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Content and Theme in Attitude Ascriptions

1 CLAUSAL AND TRANSITIVE ATTITUDE VERBS

This paper is about a substitution-failure in attitude ascriptions, but not the one you think. A standard view about the semantic shape of 'that'-clause attitude ascriptions is that they are fundamentally relational. The attitude verb expresses a binary relation whose extension, if not empty, is a collection of pairs each of which consists in an individual and a proposition, while the 'that' clause, or *content clause*, is a term for a proposition. One interesting problem this view faces is that, within the scope of many attitude verbs, 'that'-clauses are not interchangeable with certain other terms which stand for the same propositions as the clauses are supposed to. For example, (1a) below may be true, but (1c) is probably not :

- (1) a. Holmes {fears/suspects} that Moriarty has returned.
- b. That Moriarty has returned is the proposition that Moriarty has returned.
- c. Holmes {fears/suspects} the proposition that Moriarty has returned.

For only the exceptionally timorous fear propositions, and, excluding contexts in which we speak of a 'suspect premise', only the unusually paranoid suspect them.

The truth-conditional change effected by substituting propositional description for content clause illustrated in (1) occurs with a wide range of attitude verbs. If you *understand* that the window of opportunity is closing, perhaps you should act before it is too late, but if you merely *understand the proposition* that the window of opportunity is closing, you should just congratulate yourself on your grasp of idiom. The same contrast arises with verbs such as ‘forget’, ‘remember’, ‘discover’, ‘anticipate’, ‘decide’, ‘suggest’, ‘worry’, ‘ask’, ‘see’, and various cognates of these. Indeed, though it is less evident, I suspect that more quotidian attitude verbs like ‘believe’ and ‘doubt’ behave in the same manner. If Holmes believes that Moriarty has returned, does this mean he believes the proposition that Moriarty has returned? Maybe this is no more likely than (1c), though ‘believe’ and ‘doubt’ are special in certain ways, to which we will return. But however one adjudicates *their* case, the problem (1) presents is already sufficiently widespread to cast doubt on the relational view of propositional attitude ascriptions; perhaps, following (Bach 1997:224–5), we should give up the idea that ‘that’-clauses denote propositions and that the verbs of (1a) have relational type.¹

No such radical conclusion would be warranted if we could apply accounts of referential opacity that appeal to multiple ways of thinking of the same thing to explain what goes wrong in (1), for assimilation to standard opacity puzzles would

¹ This use of ‘relational’ has nothing to do with the ‘relational_Q’ versus ‘notional_Q’ distinction of (Quine 1956), which is not germane to the problem this paper addresses. Relational_Q readings should be assumed here if there is ever a question. Bach (1997:222) summarizes the relational analysis in three claims: (i) belief reports express relations between persons and propositions; (ii) the semantic value of a ‘that’-clause is a proposition; and (iii) belief reports specify belief contents. The account of this paper supports (ii) and (iii), and arguably (i) as well (see §4 below, *ad fin*).

allow (1b) to stand. But it is hard to see how such accounts can help, since the only difference between the clause and the propositional description in (1b), the occurrence of ‘the proposition’ in the latter, looks too slight to support multiplicity in ways of thinking of the proposition that Moriarty has returned. Moreover, it seems that in no matter how strong a sense we posit an awareness in Holmes of the identity (1b), nor how much we suppose he reflects, with his great logical acumen, on the identity and on his fear/suspicion, we do nothing to make it more likely that (1c) is true. By contrast, with standard substitution puzzles, it is quite unclear, as a matter of psychology at least, how someone fully aware of the identity (e.g., that Callas is Kalogeropoulou), and reflecting with great logical acumen both on it and on the proposition (e.g., that Callas sings beautifully) to which the premise says he bears the attitude, could fail, *ceteris paribus*, to acquire the attitude ascribed in the conclusion, abandon the one described in the premise, or reject the identity. This suggests that (1) is very different from a standard opacity puzzle (see King 2002:352 for more considerations in support of this conclusion).

Concomitantly, (1) presents a problem on many conceptions of proposition, for example, as a set of worlds, a Russellian complex of objects and properties, or a Fregean complex of individual and general concepts. So for the purposes of this discussion I will remain agnostic about what propositions are, since the solution to the problem in (1) to be developed here is available to proponents of any of the theories of propositions just mentioned.

But even if appeal to some familiar theory of substitution-failure is not useful in

resolving (1), there is still no warrant for giving up the idea that ‘that’-clauses denote propositions. The characteristic feature of failed inferences in the style of (1) is that the minor premise involves the use of a word as a clausal verb, where it is appropriately followed by a ‘that’-clause, but because the conclusion replaces the clause with an NP, the syntax of the verb *shifts* from clausal to transitive. For instance, in categorial grammar, the substitution would occasion a shift in the verb’s syntactic category from VP/S, something which produces a verb phrase from a following sentence or sentential clause, to the category VP/NP, something which produces a verb phrase from a following noun phrase.² This in turn occasions a shift in the verb’s meaning. In the Simple Theory of Types it would be a shift from a function of type $b(ib)$, that of functions with *boolean* input (\top or \perp) and functions from *individuals* to *boolean* values as output, to a function of type $i(ib)$, the type of first-order binary relations. Generally, the shift substitution produces is from a *propositional* to an *objectual* attitude verb (an intensional transitive which can be used to ascribe attitudes towards individuals).

