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Meaning-Postulates, Inference, and the Relational / Notional Ambiguity[1]

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1 What notional readings mean

Some attitude ascriptions use quantified or possessive noun phrases (qnp's or pnp's) in the specification of the content of the attitude being ascribed. When the ascription is *propositional*, this gives rise to an ambiguity Quine (1955) labelled "relational / notional". For example,

(1) Oedipus wants to marry a member of his family

can be understood relationally, to mean, as we might naively put it, that for some (non-descriptive) singular np denoting a member of his family, Oedipus has the attitude of desiring-to-make-true towards the proposition he would literally express with (his words for) ⌜I marry np⌝. In this case, he stands in the wanting-to-marry relation to a "specific" or "particular" individual. But an alternative understanding of (1) is available, the notional one, on which it says that Oedipus has the attitude of desiring-to-make-true towards the proposition he would literally express with (his words for) 'I marry a member of my family'. Here we are to suppose that he

1 This paper is a successor to (Forbes 2000) and (Forbes 2002), though it can be read independently. In addition to those acknowledged in (Forbes 2002) I thank Michael Martin, Daniel Nolan and Diana Raffman for comments and discussion at meetings of the Society for Exact Philosophy (where one lets one's inner logical positivist rock and roll) and the Joint Session.

could have this desire even though there is no specific or particular person who is a member of his family and towards whom he has matrimonial intentions.

Standard accounts of propositional attitude ascriptions can represent this ambiguity in a fairly straightforward way, as an ambiguity in the scope of 'a member of his family' relative to 'wants'. We can force the truth-condition that there be a particular person who is a member of his family and to whom he stands in the wanting-to-marry relation if we "raise" the qnp above 'wants', as in 'at least one member of his family is someone whom Oedipus wants to marry'. The notional reading is then 'Oedipus wants it to be the case that for at least one member of his family, he marries her', in which 'a member of his family' has narrow scope with respect to 'wants'.

However, a problem arises when the attitude being ascribed is *objectual* rather than propositional:

(2) Oedipus is looking for a member of his family.

The relational reading, in which 'a member of his family' has wide scope, is still available: 'a member of his family is someone whom Oedipus is looking for', which is true if Oedipus is looking for Jocasta, whether or not he realizes Jocasta *is* a member of his family. But the notional reading is more difficult to represent, since 'look' takes an np-argument delivered in a *for*-pp, not a clausal complement that can be headed by an np and associated with a general proposition. Moreover, if we move 'a family-member' above 'look' we only get the relational reading back again. It appears that, as Kaplan puts it (1986:266), "without an inner *sentential* context…distinctions of scope disappear…".

One response is to *postulate* an inner sentential context, along the lines, for (2), of 'Oedipus is trying to find a family-member'. This Quinean idea has recently received some interesting development (den Dikken, Larson and Ludlow 1996; Parsons 1997; Larson 2001), but I am sceptical that it is capable of accounting for the

full variety of objectual attitude ascriptions.[2] So I propose to pursue the main alternative to such a "propositionalist" approach, which is to capture notional readings by allowing qnp's and pnp's in the attitude vp to provide their semantic values as arguments, almost as if they were singular terms. The usual way of implementing this alternative is the Montagovian one of letting the np provide its semantic value as an argument to the attitude verb itself (see, for example, Dowty, Wall and Peters 1981:215–227). However, in the case of a qnp, the semantic value is a property of properties, modeled either as a set of sets[3] or in some more fine-grained way[4] (for the purposes of this paper the extensional model of a property as a set – actually, the characteristic function of a set – will suffice). On this analysis, it looks as if the notional reading of (2) would imply that just as Oedipus may stand in the *looking-for* relation to a person (say, Jocasta), so in the very same sense, he may stand in the *looking-for* relation to a property of properties (say, the property of being a property of a member of Oedipus's family). The Montagovian has some explaining to do to dispel the natural puzzlement this occasions.

We can sidestep this hermeneutic obstacle by noting that a search-verb like *look* is an action verb, and so, as Davidson (1967) has argued, involves implicit quantification over events. According to the now-classic development of this approach, (Parsons 1990), in so-called "sub-atomic" logical form the action verb becomes a predicate of events, and the items which are superficially arguments of the verb become arguments to certain special relations. Some of these relations are *thematic* relations, others are idiosyncratic to the verb. Parsons proposes in later work (1995:637–40) that the relevant relation is fixed by the preposition used in event

2 Some grounds for my scepticism are presented in (Forbes 2001, 2003).

3 So a first-order property is a function which maps to $\top$ exactly the individuals that have the property. A second-order property is a function which maps to true exactly the first-order properties which have the property. So the qnp 'every Cretan' is the property of being a property of every Cretan, and maps to $\top$ exactly the properties which are properties of every Cretan; 'exactly one Cretan' maps to $\top$ exactly the properties which are properties of exactly one Cretan; and so on.

4 I favor making the semantic values more fine-grained in the manner of (Thomason 1980); see (Forbes 2002:v).

nominals corresponding to the verb. So for the relational reading of (2), we would have something like

(3) For some event *e* of looking, Oedipus is agent of *e* and there is a family-member of his that *e* is for

or in the type-theoretic formulation to be used here, suppressing irrelevant detail,

(4) **(some(looking))λe.agent(e)(Oedipus) and (a(member of his family))λx.for(x)(e).**

Oedipus fills the *agent* thematic role because the looking is *by* Oedipus. But since there is no family-member that the looking is *of*, *e* has no theme. Nor does *e* have a benefactee, since in the intended sense of 'for' there is no family-member for whose benefit the looking is done; so 'for' is an idiosyncratic relation in this case (as it also is when 'for' means 'on behalf of').

The Davidsonian perspective on search-verbs is helpful because it allows us to generalize a proposal of Goodman's (1976:22) about depiction verbs, according to which notional interpretations of depiction vp's such as 'drew two dogs' are to be understood as *classifying* depictions: 'drew a two-dog depiction'. Similarly, we can say that notional interpretations of search vp's classify search-events based on the goals of the searcher. Thus the qnp in (2), when 'is looking for a member of his family' is interpreted notionally, specifies the *kind* of search to which the particular search (2) reports belongs. If we *identify* the kinds with the semantic values of the complement np's, we can write '*e* belongs to the a-member-of-his-family kind' and regiment it as '*kind*(*e*, *a member of his family*)', in which the qnp contributes its semantic value, the property of being a property of a member of his family, as an argument to the third-order *kind* relation. The notional counterpart of (4) is then

(5) **(some(looking))λe.agent(e)(Oedipus) and kind(e)(a(member of his family)).**[5]

(5) does not suggest that there is an abstract entity Oedipus is looking for. '*e* belongs to the a-member-of-his-family kind' is a rather ugly phrase, and one may suspect there is something metalinguistic about it, but all it means is that *e* is classified as to kind by the property of being a property of some member of his family.

