properties*. If Ralph's vulnerability is manifested at a particular time *t*, then this will involve the realization at *t* of some set of properties that are intrinsic and *extrinsic*, in particular, being such that there is something in the environment that can (easily) harm Ralph.

Similarly, ascriptions of need program for *intrinsic and extrinsic properties*. If, say, Nemo's need to remain in a pH-neutral environment is not met, then there will be a set of intrinsic (e.g. certain microphysical properties responsible for tissue damage) and extrinsic properties (e.g. being in the presence of a non-pH neutral environment) that will likely result in harm. So, like extrinsic dispositions, need attributions can contribute to extrinsic program explanations.

The Jackson–Pettit framework, then, allows us to see how need and disposition ascriptions can be more explanatory compared with facts about low-level properties. Need and disposition ascriptions communicate 'high-level' information about causal dependencies, but they differ subtly in their action-guiding role. The 'low-level' fact that Nemo's blood nitrogen level is value *n* is the categorical basis for a number of modal truths, many of which may be irrelevant to the speaker's (explanatory) aims. In contrast, knowing that some dispositional fact obtains—for example, that Nemo has or had something *toxic* in its system, or that it is in some way *vulnerable*—can be more informative about Nemo's (likely eventual) death. An attribution of a need, say to be returned to a pH-neutral environment, specifies a high-level causal dependency, *viz*. that Nemo's *not* being so returned makes some non-ideal condition likely to obtain. The subtle difference is that assertions of need have greater *directive* relevance: they focus us on what is to be done (leaving the non-ideal condition implicit), whereas the corresponding disposition attributions focus us on the identity of this non-ideal condition (leaving implicit what is to be done).

V. Conclusion

We have taken some early steps toward a metaphysics of need, a notion that is part of everyday moral thought and talk and which holds a special significance for moral or political philosophy, the philosophy of mind and the philosophy of biology. There remains considerable work to be done. For example, what causal mechanisms support the program explanations identified in Section 4? That is, where a true need explanation obtains, what is the nature of the causal

mechanism(s) that connect the relevant empirical fact explained with the explaining need fact? Accounts of these causal mechanisms will vary considerably as we consider organisms of increasing complexity. A proper subset of such mechanisms will include mechanisms that account for how needs come to be *represented* by sophisticated organisms and become objects of (epistemic) awareness.[21] If one is to make progress on these questions, we need to get the basics right. To this end, I have aimed to set out a plausible analysis of need ascriptions and to investigate how need ascriptions contribute to informative causal explanations at a high level of precision.

I have argued for three claims. First, need attributions should be analysed as making claims about relative necessity: if, for example, *A* has a need that *P* (to avoid harm), then it is necessary that *P* if *A* is to avoid harm, other things being equal (Section 1). Second, I have argued that need explanations are not singular causal statements. If their explanatory contribution is to be found, it is not via the identification of *particular* spatiotemporal causes (Section 2.2). Rather, such explanations are sentential causal statements, and they are explanatory in virtue of identifying causal dependencies between classes of fact (Section 2.3). I showed how attributions of (unmet) need are causally relevant on two popular criteria for causal relevance (Section 3). Finally, I drew out some similarities and differences between explanations that appeal to need and those that appeal to dispositions. I argued that need ascriptions can be more informative than ascriptions of 'low-level' properties and have greater directive significance compared with disposition ascriptions (Section 4).

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[21] For discussion, see Stampe (1988 1987).

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