Elementary logic textbooks caution that when an inference rule is applied to some premise(s), *no other changes should be made* beyond what the rule explicitly licenses. This proscription disqualifies rule-applications which have truth-condition-altering side-effects. Thus (1), by virtue of the type-shift, would be classified as an illegal use of Identity Elimination (“Leibniz’s Law”, ‘=E’). The inference is in the same fallacious-because-of-a-side-effect group as Quine’s example (1961:22),

² Schematically, the shift is from $[_{VP}[_{VP/S} \textit{clausal-verb}][_S \textit{clause}]]$ to $[_{VP}[_{VP/NP} \textit{trans-verb}][_{NP} \textit{term}]]$. Here VP abbreviates NP\S, something which produces s by concatenating with a left NP.

‘Giorgione is so-called because of his size, Giorgione is Barbarelli, thus Barbarelli is so-called because of his size’. Here substitution has the side-effect of altering the semantic value of ‘so’, which before the substitution refers to ‘Giorgione’ (the name), and after, to ‘Barbarelli’. And once this truth-condition-altering side-effect is noted, there is, *contra* Quine, no reason to hold that the substitution-failure indicates some deviance in the semantic functioning of ‘Giorgione’. We may take the name, as usual, simply to refer to the artist, since the loss of truth is completely explained by the shift in reference of ‘so’ to a name which was *not* bestowed on the basis of size. In the same way, once substitution’s side-effect in (1) is noted, we should be sceptical about concluding that the substitution-failure shows the clause in (1a) does not take a proposition as its semantic value. Such scepticism will be vindicated by the account to be developed here of the particular truth-conditional difference produced by the syntactic shift.³

In some cases, substitution doesn’t merely change meaning, but loses it. For example, Holmes may *pretend* that he does not recognize Watson, but it makes no sense to say he *pretends the proposition* that he does not recognize Watson; similarly for ‘grumble that’ and ‘grumble the proposition that’ (Pietroski 2005:227), ‘reason that’ and ‘reason the proposition that’ (Pryor 2007:220), ‘insist that’ and ‘insist the proposition that’, and ‘hope that’ and ‘hope the proposition that’. Meaning is lost because, as in the previous examples, the substitution shifts the

³ For other examples where causing a syntactic side-effect disqualifies a use of =E, see (Fine 1989: 111); one of his cases is “Eve’s elder son was Cain, Eve is the mother of Cain, so the mother of Cain’s elder son was Cain”.

verb from VP/S to VP/NP, but in the current examples, the putative transitive verb in the conclusion does not exist in the language.⁴ So no proposition is expressed.⁵

There are also cases where a necessarily false conclusion (as opposed to an odd or meaningless one) is reached, if the conclusion is construed literally. Believing a witness is believing what the witness *says*, and this in turn seems to consist in believing or agreeing that *p* for some statement that *p* of the witness's that you are judging. You can also, in the same sense, believe a written report, because you believe that *p* for enough propositions *p* such that it is stated that *p* in the report, which you read and judge correct. But propositions themselves do not literally *say* anything, so claiming that you believe *the proposition* that *p* is a category mistake, something necessarily false.

Nevertheless, it is in fact quite acceptable to say '{believe/doubt} the proposition that...'. The reason this is so, I suggest, is that it is an apt figure of speech.

Although the proposition that *p* doesn't literally *say* that *p*, it *is* what is said in cer-

⁴ Pryor (2007:227) takes it as evidence against 'that'-clauses denoting propositions that (i) *John hopes that S*, entails (ii) *there's something John hopes*, but not (iii) *there's some proposition John hopes*; he marks (iii) as infelicitous (I have simplified his example). But (iii) is not predicted to be felicitous by the hypothesis that 'that'-clauses denote propositions, since even if they do, (iii) requires transitive 'hope', and there is no transitive 'hope' in English. (The absence of transitive 'hope' explains the infelicity of (iii) but not the felicity of (ii), to which I return in note 29.) Things are not much improved by using a verb with a transitive form, e.g., 'suspect', since $\exists I$ is like $=E$ – legitimate uses should not have side-effects. Because 'suspect' would shift to its transitive form, the infelicity of the outcome doesn't show $\exists I$ was not applied to the position of a singular term.