2 Two readings or three?[6]

The relational / notional ambiguity is normally understood to be a binary ambiguity.[7] However, in an explicitly *anti-relational* ascription such as

(6) Oedipus is looking for two members of his family, but no particular ones

we seem to have a conjunct saying that he is looking for two members of his family, and then another conjunct that qualifies what the first says. The first conjunct could hardly imply that he is looking for two particular members of his family, since that would make (6) contradictory. So if the second conjunct says something that makes a non-trivial qualification of the first, the first conjunct must be *neutral* on whether or not there are particular family-members Oedipus is looking for.[8] This gives us a total of three readings for 'Oedipus is looking for two members of his family', relational, neutral, and anti-relational. We could also call the neutral reading of the first conjunct of (6) the *inclusive* reading, since our suggestion is that the second conjunct stands to the first much as a 'but not both' rider stands to an inclusive disjunction: some situations in which an inclusive $p \vee q$ would be true are eliminated by attaching 'but not both', just as some situations in which Oedipus is looking for

5 See (Forbes 2000:167–180) for more on this generalization of Goodman's semantics. Although I am abandoning the idea that ultimately, the ambiguity in (2) is a scope ambiguity, I am happy to say that at Parsons' "atomic" level, it is a scope ambiguity, with the narrow-scope reading being one in which the quantifier is an argument of 'looks'. But at the *sub*-atomic level (Parsons 1990:8–9), the ambiguity is no mere scope-ambiguity.

6 This section supersedes and (I hope) improves upon the discussion in (Forbes 2000:177–9).

7 Construed as a scope ambiguity in the propositional case, with the case of iterated ascriptions in mind, 'binary' has to be relativized to specific occurrences of attitude verbs.

8 On the binary view, the second conjunct does not say anything beyond the proposition the first is intended to express, it only clarifies what that proposition is.

two members of his family are eliminated by attaching 'but no particular members'.

The standard view is that the first conjunct of (6) is ambiguous between two readings, and 'but not both' disambiguates (an analogous view would be held by one who holds 'or' to be ambiguous). One reason to hold, against the standard view, that a neutral reading of the first conjunct of (6) must be available, is that it might be obvious for various reasons that Oedipus is looking for two family-members (say, because of the places he is looking in and what he is carrying to give them), but not obvious whether or not he is looking for particular family-members. In such a situation, it is natural to think that we are justified in asserting the first conjunct of (6). But we would not be justified in asserting the second or its negation. However, on the standard view, strictly we would only be justified in asserting a disjunction of relational and anti-relational formulations, which seems artificial. Similarly, the binary view deals awkwardly with a statement like 'Oedipus is looking for two members of his family, perhaps particular ones, perhaps not', whose interpretation requires processing the first conjunct twice over, differently for each 'perhaps', if there is no neutral proposition for 'Oedipus is looking for two members of his family' to express.

Granted that we accept the distinction between the neutral proposition and the one with an explicit 'but no particular' rider, I take it to be merely a terminological issue whether 'notional' should be applied to neutral propositions, or instead be reserved for explicitly anti-relational ones like (6). Perhaps, as 'notional' and 'relational' are commonly used in the literature, they are intended to be mutually exclusive. However, I prefer to use 'notional' more broadly: some notional ascriptions are neutral, hence consistent with the facts of the matter being relational; and some are anti-relational, either with explicit 'but no particular' riders or ones understood from context. So speaking carefully, we will use 'neutral notional' and 'anti-relational notional', though we can just use 'notional' if it is clear which

is intended, or if the claim we are making is correct either way.

The semantics of the neutral proposition which is the first conjunct of (6) is given by changing the qnp in (5):

(7) **(some(looking))λe.agent(e)(Oedipus) and kind(e)(two(members of his family))**

Hence, the semantics of (6) itself is obtained just by inserting the anti-relational rider:

(8) **(some(looking))λe.agent(e)(Oedipus) and kind(e)(two(members of his family)) and (no(member of his family))λx.for(x)(e).**

When we turn to the semantics of the avowedly relational

(9) Oedipus is looking for two particular members of his family

the obvious move is just to change **no** in (8) to **two**. But it is not so clear that (9) involves an assertion of the neutral part of (6) followed by a second conjunct which rules out verifying situations for (6)'s second conjunct. Rather, the function of 'particular' may simply be to introduce the *for*-relation of (4) into the semantics. Second, (4) is a special case, in that **some(looking)** and **a(member of his family)** commute. But with **two(members of his family)** the possible scope-configurations are no longer semantically equivalent: the reading in which **some(looking)** commands **two(members of his family)** implies but is not implied by the **two…some** reading. Perhaps (9) is naturally understood to indicate that Oedipus is the agent of a single search which is for two people, but that is because the verb is in the present progressive. The effect disappears in

(10) Yesterday, Oedipus looked for two particular members of his family.

It is evidently incorrect to hold that (10) is false if he looked for one in the morning,

gave up, had lunch, and in the afternoon started a different search for the other. So the appropriate semantics for (9) is

(11) **(two(members of his family))λx.(some(looking))λe.agent(e)(Oedipus) and for(x)(e).**

For uniformity, a corresponding adjustment should be made in (4). (11) is also what we would expect for the strictly unambiguous, if also unlovely, formulation 'there are two members of his family for whom Oedipus is looking'.

3 Bridge inferences

Distinguishing the neutral and the anti-relational subspecies of notionality helps to account for the workings of "bridge" inferences, which carry us from notional to relational. An example is:

(12) Oedipus is looking for a family member; whatever Oedipus looks for, he finds; therefore, Oedipus will find a family member.

On a purely relational reading, 'whatever' is a standard first-order quantifier and this argument is straightforwardly valid. The interesting thing about (12) is that it also appears to be valid if the minor premise is read notionally, and the major premise is taken as generalizing over conditionals of the schematic form 'if Oedipus looks for (q)np, he will find (q)np' in which the antecedent vp is interpreted notionally. This is despite the fact that the consequent and the conclusion are perforce relational.[9] Indeed, because of the use of the impersonal 'whatever' in a context where 'whoever' is syntactically acceptable, this partly notional construal is strongly preferred.[10]

9 It is a nice question whether the second premise of (12) can still be true even if Oedipus looks for Jocasta and fails to find her. Perhaps this should be covered by raising the type of the name (see also n. 22) and emphasizing the neutrality of the reading.

10 See also the discussion of 'what' in (Moltmann 1997:6).

Distinguishing neutral notional readings from anti-relational ones helps with (12) because its second premise would seem to entail, by uniform instantiation of 'whatever', that if he looks for a family member, no particular one, he finds a family member, no particular one. But it is not possible to find an *F*, though no particular *F*. If the notional construal of the antecedent in 'if Oedipus looks for (q)np, he will find (q)np' is neutral on the *particular* / *no particular* divide, this problem does not arise. Therefore, the semantics for the major premise which gives us a valid argument when the minor premise is notional should be:

(13) **(whatever(λ$\mathcal{P}$.some(looking)λe_1.agent(e)(oedipus) and kind(e)($\mathcal{P}$)))**
(λ$\mathcal{Q}$.$\mathcal{Q}$(λx.some(finding)λe_1.agent(e)(oedipus) and theme(e)(x))).