⁵ These verbs are problems for the solution to (1) proposed in (Moffett 2003). This solution introduces a special kind of predication, descriptive predication, which is selected by verbs like 'fear' and 'suspect', which do not express a direct relation to propositions on pain of a 'category mistake' (or at least oddity). Descriptive predication allows us to evaluate clausal uses of such verbs in terms of direct relations to entities that are more suitable. For 'know' these would be facts, since 'know the fact that' is not odd, and for 'fear' and 'imagine' Moffett (p. 82) suggests possibilities, since '{fear/imagine} the possibility that' are quite natural. But we have just noted clausal verbs *V* with no transitive forms, and which therefore cannot instantiate '*V* the *F* that...' Since these verbs give rise to (1)-style problems, Moffett's solution seems insufficiently general.

tain speech-acts. And we are willing to think of the proposition as ‘having’ the content which is the very content it is, to think of it as a container, so to speak. So in this way we take the proposition that p to say that p . That makes the account of transitive ‘believe’ in the previous paragraph applicable – believing the proposition is believing what it says, *mutatis mutandis* for doubting.⁶

Are there *any* attitude verbs where an inference in the style of (1) is straightforwardly correct? Some verbs for mental operations on propositions support interchange of clause and propositional description preserving literal meaning; these include ‘assume’, ‘accept’, and inference verbs such as ‘deduce’, ‘prove’, ‘infer’ and ‘establish’. For instance, deducing that p and deducing the proposition that p are, at the very least, hard to separate. These verbs are for mental actions, such as the action of inferring the proposition that p from the proposition that p and q . Propositions are themselves manipulated in thought, and the special feature of the case is that the clausal verbs stand for the same manipulations of the same items as their transitive homonyms. So if we replace ‘fear’ in (1) with ‘infer’, the substitution still has the syntactic side-effect of shifting from VP/S to VP/NP, but in this case the side-effect seems not to be potentially truth-value altering. Whether the inference is *valid* in some sense is something we consider in §4 below, but with ‘infer’ it does appear to be at least necessarily truth-preserving.

⁶ King (2002:359–60) has a similar view about ‘believe’, though he takes it to be literally true that we believe propositions.

2 THE PRIORITY QUESTION

It is presumably no coincidence that the same word is used both as a transitive and as a clausal intensional verb. So it is natural to ask if one form is based on the other. With ‘fear’, perhaps the transitive verb is more fundamental: fearing that Moriarty has returned seems to consist in giving a sufficient amount of credence to his having returned, and in the prospect of his having returned evoking a subjective response that is close to the one of dread that Holmes would have in certain direct encounters with the master criminal.⁷

But this does not address the main question, which is whether use of the same word betrays an underlying systematic priority relationship between the two categories, transitive and clausal. Examples like ‘pretend’, ‘complain’, ‘object’, and so on, certainly suggest there is no productive procedure that generates intensional transitives from clausal verbs (why does it fail in their case?). And though we can *embrace* the proposition (hypothesis, speculation) that Moriarty has returned, we cannot *embrace that* Moriarty has returned (King 2002:343); similarly with ‘endorse’ (Pryor 2007:222), ‘advance’, ‘attack’ and ‘defend’. So the direction from intensional transitive to clausal verb has its failures as well.⁸

However, it is still worth pursuing the priority question, since each of the two problematic groups of verbs just mentioned might reasonably be regarded as a

⁷ This might be enough justification for saying that the two forms of ‘fear’ are polysemous. That failure of interchangeability means there is polysemy in attitude verbs is argued for in (King 2002).

⁸ It is disputable whether ‘embrace’ and so on are *intensional* transitives. If the thesis that Superman can fly is distinct from the thesis that Clark can fly, then embracing the first thesis comes apart from embracing the second without any intensionality in ‘embrace’; one would look instead to the semantics of ‘the thesis that...’ to explain substitution-resistance in the names.

collection of idiosyncratic exceptions, if, putting that group aside, a priority thesis could then be maintained. Such a thesis could range from a recipe for informal accounts of how the sense of the clausal verb is based on the transitive, or vice-versa, to a system of rigorous meaning-postulates, to a logical form thesis on which sentences with verbs of the one syntactic category are, at an underlying level, really employing the homonym of the other category.

An obstacle to priority of the transitive verb is that if we are restricted to direct-object complements, it is hard to see where the rest of the content of a full clause would come from if we cannot just parrot the content of the clause in a propositional description ((1) shows this does not work). But perhaps we can analyze propositional ascriptions as objectual ones if we allow further inputs to the transitive verb. One proposal would be that to suspect that *p* is to suspect the proposition that *p of being true*, to accept that *p* is to accept the proposition that *p as being true*, to {believe/suggest/fear/confess} that *p* is to {believe/suggest/fear/confess} the proposition that *p to be true*, and so on: the transitive verb combines with the expected propositional description, then another argument.

The *of being true* form probably does involve the transitive verb, but in most cases, *to be true* is required, and, at least on the conventional view, it is not the transitive verb that is used with this form of words. The syntactic structure of, say, 'believe Moriarty to have returned', is instead said to be 'believe [Moriarty to have returned]'. Here the string 'Moriarty to have returned' is called an 'exceptional' clause; so the attitude verb is the clausal one, unaccompanied by a complemen-

tizer ('that', 'for', 'whether', etc.). Besides syntactic arguments for this analysis (see, e.g., Radford 1988:317–24), it is not difficult to tell that, say, 'fear' in 'fear Moriarty to have returned' does not have the same meaning as 'fear' in 'fear Moriarty', which it would have to have if the meaning of 'fear Moriarty to have returned' were to be compositionally derived as '[fear [Moriarty]] [to have returned]'; rather, this 'fear' means exactly what 'fear' with a 'that'-clause complement means. So unless the case of 'the proposition that...' induces an exception to the exceptional, 'fear the proposition that p to be true' and its ilk must involve the clausal, not the transitive, attitude verb, with an exceptional clause, 'the proposition that p to be true', as its complement.⁹

A priority thesis in the other direction, basing transitive uses of *search* verbs on (infinitival) clausal ones, was proposed in (Quine 1956), and has subsequently been refined and generalized in (Fodor 1979:319–28, den Dikken *et al.* 1996, Parsons 1997, and Larson 2002). I call this thesis 'propositionalism', since the clauses in the basic forms determine propositions. Propositionalism sits well with some intensional transitives, for example, 'want' and 'need', since wanting or needing x appears to be wanting or needing *to have* or *to get* x (or if you insist on a 'that'-clause for the proposition, wanting or needing (to make it the case) that one has or gets x).¹⁰ That an implicit 'have' or 'get' is present in a 'transitive' use of 'want'

⁹ It is worth noting, though, that while '{whine/complain/object} that Moriarty has returned' are all grammatical, none of '{whine/complain/object} the proposition that Moriarty has returned to be true' are. This would easily be explained if the latter *did* involve an attempt to impose transitive syntax on the verb, but if their complements are clausal, we have verbs with no transitive form that can be complemented with 'that'-clauses but not with exceptional clauses.

¹⁰ Harley (2004) discusses why 'have' is sometimes more appropriate than 'get' and vice-versa.

or ‘need’ is attested by the acceptability of modifiers that do not make much sense otherwise. For example, it is natural to understand ‘I want/need x quickly’ as ‘I want/need to get x quickly’, which concerns the rapidity of the getting, not of the wanting or needing – ‘quickly’ has to precede the verb to express the quick onslaught of a want or need.¹¹

But ‘want’ and ‘need’ are special cases, and there are many classes of intensional transitives which are harder for the propositionalist. Among these are Quine’s original examples of search verbs, and also transaction verbs, depiction verbs, and evaluative and emotion verbs. Here we focus on the emotion verb ‘fear’, which illustrates some of the difficulties.¹²

It is clear that Holmes’ fearing that Moriarty has returned doesn’t entail his fearing Moriarty, but more plausible proposals also fail. For example, Holmes’ fearing *encountering* Moriarty doesn’t entail his fearing Moriarty, since it may be the prospect of encounter that drives the fear: perhaps he knows Moriarty has a deadly communicable disease. Nor does his fearing that Moriarty will do him some injury: perhaps he knows Moriarty is highly accident-prone and those in his vicinity often suffer collateral damage. So we have to add ‘intentionally’, or more carefully, explain, say, ‘I fear Moriarty’ as (first approximation) ‘I fear that Moriarty will perform some act intentional under the description ‘injure t ’, where t is a term for me, and will in fact cause me injury *via* a causal chain initiated by his performing that act in execution of his intention’. But the philosophical content

¹¹ See (den Dikken *et al*, 1996) for other arguments for an implicit clause.

¹² Search verbs and depiction verbs are discussed at length in (Forbes 2006, Chs. 4, 7).

in this formulation far outstrips what is plausible for hidden structure and content. And worse, the additions still do not guarantee extensional adequacy; in particular, the supposed propositional attitude is still insufficient for the objectual one. For I may have the indicated propositional fear, yet even so, regard Moriarty as a rather weak and ineffectual individual. It is just that I suspect that this time he'll get lucky, or benefit from divine intervention.

A less ambitious thesis is that whenever there is fear of an object, there are propositional attitudes which explain that fear. Kaplan (1986:267) denies this, citing Ctesias' unicorn-phobia, while den Dikken *et al.* respond (1996:339) that 'strictly speaking' phobias aren't fears. Be this as it may,¹³ if the view is that in each instance of objectual fear there are explanatory propositional attitudes, perhaps different ones in different instances, that give rise to it, then a propositionalist analysis of objectual ascriptions would have to *quantify over* propositions or mental states with propositional content: for A to fear x is for there to be some relation R and some condition $C(\xi, A)$ on objects such that A stands in R to the proposition $C(x, A)$; or some complex of these elements. However, this needs to be fleshed out with much more detail, for not just any old R and any old $C(\xi, A)$ will do. But then the appeal to quantification has not really helped avoid the difficulties, since if asked to characterize the *kind* of condition that, in combination with a certain

¹³ No less a master of the language than Wodehouse sides with Kaplan on this issue, though the example is different: 'Rupert Baxter, the Earl of Emsworth's indefatigable private secretary, was one of those men whose chief characteristic is a vague suspicion of their fellow human beings. He did not suspect them of this or that definite crime: he simply suspected them. He prowled through life as we are told the Hosts of Midian prowled.' (*Something Fresh*, 5.6)

choice of R , could underlie A 's fearing x , it would be natural to try something along the lines that $C(x, A)$ be a kind of harming of A by x . So the insufficiency problems raised above for proposed specific propositions would apply to this quantificational analysis as well, just at a different level.¹⁴

The conclusion we are led to is that for a wide range of intensional verbs, the transitive (objectual) and clausal (propositional) forms have distinct and independent entries in the lexicon.¹⁵ This allows them to have senses that differ in certain ways, and to have their own combinatorial and selection constraints. The precise nature of these will be our next topic.