Here the general form is **(whatever(λ$\mathcal{P}$.ϕ($\mathcal{P}$)))(λ$\mathcal{Q}$.ψ($\mathcal{Q}$))**, in which ⟦**λ$\mathcal{P}$.ϕ($\mathcal{P}$)**⟧ is input to ⟦**whatever**⟧ and ⟦**λ$\mathcal{Q}$.ψ($\mathcal{Q}$)**⟧ is input to ⟦**whatever(λ$\mathcal{P}$.ϕ($\mathcal{P}$))**⟧. $\mathcal{P}$ and $\mathcal{Q}$ are variables for properties of properties of individuals (first-order quantifiers). The function ⟦**whatever(λ$\mathcal{P}$.ϕ($\mathcal{P}$))**⟧ maps ⟦**λ$\mathcal{Q}$.ψ($\mathcal{Q}$)**⟧ to ⊤ iff for any property of properties of individuals μ, ⟦**λ$\mathcal{Q}$.ψ($\mathcal{Q}$)**⟧(μ) = ⊤ if ⟦**λ$\mathcal{P}$.ϕ($\mathcal{P}$)**⟧(μ) = ⊤. So truth-conditionally, **whatever** is indistinguishable from **every**.

According to (13), the second premise of (12) means that whatever property of properties classifies a looking by Oedipus, the property *being found by Oedipus* has that property. So if *being a property of at least one family member of Oedipus* classifies a looking by Oedipus, then the property *being found by Oedipus* has the property *being a property of at least one family member of Oedipus*. This latter means that at least one of his family-members is found by Oedipus.

We can give an even more symmetric account of the major premise in (12) if we are willing to construe 'Oedipus finds a family member' along the lines of (5) rather than (4), that is, to construe it as saying that Oedipus is agent of a finding of the some-family-member kind. Then the second premise of (12) would say that whatever property of properties classifies a looking by Oedipus also classifies a

finding by Oedipus. This version would require meaning-postulates for vp's with extensional verbs to guarantee that if *e* is a finding of the some-family-member kind then there is a family member who is a theme of *e* (and vice-versa). The viability of this account depends on neutral readings being available for extensional verbs. But I will not pursue its ramifications at this point, since (13) already suffices to demonstrate that (12) is valid *even if* the minor premise and the conclusion have rather different-looking semantics.

4 Weakening inferences

A second type of inference with notional vp's is one in which the conclusion is apparently obtained simply by deleting some information from the premise. If this is all that happens, arguments of this type must be valid. Examples:

(14) Richard III needs a war horse; therefore Richard III needs a horse.

(15) Richard III needs at most one horse; therefore Richard III needs at most two horses.

(16) Richard III needs every available horse; therefore Richard III needs every available war horse.[11]

In this section I discuss whether weakening inferences *should* be validated, and in the next, how they *could* be.

The choice of 'need' as the attitude verb in (14)–(16) is deliberate, since, though intensional, 'need' is not *hyper*intensional. That is to say, it permits interchange in its complement of expressions standing for the same individual, or property of individuals, or property of properties, and so on (interchange of merely co-extensive expressions seems to fail). If you are dehydrated and need water, you need h_2o: your needs are settled by the objective facts about the states you are in. By contrast, you may *want* water but not *want* h_2o because you think h_2o is a kind of rat poi-

11 Richard III was the King of England who, upon losing his horse at the Battle of Bosworth, cried "A horse! A horse! My kingdom for a horse!" (according to Shakespeare).

son. Hence using 'need' we can bracket issues about opacity. However, our conclusions should apply to variants of (14)–(16) with hyperintensional verbs like 'want' and 'seek', since these variants would be susceptible to transparent readings as well as opaque ones, and principles for 'need' would be applicable to the transparent readings in the hyperintensional case.[12]

If (14), say, is invalid, then it must be possible that

(17) Richard III needs a war horse but does not need a horse.

To some ears, this verges on contradiction, and can only be rescued by reading the 'not' metalinguistically,[13] with the import 'he doesn't *merely* need a horse'. But an alternative defense of (17) is possible. We are supposing that all the 'need'-vp's in (14)–(17) are to be understood notionally. To this point we have used the rider 'but no particular one' when we wanted to make the notional reading salient (according to §2, it does this by forcing an anti-relational reading). But it may be suggested that notional readings are better made salient by the rider 'any one(s) will do'. If this is right, (14) may have a true premise and a false conclusion. For in Richard III's battle situation, among horses perhaps only war horses would be of any use to him. So the conclusion, 'Richard III needs a horse, any one will do' is false.

But the proposed 'any one(s) will do' rider for notional readings is problematic in various ways. First, it is very specific to the case of search verbs, and 'want' and 'need' and their cognates, and specific to existential qnp's. 'Guercino drew a dog', 'Oedipus lacks a friend', 'Richard III anticipates an attack' and 'Perseus worships every god who lives on a mountain' all have notional readings,[14] but 'any one(s) will do' makes little sense with them. 'Oedipus seeks every wise man who lives on Mount Olympus' also has a notional reading, again difficult to articulate with 'any

12 Thus I am saying that the opaque / transparent distinction is orthogonal to the notional / relational distinction; see further (Forbes 2000:165–67).

13 See (Kadmon 2001:8) for a recent account.

14 That 'worship' allows notional readings for universal qnp's was pointed out to me by Michael Jacovides. The reading does not seem to involve a generic.

ones will do', easy with 'but no particular wise men'.

Secondly, and more importantly, the explication of notionality as *indifference* has extreme consequences for the warranted assertibility of notional ascriptions. No matter how specific the ascription of an objectual attitude may be, it will be false unless it is *maximally* specific. For example, if we say of some bond trader who is in trouble with financial regulators that he needs a good lawyer, we say something false, since a good personal accident lawyer would be of little use to him. It might be replied that context always indicates some restricted group, any one of whom will do. But it is quite difficult to see how the contextual restriction is to be generated, and how it is transmitted in communication: if A tells B on the basis of his own observation that Richard III needs a horse, and A knows this, B will normally come to know it, even if he knows little about the context in which A observed it. But on the contextualist proposal, this would be as if A had said 'he needs a horse' without providing B any way of resolving the 'he'. Saving 'any one will do' by appeal to context requires considerable explanation.

However, these are arguments against an objection to (14)–(16). It would be better if we could argue directly from the appropriateness of 'but no particular one' to the validity of (14)–(16). But the appropriateness of this rider cannot by itself justify the step that thins informational content, as is shown by the case of 'lack'. If Richard III lacks a war horse, there may be no particular war horse he lacks. Yet it does not follow that Richard III lacks a horse, though the logical form of this inference appears to be the same as in (14)–(16).[15] Apparently, the lexical meaning of the verb is also crucial. So, using 'but no particular one', can we argue that (17) is impossible? Suppose Richard III needs a war horse, but no particular one, and for *reductio*, (a) that the following is not the case: he needs a horse, but no

15 This would not be so if 'lack' lexically decomposes into 'does not have'. Since this would still leave us with the problem to be discussed next, I will not pursue this response, other than to note that 'not' creates downward-entailing contexts licensing negative polarity 'any'; but though 'lack' is downward entailing, 'Richard III lacks any horse' is unacceptable, disconfirming the presence of 'not'.

particular one. From (a), either (b) he does not need a horse; or (c) he needs a particular horse. (b) combined with his needing a war horse is simply (17) over again, which sceptics about weakening inferences are presumably willing to swallow. And (c) combined with his needing a war horse (though no particular one) is perfectly possible, if he needs both *that* horse over *there*, and a war horse. So no decisive defense of weakening inferences emerges.

When intuitions about logical consequence are uncertain or contested, questions may be answered by finding *paraphrases* which make logical relations among sentences of the problematic kind less opaque. These paraphrases may be formulated as meaning postulates that constrain the class of models in which such sentences are evaluated. So the question to which I now turn is whether there are adequate paraphrases of the range of objectual attitude ascriptions we are considering which independently settle the status of weakening inferences.

5 Happy-outcome paraphrases

Objectual attitude ascriptions with search verbs, 'want', 'need' and their cognates can be paraphrased by statements that say in what circumstances the search is successful, the desire is satisfied, or the need is met. For (14)'s premise, 'Richard III needs a war horse', two simple versions of such *happy outcome* paraphrases are

(18) Richard III's need is met if he gets a war horse.

(19) Richard III's need is met only if he gets a war horse.

By the lights of (18), weakening inferences are invalid. The paraphrase of the conclusion of (14) would be "Richard III's need is met if he gets a horse", which does not follow from (18). But the simple sufficient condition account that (18) illustrates is clearly incorrect, since it validates *strengthening* inferences. If his need is met if he gets a horse, then it is met if he gets a war horse. So needing a horse entails needing a war horse. A counterfactual version of (18) has the same problem. From 'if he

were to get a horse it would be a war horse' and 'if he were to get a horse his need would be met' we can infer 'if he were to get a war horse his need would be met'. But his needing a horse should not imply his needing a war horse simply because, among horses, war horses are the easiest for him to come by in his present circumstances.

(19) is not subject to these difficulties, and validates weakening: if getting a war horse is necessary to meet his need then getting a horse is necessary; if getting every available horse is necessary, then so is getting every available war horse, and so on. A sceptic about weakening might try to add (18) on top of (19), but although that would not validate strengthening inferences (which (19) suffices to defeat), an objection we already made to the use of 'any one will do' riders resurfaces: the warranted assertibility conditions of ascriptions of needs will become too stringent. Our troubled bond trader still doesn't need a lawyer, because it is not true that if he gets a lawyer his need is met (suppose he gets a personal injury lawyer). So, at least at first sight, it looks as if happy outcome paraphrases settle the status of weakening inferences, and do so in their favor.

The model theory for the semantic representations we introduced earlier does not validate weakening in and of itself: there is no reason why **kind(e)(a(horse))** should hold simply because **kind(e)(a(war horse))** holds.[16] To constrain the class of models to ones in which **kind(e)(a(war horse))** holds only if **kind(e)(a(horse))** holds we could add the capacity to express happy outcome paraphrases to the formal language and relate objectual ascriptions to their paraphrases, so that logical relations among the ascriptions are settled by those among their paraphrases. Alternatively, we could make stipulations directly about **kind**. The latter is the tempting route, especially when we are modelling properties extensionally. A direct stipulation about kinds would say that the kinds of certain events or states are closed under containing kinds, or extensionally speaking, under supersets:

16 We use '**e**' as a variable for states as well as for events.

(20) If *e* is an event of search or a state of want or need, $[\![\textbf{kind(e)}(\mathcal{P})]\!] = \top$ and $[\![\mathcal{P}]\!] \subseteq [\![\mathcal{Q}]\!]$, then $[\![\textbf{kind(e)}(\mathcal{Q})]\!] = \top$.

However, (20) appears to be the wrong generalization, as we can bring out by consideration of *disjunctive* objectual attitude ascriptions:

(21) Richard III needs a war horse or a cart horse.

In terms of happy outcome paraphrases, (21) would standardly be understood to mean that getting a war-horse is one way of meeting his need *and* getting a cart horse is another. In other words, the disjunction in (21) has what I will call *conjunctive force*, and consequently the inference

(22) Richard III needs a war horse, therefore Richard III needs a war horse or a cart horse

fails, because the premise says nothing about getting a cart horse being a way of meeting his need (I refer to the inference as "np-$\vee$-Introduction in the complement", $\vee I^{np}_{comp}$ for short).[17]

It is possible to rob (21) of its conjunctive force, by the addition of a rider like 'only he knows which' or 'at least one of the two', but this is a special, "marked", use. The conjunctive force interpretation is the default one, and the problem with (20), granted a standard account of the semantics of 'or' as union (maximum, least upper bound, etc.) is precisely that it produces the semantics of the marked reading, not the unmarked one. By closure under supersets, needing a war horse entails needing a war horse or a cart horse (the set of all sets containing a war horse is a subset of the set of all sets containing a war horse or a cart horse). So the rule $\vee I^{np}_{comp}$, which ought to be invalid for 'need', 'want' and search verbs, is validated.

The phenomenon of conjunctive force is not restricted to the complements of

17 The phenomenon of '$\vee$' with conjunctive force is robust across many languages.

search verbs, 'wants' and 'needs', as the following examples attest:

(23) Richard III's sword is heavier than his shield or his helmet.

(24) If Richard III were to find a cart horse or a ceremonial horse he'd be frustrated.

(25) Richard III could have been a king or a commoner.

(26) Richard III is permitted to abdicate or negotiate with the nobles.

Standard logics for counterfactuals and alethic and deontic modalities assign non-conjunctive readings to (24)–(26), just as (20) does to (21), and so appear equally problematic.

However, it may be argued that the phenomenon of conjunctive force is *pragmatic*, as has been urged for (24), whose literal meaning on this view is just what Lewis-Stalnaker semantics say it is.[18] If this is right, (20) could be reinstated and $\vee I^{np}_{comp}$ accepted. But though it is often hard to tell where literal content ends and implicature begins, certain features of these examples suggest that conjunctive force is literal.

First, the case of counterfactuals like (24) does not seem so far removed from that of material or strict conditionals of the form $(p \vee q) \rightarrow r$, whose conjunctive force is indisputably literal, given logical equivalence to $(p \rightarrow r) \wedge (q \rightarrow r)$.