3 THEMES AND CONTENTS

We have argued that the substitution made in (1) induces a truth-condition altering syntactic side-effect, which disqualifies (1) as an application of =E. In this section, I want to develop a more rigorous account of the truth-conditional difference between (1a) and (1c), so that we have a better grasp of how disruptive the side-effect of the syntactic shift is. I aim to do this by giving *neo-Davidsonian* analyses of the sentences in (1). These will reveal how replacement of 'that'-clauses by codesignating terms has, *via* side-effects, large consequences for the semantics and produces exactly the outcome (1) displays: perfectly sensible attitude ascriptions become absurdities. I take the neo-Davidsonian route not because of some

¹⁴ I thank Keith DeRose and Hans-Christian Schmitz for discussions which led to this paragraph.

¹⁵ From this point of view we might prefer to say that the substitution in (1) has a lexical rather than a syntactic side-effect – a lexical replacement is effected.

antecedent argument that this is the generally correct approach, but because the proposals it leads to in this context are intuitively plausible. This in turn, of course, constitutes a reason to think we *are* following the generally correct approach, since neo-Davidsonian analyses were not formulated with an eye on the substitution problem in (1).¹⁶

By a neo-Davidsonian analysis I mean a semantics which treats a typical assertion as stating the occurrence of an event of a kind determined by the main verb of the assertion, and with participants as mentioned in the assertion. Some of these participants stand to the event in *thematic relations*, such as agent, theme, instrument, location, goal and source (in this paper we focus on agent and theme). So for (2a) below, we have the neo-Davidsonian paraphrase (2b) and its formal type-theoretic representation (2c):

- (2) a. Tom chased Jerry.
- b. There occurred a chasing whose agent was Tom and whose theme was Jerry.
- c. **(some) λe .chasing(e) and agent(e)(tom) and theme(e)(jerry)**.¹⁷

The **some** of (2c) is a function from properties of events to truth-values.¹⁸ The

¹⁶ Davidson's original account is in (Davidson 1969), and the 'neo' variant is developed most influentially in (Parsons 1990), which is elaborated upon in (Parsons 1995).

¹⁷ For the purposes of this paper it suffices to interpret type-theoretic formulae in the simple theory of types, supplemented with a basic type *e* of events. A much more adequate interpretation (though without *e*) is provided in (Thomason 1980), where familiar extensionality problems are resolved; see further (Muskens 2005).

¹⁸ The property is the one denoted by the lambda term that is the scope of **some**, namely, the property of being a chase with Tom as agent and Jerry as theme. The semantics of **some** entails that (2c) is true iff this property is true of something in the domain of events. The infix **and** in (2c) allows for **p and q** as a notational variant of **(and^{b(bb)}(q))(p)**, where **and^{b(bb)}** is a function of type *b(bb)*, from truth-values to functions from truth-values to truth-values.

agent thematic role is held by the constituent of the chasing that the chasing is *by*, and the theme role by the constituent of the chasing that the chasing is *of*. These prepositional criteria rely on particular senses of the prepositions (*cf.* the ambiguity of ‘the shooting of the hunter’), and Parsons (1995:639–41) is pessimistic that anything better can be done. But at least for agenthood we can be a little more explicit: the agent of an event is the individual whose action the event is. The notion of theme is more heterogeneous. But broadly speaking, the theme is something that is *affected*, in some suitably light or attenuated sense, by the event, and there is an idiomatic auxiliary use of ‘get’ that captures this: Jerry gets chased, the sonata gets played, Moriarty gets sought, the prey gets shot.

Many other questions about the apparatus in (2) arise, especially about the conception of event that is being employed. I think that it is an intuitive and natural conception, but this would not be the place to detour into a lengthy discussion of event metaphysics. However, it is perhaps worth looking briefly at the following more controversial use of the prepositional criteria.

Some situations are symmetrically describable. If *A* meets *B*’s train at the station, we would not say that *B*’s train thereby meets *A* at the station. But if *A* and *B* each travel to the same city-center landmark to meet the other, and both arrive simultaneously and greet each other, then it seems *A* meets *B*, *B* meets *A*, and *A* and *B* meet. Are there one, two or three events here?

The prepositional criteria say that there are three: (i) a meeting of *B* by *A*, so one with *A* as agent and *B* as theme; (ii) a meeting of *A* by *B*, so one with *B* as agent and

A as theme; and (iii) a meeting of *A* and *B*, so one with the group of *A* and *B* as theme (*cf.* ‘a meeting of the conspirators’).¹⁹ For those who find this extravagant, it is possible to collapse all three events into a single event with multiple agents and themes, so long as we relativize one to the other: *A* would be theme relative to *B* as agent, the group of *A* and *B* would be theme relative to the empty group as agent, and so on. But as appeal to the empty group – if there is such a thing – indicates, this strategy threatens to raise more questions than it answers. It is simpler to accept the fine distinctions among the events and soothe the extravagance worry by allowing that some events can be *realized* by others. The meeting of *A* and *B* is, in the circumstances, realized by *A*’s meeting *B* and *B*’s meeting *A*, and each of these is in turn realized by other events, such as, for *A*’s meeting *B*, *A*’s issuing some greeting to *B* on their arrival at the landmark. With this notion of realization in mind, the multiplicity of events we are countenancing seems harmless.²⁰

A neo-Davidsonian analysis is available for transitives like ‘fear’, ‘understand’

¹⁹ The ‘gets’ test fails when there is no agent – we cannot say ‘*A* and *B* get met’. In ‘*A* and *B* meet’, ‘meet’ functions as an unaccusative verb, a type of verb where the syntactic subject is theme rather than agent. In an event-nominal paraphrase, the subject of an unaccusative (e.g., ‘die’) prefers ‘of’ rather than ‘by’, as in ‘the dying *of* Lazarus occurred at such-and-such a time’, not ‘the dying *by* Lazarus’. ‘*A* and *B* meet’ seems synonymous with ‘*A* meets with *B*’, so the latter would get the same group theme (see further Parsons 1990:83 on ‘with’). However, to my ear, ‘*A* and *B* meet’ is not synonymous with ‘*A* and *B* meet each other’, since the conspirators may meet each other without meeting, that is, meeting all together.

²⁰ According to Schein (2002:276) ‘if there ever were alternative descriptions of the same event, they should include pairs like “Ray’s playing the clarinet” and “Ray’s playing music on the clarinet”...’ I am not sure it is the same predicate of events ‘playing’ in these two, but the notion of realization can be brought to bear anyway: the playing of the clarinet realizes the playing of music on the clarinet. Indeed, nowadays it would be stipulative to insist that there might be playings of the clarinet that did *not* realize playings of music on the clarinet.

and ‘believe’, except that these are state verbs rather than action verbs, so the term ‘agent’ is inappropriate for the thing that is in the state in question; ‘subject’ and ‘experiencer’ are common alternatives, but I shall just use ‘in’ (Parsons 1995:644). However, I shall construe the type of events widely enough to include states as well, rather than introduce a broader term. So ‘Jerry fears Tom’ would have the paraphrase that there is a (state of) fear that Jerry is in and whose theme is Tom:

- (3) a. Jerry fears Tom.
b. **(some) λ e.fear(e) and in(e)(jerry) and theme(e)(tom).**

The same ‘gets’-paraphrase captures a unitary notion of theme for states: Tom gets feared, Moriarty gets suspected, Juliette gets loved.

We have already noted that transitive and clausal homonyms are typically separate lexical entries. We are now working in a framework where each verb carries with it a thematic ‘grid’, which, in the case of a standard transitive verb, will require an agent/subject and a theme. This applies just as much to the intensional transitives that figure in the conclusions of fallacies like (1). In particular, a proposition-term will behave in object position of a typical intensional transitive like any term in object position of a typical transitive, which is to say that it will provide the theme of the event or state for which the verb provides a sortal predicate. So we would have the following type of analysis:

- (4) a. Holmes fears the proposition that Moriarty has returned
- b. **(some) λe .fear(e) and in(e)(holmes) and theme(e)(the proposition that Moriarty has returned).**²¹

Just as Tom gets feared, according to (3b), so the proposition that Moriarty has returned gets feared, according to (4b). This certainly captures the absurdity of (4a) (= (1c)), and partly explains how it arises from substituting in (1a): whatever thematic role the proposition is playing in (1a), the shift to the transitive verb in (4a) imposes the role of theme on it, a role which, apart from a few exceptions like being theme of an inference, propositions are ill-suited to play. The explanation generalizes to other cases we have noted: Holmes may {understand/suspect/remember/pretend} that p , but this is not the same as saying that the proposition that p gets understood, suspected, remembered or pretended (whatever this last might mean); it is not the theme of such states. As for the cases of '{believe/doubt} that p ', it is true that we can equivalently say that the proposition that p gets believed or doubted, but this would be as much a figure of speech as the idea of believing or doubting propositions.