Secondly, the rider-attachments that can dissolve conjunctive force in our examples seem more like scope-ambiguity resolvers than implicature-cancellers. If we append 'and he knows which' to (23), the anaphoric 'which' appears to require for its interpretation that the 'or' have the comparative in its scope, as in '(is) heavier than his shield or [is heavier than] his helmet', and if (23) is read this way, it has no conjunctive force (similarly, for (25), the rider "I'm not sure which" gives the disjunction vp scope). If conjunctive force is associated with certain structural

18 There is an ingenious account of the conjunctive force of counterfactuals with disjunctive antecedents as essentially a Gricean implicature in (Loewer 1976), the details of which I do not have any decisive objection to.

conditions, and its absence despite apparent narrow scope involves implicit wide-scope disjunction accompanied by an ellipsis, then conjunctive force is a semantic phenomenon.

Thirdly, other changes in (24)–(26) produce examples where we can tell there is no conjunctive reading without any consideration of pragmatics. For instance, a dominant conjunctive reading persists if we change 'could have been' in (25) to 'could become', but immediately vanishes if we change it instead to 'is going to become'. Similarly, if we put 'obliged' for 'permitted' in (26), we lose the conjunctive reading regardless of how the scope-ambiguity between □ and ∨ is resolved. These verdicts arise from reflection on the literal meaning of the new examples, not from considerations about how or when it is normally appropriate to use them, not even the largely context-independent considerations which are all that are required for *generalized* conversational implicatures.

But if conjunctive force is literal, how is to be explained? A plausible hypothesis is that the disjunctions in our examples function as lists of items that are being said to satisfy certain conditions, that is, as lists such that *any member* of them satisfies the conditions. In the semantic representation, the list-disjunction is raised and the 'any member' becomes a universal quantifier.[19] So for example, (23) is

(27) (Any *x: x* = Richard III's shield ∨ *x* = Richard III's helmet)[Richard III's sword is heavier than *x*]

and with a *de dicto* reading in intensional logic, (25) exhibits the same pattern:

(28) (Any *F: F* = $^{\wedge}\lambda x$.king(x) ∨ *F* = $^{\wedge}\lambda x$.commoner(x))[$\Diamond^{\vee}F$(Richard III)].[20]

19 I came to this view independently, but I believe the first published version of it is (Makinson 1984). His paper focusses on the deontic case, but he notes his approach's applicability to counterfactuals with disjunctive antecedents, and epistemic and logical modalities (141, 146).

20 List-raising suggests an account of a phenomenon noted in (Zimmerman 2000:258–259), that in some modal cases conjunctive force persists even if 'or' is given widest scope, as for instance in 'He may speak English or he may speak Spanish' (either the 'may' of permission or of epistemic possibility). Here we raise a list of modal propositions, e.g., 'for any proposition *p*, if *p* = *that he may speak English* or *p* = *that he may speak Spanish* then *p*'. However, modal auxiliaries like 'could'

However, there is no immediate way of applying list-raising to (21). If we follow the model of (27) and (28) and try to apply it to (21) using the type of semantic representation illustrated in (5), we get

(29) **(any(λ$\mathcal{P}$.$\mathcal{P}$ = λX.(a(war horse))(X) or $\mathcal{P}$ = λX.(a(cart horse))(X))) λ$\mathcal{Q}$.some(need)λe.in(e)(richard-iii) and kind(e)($\mathcal{Q}$).**[21]

Inspection indicates that this means Richard III needs a war horse *and* needs a cart horse, which is not at all what (21) means. The implicit explanation of the failure of $\vee I^{np}_{comp}$ that list readings provide is that $\vee I^{np}_{comp}$ weakens the antecedent or the quantifier-restriction. But (29) is the wrong formula for this explanation. Indeed, apart from attachment to (20), there is no reason not to take the semantics of (21) to be what it appears to be, involving classification by a disjunctive noun phrase:

(30) **some(need)λe.in(e)(richard-iii) and kind(e)((a(war horse)) or (a(cart horse))).**[22]

This vindicates the idea that conjunctive force is associated with genuine narrow scope. The simplest wide-scope reading that lacks conjunctive force involves replacing the single kind-classification in (30) with a disjunction of classifications: **kind(e)(a(war horse)) or kind(e)(a(cart horse))**.

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and 'may' are idiosyncratic in the way they retain conjunctive force – it is hard to hear conjunctive force in 'He is permitted to speak English or he is permitted to speak Spanish'. And with comparatives or intensional transitives, there is no conjunctive force in wide-scope disjunctions. For example, "Richard III's sword is heavier than his shield or heavier than his helmet" does not have a conjunctive reading. But why is the semantics "for any property *P*, if *P = being heavier than Richard III's shield* or *P = being heavier than Richard III's helmet* then *P*(*Richard III's sword*)" not possible for this predicate disjunction? There is apparently a constraint observed by all but modal auxiliaries to the effect that the expression responsible for conjunctive force, e.g., a comparative adjective or an intensional transitive verb, cannot itself figure in terms for the list items.

21 I adopt Parsons' proposal (1995:644) that 'the major thematic relation needed in the case of state sentences is…the relation of being *in* the state'.

22 This form would also serve for ascriptions with disjunctions of proper names, by raising the type of the names to that of quantifiers.

Since (20) produces the wrong results with (30), we have good reason to investigate the alternative way we mentioned above of constraining the class of models to ones in which weakening is valid (and $\vee I^{np}_{comp}$ invalid). We should try to use happy outcome paraphrases as meaning-postulates for objectual ascriptions and let the logic of the ascriptions follow from the logic of the paraphrases.

6 Paraphrases for disjunctive ascriptions

On the face of it, the meaning-postulate approach fares no better than (20) as far as invalidating $\vee I^{np}_{comp}$ is concerned, since the paraphrase we have proposed for 'Richard III needs a war horse' is "Richard III's need is met only if he gets a war horse". But if his need is met only if he gets a war horse, it is met only if he gets a war horse or a cart horse. And so $\vee I^{np}_{comp}$ is validated again.

However, this just means we need better paraphrases. In explaining the conjunctive force of (21), 'Richard III needs a war horse or a cart horse', we used the idea of a *way of meeting* his need: getting a war horse is a way of meeting it, *and* getting a cart horse is a way of meeting it. We can capture the idea of a way of bringing about such-and-such a result in terms of quantification over courses of events, *complete* courses of events, in the style of possible world semantics, but not necessarily *possible* courses of events.[23] For the premise of (14),

(31) Richard III needs a war horse

a first try would be "in some course of events Richard III's need is met by his getting a war horse", or using events and thematic relations explicitly,

(32) Richard III is in a state of need such that in some course of events $\vec{e}$, there is an event of getting whose agent is Richard III, whose theme is a war horse, and which meets that need in $\vec{e}$.[24]

23 This is to allow for desires, searches, perhaps even needs, for *impossibilia*.

(32) does not say that getting a war horse is sufficient to meet Richard III's need, only that *in some circumstances* it is sufficient. Therefore it does not set the bar too high *vis à vis* the assertibility of (31). Nor does it validate strengthening: even if getting a horse is sufficient in some circumstances, it does not follow that getting a war horse is sufficient in some circumstances. But (32) does validate weakening, since a thematic war horse is *ipso facto* a thematic horse. So it looks promising, not simply as an accurate paraphrase, but as an explanation why weakening is valid.