To complete the explanation, we need to provide the minor premises of fallacies like (1) with meanings that differ significantly from the kind (4b) imputes to (4a). In particular, the content clause in those premises had better not stand for a prop-

²¹ Some plausible considerations are given against an appositive account of 'the proposition that p ' by Huddleston in (Huddleston and Pullum 2002:1016–17). Pressed for the specifics of an alternative, I would treat the content clause as a complement of the noun, with a semantics similar to that of a relative clause, along the lines of 'the proposition which is identical to *that Moriarty has returned*', **the((which(λp .p = that(Moriarty has returned)))(proposition))**.

osition that provides a *theme* for the state the premise describes. As this way of putting it shows, there are two options for the minor premise consistent with getting a large contrast with (4b): one is to deny that the ‘that’-clause in the minor premise stands for a proposition, the other is to deny that the proposition it stands for is the theme of the state. Here we opt to preserve the orthodox view about what the content clause stands for, and instead give the proposition in question a thematic role more apt for a propositional attitude ascription.

There is no better way of saying what the content clause in an attitude ascription does than that it specifies the *content* of the attitude, for we think of the mental states in question as having individuating propositional content. I therefore propose to introduce a thematic role, that of being the content, tailored specifically to propositions and mental states, and to add the primitive **content**, of type $e(bb)$, to the stock of role terms in the type-theoretic language.²² With **content** to hand, we can give the following semantics for (1a) (now (5a)):

- (5) a. Holmes fears that Moriarty has returned.
- b. Holmes is in a state of fear whose content is that Moriarty has returned.
- c. **(some) λe .fear(e) and in(e)(holmes) and content(e)(that(moriarty has returned))**.

(5c) represents the content-clause of (5a) as standing for the proposition that Moriarty has returned exactly as the propositional term does in (4a).²³ For in a

²² Here my account, though arrived at independently, has a number of points of contact with (Pietroski 2005: sec. 3.4), especially Pietroski’s view of the difference between ‘Nora explained that Fido barked’ and ‘Nora explained the fact that Fido barked’ (p.223).

compositional derivation of (5c) as the meaning of (5a), on which more in §4 (especially note 28), the role of the clause is to specify the proposition that is the input to the function **content(e)**. But that proposition is not the *theme* of Holmes's fear, even though the content clause denoting it is the complement of the verb.²⁴

Neither (5b) nor (5c) is any kind of absurdity, so in proposing (5c) as the semantics of (5a) (= (1a)), we have exactly captured the contrast between sensible and strange that is manifest in (1). The point at which we have arrived can be compared with the natural diagnosis of the 'Giorgione' fallacy. According to this diagnosis, it is sufficient for substitution to open the door to change of truth-value that the reference of 'so' changes when one name replaces the other. Analogously in the case of (1), it is sufficient for substitution to open the door to change of truth-value that the category and type of the attitude verb changes when one propositional term replaces the other. But in the 'Giorgione' case we can also explain exactly why truth is lost: 'so' switches its reference from a name which was bestowed on a certain individual for a particular reason, to another name bestowed on the same individual, but for a different reason or no reason. Hence the minor premise's correct statement of the reason for bestowal of the name denoted by 'so' in that premise becomes an incorrect statement of a reason for a

²³ Since this paper tries to be neutral on the nature of propositions, I am not presupposing that there is a transparent/opaque distinction to be drawn in connection with (5a). But if we take it that there is such a distinction, (5c) would be for the transparent reading.

²⁴ Notice that the term **that moriarty has returned** and the term **the(proposition that moriarty has returned)** are interchangeable in (5c): the result of putting the latter for the former is *not* the semantics of the unpalatable (4a), i.e., (4b). No logical maneuver applicable to (5c) can replace **content** with **theme**.

name-bestowal when the reference of ‘so’ switches. The analogous explanation for (1) is that truth is lost because switching from clausal to transitive verb changes the thematic role assigned by the verb to the proposition determined by the ‘that’-clause in the minor premise. In that premise, the proposition is assigned the role of **content**, and in fact plays that role. But because substitution makes the conclusion’s verb a transitive one, the assigned role changes to **theme**, one which the proposition in question does not play in this case.

4 LEXICAL AND COMPOSITIONAL MEANING

According to the conclusion of section 2, attitude verbs with both clausal and transitive forms have separate lexical entries for each. For concreteness, let us suppose that the lexicon is for a categorial, type-theoretic account. Then a lexical entry for a basic expression r of a language \mathcal{L} would relate r to a pair consisting in a term \mathbf{t} of the type-theoretic language and a syntactic category C , schematically $r \Rightarrow \mathbf{t}; C$ (Carpenter 1997:115); thus the entry for a sentential negation particle ‘not’ might read: $not \Rightarrow \lambda \mathbf{p}^b . not(\mathbf{p}); s/s$.²⁵ In entries for clausal and transitive attitude verbs, the syntactic categories, as already noted, are VP/S and VP/NP respectively.²⁶ However, the type-theoretic terms we need are more debatable.

One possibility is that in the entries for transitive ‘fear’ and clausal ‘fear’ there

²⁵ \mathbf{p} is a variable of type b , the type of sentences in the Simple Theory of Types. In Thomason’s intentional logic alluded to in note 17, the term would be $\lambda \mathbf{p}^m . not(\mathbf{p})$, where m is the type of sentence-meanings. We leave it to the semantics of the type-theoretic language to specify which particular monadic function the term in the lexical entry stands for.