Ascriptions of needs for pluralities of objects show that (32) does not generalize to other qnp's that may be in the verb's complement.[25] We cannot paraphrase

(33) Richard III needs exactly two war horses

by replacing 'whose theme is a war horse' in (32) with 'whose themes are exactly two war horses', since that would require both horses to be themes of a single event of getting, in other words, require that he get them together.[26] But the need ascribed in (33) could be met if he got first one, then shortly thereafter, another. This means the theme quantifier has to have scope over the event quantifier, so that the need can be met by two events of getting.

This occasions a further complication, however, since in a case where a need is met by two or more events of getting, the property of meeting the need is not one which distributes across the events: we cannot say 'each getting meets the need', only that *the gettings* meet the need, which is a collective predication of events. To capture collective predication, I adapt Schein (1993), where a collective predication

24 I say Richard III is agent because gettings and obtainings are *by* the subject even if the subject doesn't *do* anything. In our language for semantic representations, (32) would be **(some(need))λe.in(@)(e)(r-iii) and (some)λ$\bar{e}$.(some(getting))λe′.agent(e′)(r-iii) and (some(war horse))λx. theme(e′)(x) and meets($\bar{e}$)(e)(e′)**. '**in(@)(e)(r-iii)**' means Richard III is in the state *e* in the actual world. For simplicity, I assume that all atomic predicates and relations are (i) existence-entailing, and (ii) weakly rigid, excepting **meet**, **satisfy**, and **successful**, which are therefore relativized to courses of events).

25 I managed to overlook this in (Forbes 2002), which used paraphrases in the style of (32) throughout. The present account supersedes the one in that paper.

26 Note that this is a problem whether we say that the getting has two themes, or, as some would insist, a single theme consisting in a pair of objects.

of a plurality of objects introduces an event of which the various members of the plurality in question are participants, this event being the true subject of the collective predication. For example, 'some protesters assembled in the square' is understood to say, roughly, that there is an event of assembling in the square, and some protesters are its agents. Our pluralities are pluralities of events (gettings, findings, etc.) and in (32) we are already discerning something in which they are "participants", namely, the course of events $\vec{e}$. This makes it possible to avoid plural quantification over gettings: we do not need to say that *some gettings* meet the need if we can weaken this to the claim that the need is met in a course of events of which the gettings are part ('part' distributes). The proposed paraphrase of (33) is

(34) For some state of need *e* of Richard III there is a course of events $\vec{e}$ such that (i) *e* is met in $\vec{e}$; and (ii) there are exactly two war-horses *x* such that there is a getting e' such that Richard III is agent of e' and *x* is a theme of e' and e' is part of $\vec{e}$.[27]

This looks *too* weak, since it does not say that the need is met *by* the gettings, but this will not turn out to be a problem for the range of cases to be considered here (however, see note 30). [28]

We can now articulate the conjunctive force of (21), 'Richard III needs a war horse or a cart horse', by applying the list-raising strategy illustrated in (27) and

27 In our language for semantic representation, (34) is **(some(need))λe.in(@)(e)(r-iii) and (some)λ$\vec{e}$.met_in($\vec{e}$)(e) and (exactly(two))(war horse)λx.(some(getting))λe′.agent(e′)(riii) and theme (e′)(x) and part($\vec{e}$)(e′)**. For uniformity, we would recast (32) in the same way.

28 Although there are inadequacies in (34) still to be addressed, the form of the account is already sufficient to meet a constraint proposed by Richard (2001:107). Suppose Oedipus is looking for a friend who knows Jocasta and a friend who knows Creon but is indifferent between finding a friend who knows both versus a different friend for each. Then, as Richard insists, a correct semantics for notional readings must allow 'Oedipus is looking for at most one friend' and 'Oedipus is looking for at least two friends' both to be false. Granted that a single search is at issue, our paraphrase says there is a course of events $\vec{e}$ in which his search is successful, and, for some friend of his who knows Jocasta and some friend of his who knows Creon, there is a finding by Oedipus of which that friend is theme and which is part of $\vec{e}$. This is neutral on whether or not the friends are the same, and also, by the standard unfolding of **(some(F) and some(G))λx.ϕ** (Carpenter 1997:180) on whether or not the findings are the same. So we meet Richard's requirement.

(28) to the formulation of (21)'s paraphrase. This produces

(35) For some state of need *e*, Richard III is in *e*; and for any property of properties $\mathcal{P}$ which is either that of being a property of a war horse or that of being a property of a cart horse, there is a course of events $\vec{e}$ such that: (i) *e* is met in $\vec{e}$, and (ii) the following property has $\mathcal{P}$: the property of being a theme of a getting e' such that Richard III is agent of e' and e' is a part of $\vec{e}$.[29]

This says that both getting a war horse and getting a cart horse are ways of meeting Richard III's need because it says that his need is met in a course of events in which he gets a war horse, and it is met in a course of events in which he gets a cart horse.

But (35) is not adequate as a paraphrase of (21). To say that his need is met in a course of events in which he gets a war horse is, on present assumptions, to say that he needs a war horse; and to say that his need is met in a course of events in which he gets a cart horse is to say that he needs a cart horse. Therefore (35) is equivalent to the paraphrase of

(36) Richard III needs a war horse and needs a cart horse.

However, (21) is clearly not equivalent to (36): if he gets a satisfactory war horse the need reported in (21) is met, but (36) still has him needing a cart horse. The difference is naturally expressed in terms of necessary conditions, in that for the needs ascribed in (36) to be met, Richard III must end up in possession of a cart horse as well as a war horse, while for (21), only one of the two is required. Therefore, we can block unwanted entailments by adding appropriate necessary conditions. For (31), treating it as a "one-disjunct" ascription, the official paraphrase is:

29 One type-theoretic representation of this is: **(some(need))λe.in(@)(e)(r-iii) and (any(λ$\mathcal{P}$.$\mathcal{P}$ = (a(war horse)) or $\mathcal{P}$ = (a(cart horse))))λ$\mathcal{Q}$.(some)λ$\vec{e}$.met_in($\vec{e}$)(e) and $\mathcal{Q}$λx.(some(getting)) λe′.agent(e′)(riii) and theme(e′)(x) and part($\vec{e}$)(e′)**. In a more careful rendering, the relative clauses would be represented as such; see Carpenter 1997: 200–206.

(37) For some state of need *e*, Richard III is in *e*; and for any property of properties $\mathcal{P}$ identical to *being a property of a war horse*, (A) there is a course of events $\vec{e}$ such that (i) *e* is met in $\vec{e}$, and (ii) the property of being a theme of a getting whose agent is Richard III and which is a part of $\vec{e}$ has $\mathcal{P}$; and (B) for any course of events $\vec{e}$ such that *e* is met in $\vec{e}$, *being a theme of a getting whose agent is Richard III and which is a part of* $\vec{e}$ is a property of a war horse.[30]

(B) in (37) adds to (35) that Richard III's need cannot be met without his getting a war horse. It might be objected that this is too strong, for if it were somehow possible to send a twentieth-century battle tank back in time to him (driver, gunner and ammunition included), getting it would also have met his need. One could deny this on the grounds that, analytically, a need for a horse is met only by getting *a horse*. Giving him a battle tank would merely dissipate his need for a horse, not meet it. Concomitantly, if a battle tank *would* meet his need, then it is not strictly true that he needs a horse. But in that case, *no* need-ascription is strictly true, since it will always be possible to think of something that would do just as well – a miracle, if need be. It is better to take the case as showing that we must restrict the ways of meeting his need under consideration to courses of events that are in relevant respects "close" to Richard III's actual situation, in that they represent real-

30 The pattern of (37) seems to be adequate for determiners like 'at least one' (left and right upward entailing) and 'every' (left downward and right upward entailing). But examples with other determiners show the pattern is not sufficiently general. Moltmann (1997:14,22) points out that a need for exactly two *F*'s can be met in a world where the subject of the need gets more than two: the extra ones can always be discarded. Her own proposal is to restrict paraphrases to "minimal situations", but this threatens to eliminate the distinction between needing at least two and needing exactly two, since presumably a *minimal* situation in which a need for at least two is met is one where exactly two are obtained. The moral for (37b) is apparently that the distributive 'part' is insufficient for our purposes. We need instead a non-distributive 'meet' and plural quantification over events: for any course of events in which the need is met, exactly two *F*'s are themes of gettings which (jointly) meet the need in that course of events. The idea is that discarded *F*'s aren't themes of gettings *which meet the need*. There is then an obvious problem with cases where a single getting has two *F*'s as themes, one of which goes toward meeting the need, the other of which is discarded. This version of the "irrelevant theme" problem can be handled with some of the apparatus described in section 7. But I will leave these generalizations to another occasion.

istic prospects.[31]

The corresponding paraphrase for the disjunctive (21) is

(38) For some state of need e, Richard III is in e; and for any property of properties $\mathcal{P}$ identical to being a property of a war horse or to being a property of a cart horse, (A) there is a course of events $\vec{e}$ such that e is met in $\vec{e}$, and the property of being a theme of a getting whose agent is Richard III and which is a part of $\vec{e}$ has $\mathcal{P}$; and (B) for any course of events $\vec{e}$ such that e is met in $\vec{e}$, being a theme of a getting whose agent is Richard III and which is a part of $\vec{e}$ is a property of either a war horse or a cart horse.

This paraphrase is for neutral notional readings. Therefore it is also applicable to disjunctive ascriptions using proper names, provided we raise the type of a name to that of a second-order property.[32]

The proposal we now have before us is that the status of inferences such as weakening, strengthening, and $\vee \mathrm{I}^{\mathrm{np}}_{\mathrm{comp}}$, is to be determined by associating objectual attitude ascriptions with paraphrases such as (37) and (38) and letting the logic of the paraphrases fix the logic of the ascriptions. Inspection of (37) indicates that the weakening inference (14) is valid so long as we have a meaning postulate or inference scheme that requires being a war horse to be a subproperty of being a horse. For then if (A) in (37) holds when $\mathcal{P}$ is being a property of a war horse, it holds when $\mathcal{P}$ is being a property of a horse; and (B) holds since any property that is a property of a war horse is a property of a horse. It is also easy to see that the other weakening inferences (15) and (16) hold.

Strengthening fails, since nothing guarantees that because getting a horse meets a need in a certain course of events, there is a course of events in which get-

31 See (Lycan 2001:18–24) for discussion of an analogous difficulty in the semantics of conditionals. In the current context, impossibility is not a bar to realism; see note 23.

32 How to classify such ascriptions is an interesting question. We can say ‘Oedipus is looking for Jocasta or Creon, but no particular one of them’ but not ‘Oedipus is looking for Jocasta or Creon, but no particular people’.

ting a war horse meets that need. $\vee I^{np}_{comp}$ fails, because the truth of (37) does not suffice for the truth of (38): nothing in (37) guarantees that (A) in (38) holds when $\mathcal{P}$ is being a property of a cart horse. Continuing in the same vein, the inference $\vee E^{np}_{comp}$ illustrated in

(39) Richard III needs a war horse or a cart horse; therefore Richard III needs a war horse

also fails, since the conclusion says that his need cannot be met without his getting a war horse, while the premise, according to (B) in (38), says only that it cannot be met without his getting either a war horse or a cart horse. Consequently, (21) does not entail (36).[33]

7 The relevance problem

It is a nice feature of the paraphrases that their own logic is (relatively) transparent: using them allows us to reduce a more problematic consequence relation to a less problematic one.[34] A sceptic about weakening may object that our procedure is circular, since we formulated the paraphrases precisely with a view to validating weakening inferences. But the main constraints we observed in formulating the paraphrases were rather to avoid validating strengthening, to capture the conjunctive force of disjunctive ascriptions, and to avoid imputing truth-conditions that put warranted assertibility out of reach. Weakening was validated incidentally.

However, there is a problem with the accuracy of the paraphrases that threatens the transparency of their logic. It is generated by the way we have captured the

33 However, 'Richard III needs a war horse and a cart horse' does entail (21) according to their paraphrases. This is another problem that can be resolved by using the non-distributive 'meet' discussed in note 30. That gettings of a warhorse and a cart horse jointly meet a need does not entail that each by itself could meet the need.

34 Even bridging inferences are clarified with paraphrases: 'Whatever Oedipus seeks, he finds' generalizes over conditionals that have paraphrases of the schematic form 'if Oedipus is agent of a search which can be concluded successfully by find det f, and only in that way, then Oedipus will find det f.'

conjunctive force in (21) and ultimately traces to aspects of events finer-grained than their identities. First, suppose that in some course of events there is a single getting in which Richard III acquires a war horse and a cart horse, thereby meeting his actual need, in that course of events, for a war horse. The occurrence of this getting makes the paraphrase of (21) true as well; for the same course of events is one in which his need is met by a getting of which a cart horse is a theme (viz., the same getting); and if his need can be met only by getting a war horse, it can be met only by getting a war horse or a cart horse. But the mere possibility of acquiring a war horse and something along with it should not entail that if he needs a war horse, he needs a war horse or that something. The something in question is an irrelevant aspect of a relevant getting.

We cannot solve this problem by returning to (34) and using plural quantification over events to say explicitly that the gettings meet the need (not just that the need is met) in the course of events in question, since it is an irrelevant aspect of the *same* getting that is causing the difficulty, not the intrusion of irrelevant gettings. Nor can we solve the problem by adopting the view about thematic relations that 'an event has at most one entity playing a given thematic role' (Carlson 1998:40).[35] For it may be that the *same* horse is both a war horse and a cart horse: perhaps Charger leads a double life as Nag. This possibility also defeats an approach that distinguishes relevant themes of a getting from irrelevant themes. For in the imagined case, the same theme is both relevant and irrelevant, relevant *qua* war horse and irrelevant *qua* cart horse (white horse, four-year-old horse, and so on), one wants to say.[36]

One might try to filter irrelevant properties such as *being trained to draw a cart* or *being white* by requiring of any getting that meets the need in some circum-

35 Events which seem to have multiple themes are said to have only a single theme, consisting in the group of things that were supposedly the many themes. I would not adopt this position anyway, since it multiplies events unnecessarily.

36 But the relevant / irrelevant theme distinction is germane to the problem at the end of note 30.

stances, that the pertinent theme (themes) of the getting has (have) the appropriate property in every circumstance in which the getting meets the need. In terms of our example, this would be to rely on circumstances in which Richard III's need for a war horse is met by his getting Charger, but Charger has not been trained to draw a cart, or is not white, etc. But essential properties survive this filter: if it is essential to Charger that he was sired by Prancer, then Richard III needs a war horse or a horse sired by Prancer, even under the proposed restriction (recall that 'theme' is rigid). This is no better. And though it would be possible to filter *sired by Prancer* with reference to impossible courses of events in which Charger is not sired by Prancer, it would be objectionable to do so: the sole role of impossible courses of events in the theory should only be to accommodate needs, wants and searches for impossible objects.

We can make a technical resolution of the problem with paraphrases (37) and (38) by inserting the notion of relevance into them explicitly. Relevance is a relation between a state – here a state of need – of need and a proposition. Adding a relevance requirement to (37) produces

(40) For some state of need *e*, Richard III is in *e*; and (A) there is a course of events $\vec{e}$ such that (i) *e* is met in $\vec{e}$, (ii) *being a theme of a getting whose agent is Richard III and which is a part of* $\vec{e}$ has the property of being a property of a war horse, and (iii) it is relevant to *e* that the theme-property mentioned in (ii) is a property of a war horse; and (B) for any course of events $\vec{e}$ such that *e* is met in $\vec{e}$, *being a theme of a getting whose agent is Richard III and which is a part of* $\vec{e}$ is a property of a war horse.

It is now no longer true that if getting Charger meets Richard III's (actual) need in some course of events in which Charger is both a war horse and a cart horse, then Richard III (actually) needs a war horse or a cart horse. For when we insert the relevance requirement (40:Aiii) into (38), taking *being a property of a cart horse* for $\mathcal{P}$ and

a course of events in which Charger is also a cart horse for $\vec{e}$, we obtain the falsehood that it is relevant to Richard III's need that *being a theme of a getting whose agent is Richard III and which is a part of* $\vec{e}$ is a property of a cart horse.

But however well-motivated the appeal to relevance may be, its introduction makes the logic of paraphrases relatively less transparent. Though the invalidity of strengthening, of $\vee \mathrm{I}^{\mathrm{np}}_{\mathrm{comp}}$, and of $\vee \mathrm{E}^{\mathrm{np}}_{\mathrm{comp}}$, are not affected by the addition of the relevance requirement, the validity of weakening certainly is. For if it can be relevant to Richard III's need that a war horse is a theme of the getting which meets it in a certain course of events, but irrelevant that a horse is a theme of that getting, then the paraphrase of (14)'s premise may be true while the paraphrase of its conclusion is false. In the same way, if it can be relevant to Richard III's need that in a certain course of events *being a theme of a getting whose agent is Richard III* is a property of every available horse, and irrelevant that it is a property of every available war horse, the paraphrase of (16)'s premise can be true while the paraphrase of its conclusion is false. So the status of weakening inferences depends on what principles govern relevance. And the need for such principles is, perhaps, regrettable.

We can ensure the validity of weakening by imposing on relevance an analog of (20), saying that if it is relevant to an event or state *e* of a certain sort that a property of individuals *X* has a property $\mathcal{P}$, and if, for any property of individuals *Y*, $\mathcal{P}(Y) = \top$ only if $\mathcal{Q}(Y) = \top$, then it is relevant to *e* that *X* has $\mathcal{Q}$:

(41) **(every(λe′.ϕe′))λe.every λ$\mathcal{P}$.every λ$\mathcal{Q}$.every λX.**
rel(e)[$\mathcal{Q}$(X)] if {rel(e)[$\mathcal{P}$(X)] and (every)[λY.$\mathcal{Q}$(Y) if $\mathcal{P}$(Y)]}.[37]

However, it will immediately be objected that unless we can give (41) some independent justification, we are just validating weakening inferences by decree.

37 **ϕ** restricts **e′** to states of need or desire and events of search, excluding, e.g., states of lacking. The intention is that **rel(e)($\mathcal{Q}$(X))** will hold only if **X** is the property of being a theme of an event of finding whose agent is agent of **e** and which is part of a certain course of events in which **e** is successful, or **X** is the property of being a theme of an event of getting whose agent is agent of **e** and which is part of a certain course of events in which **e** is met, or…, etc.

The most natural construal of the relevance of which (41) speaks is as *explanatory* relevance: relevance to an event is shorthand for relevance to the explanation of why it occurs. The theme properties that are the pertinent values of **X** in (41) have properties which make them relevant to the explanation of why a need of Richard III's for a war horse, or for every available horse, or for at most one horse, is met in a certain course of events. That is, what is to be explained is Richard III's need for a war horse / every available horse / at most one horse being met in $\vec{e}$, and what is relevant to the explanation is that *being a theme of a getting by Richard III that is part of* $\vec{e}$ is a property of a war horse / every available horse / at most one horse. But the theme property's also being a property of a cart horse is not relevant to the explanation why the need is met, even if the cart horse is a war horse.

If Richard III's need for a war horse is met, the fact that some war horse is a theme of a getting of which he is the agent, though relevant to explaining why the need is met, will not be the whole story: that an *uninjured* war horse is a theme of such an event contributes more to the explanation, especially for a context in which, presumably, injured war horses abound. The property of properties cited in paraphrases will rarely exhaust what is potentially relevant, just as the paraphrased ascription's kind-classification will usually involve underspecification. Consequently, removing some detail from an existential second-order property term will not render a theme-property's possession of it irrelevant to the account of why an existential need is met: the step down from 'uninjured war horse' to 'war horse' is no smaller than that from 'war horse' to 'horse', and so on with ever greater generality. The contribution to the explanation gets smaller, but does not disappear.

In the case of a universal need we can go in the opposite direction, adding detail that admittedly does not enhance the explanation of why a need for, say, every available horse, is met. But the explanation is not undercut either. If being a theme of an event of getting by Richard III is a property of some available horses, then the

theme property's being a property of some available horses *X* contributes to the explanation of why Richard III's need for every available horse is met, and makes the same contribution if we add that those *X*'s are, in fact, war horses.

I conclude that (41) can be given a justification that is independent of the status of the weakening inferences, a justification in terms of explanatory relevance. We needed the relevance condition to avoid incorrect attributions of disjunctive objectual attitudes, but there is no reason to think it conflicts with weakening.

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