²⁶ Strictly, the clausal verb should have category VP/s_c , where s_c is the subcategory of sentences consisting in complementized sentences (Carpenter 1997:429–30).

are terms $\lambda e^e.\text{fear}_\theta(e)$ and $\lambda e^e.\text{fear}_\rho(e)$ respectively (e a variable for the type of events). But if that is the whole story, it is hard to see how role terms such as **agent**, **theme** and **content** get into the semantics of complete sentences, since in categorial grammar, with few exceptions, there must be some explicit element in a phrase to justify the presence of a given term in its semantics. But no words invoking role-terms occur in any of our English examples. Nor is there anything that explains how role-formulae come to be *conjoined*.

For these reasons there is considerable appeal in a suggestion of Parsons (1995: 650–51) that the lexical entry for a verb already conjoins formulae for the verb’s obligatory arguments.²⁷ Applied to ‘fear’ we would have

- (6) a. $\text{fear} \Rightarrow \lambda y^i.\lambda x^i.\lambda e^e.\text{fear}_\theta(e) \text{ and in}(e)(x) \text{ and theme}(e)(y)$; VP/NP
 b. $\text{fear} \Rightarrow \lambda p^b.\lambda x^i.\lambda e^e.\text{fear}_\rho(e) \text{ and in}(e)(x) \text{ and content}(e)(p)$; VP/S_C

(6a) allows us to derive the semantics of (3a), ‘Jerry fears Tom’, in essentially two steps: the semantics of ‘fear’ consumes **tom**, resulting in the semantics of ‘fears Tom’, which then consumes **jerry**, resulting in the semantics of ‘Jerry fears Tom’, namely, the property of events denoted by the lambda term in the scope of **some** in (3b). A step of ‘finalization’ is then required; Parsons (*loc. cit.*) proposes ‘default existential quantification’, which is how (3b) ends up with **some** as its main connective; other options are described in (Francez and Steedman 2006:399).²⁸

²⁷ This is also the approach in (Bonomi and Casalegno 1993). In (Forbes 2006:85) I objected to Parsons’ proposal that it imposes the burden of determining what the obligatory arguments are. But in the categorial framework we are already saddled with this at the syntactic level, e.g., the transitive verb category (NP\S)/NP indicates two obligatory NP-arguments.

Not all intensional verbs have two lexical entries parallel to those in (6). As we have already noted, those like ‘embrace’, ‘endorse’ and ‘advance’ do not take clauses as complements, so they have no VP/s (clausal) entry, while verbs like ‘reason’ and ‘pretend’ have no VP/NP (transitive) entry. The other special case we noted was that of verbs such as ‘accept’ and ‘deduce’, which yield necessarily truth-preserving versions of (1). For these cases, two possibilities suggest themselves. The first is that they also deviate from the paradigm in (6). As a matter of syntax, the verbs have both VP/s and VP/NP forms, so two lexical entries are

²⁸ At the risk of giving readers more detail than they ever wanted, we derive the (3b) semantics for (3a) as follows. In categorial grammar, when expressions ϕ_1 and ϕ_2 have categories A/B and B respectively, and semantics \mathbf{t}_1 and \mathbf{t}_2 respectively, then (a) we can concatenate ϕ_1 and ϕ_2 ; (b) the result, $\phi_1 \frown \phi_2$, has category A ; and (c) its semantics is the composition of \mathbf{t}_1 and \mathbf{t}_2 , i.e., the application of \mathbf{t}_1 to \mathbf{t}_2 , written $\mathbf{t}_1(\mathbf{t}_2)$. Assuming that we have sequents for ϕ_1 and ϕ_2 of the same form as those in (6), namely (i) $\phi_1 \Rightarrow \mathbf{t}_1; A/B$, and (ii) $\phi_2 \Rightarrow \mathbf{t}_2; B$, this is to say that we can infer the sequent (iii) $\phi_1 \frown \phi_2 \Rightarrow \mathbf{t}_1(\mathbf{t}_2); A$, by the rule of *forward-slash elimination* ($/E$) applied to A/B and B . If the category of ϕ_1 is instead $B \setminus A$, we would obtain, in place of (iii), $\phi_2 \frown \phi_1 \Rightarrow \mathbf{t}_1(\mathbf{t}_2); A$, by the rule of $\setminus E$. The arrow \Rightarrow is like the turnstile \vdash and the slash- E rules like $\rightarrow E$ (think of A/B and $B \setminus A$ as $B \rightarrow A$, ‘an A from a B ’). This allows us to derive the semantics of expressions by a process strongly reminiscent of sequent-to-sequent natural deduction. Here is such a derivation for (3a), in tree format:

$$\begin{array}{c}
 \text{fears} \Rightarrow \lambda \mathbf{y}.\lambda \mathbf{x}.\lambda \mathbf{e}.\text{fear}(\mathbf{e}) \text{ and in}(\mathbf{e})(\mathbf{x}) \text{ and theme}(\mathbf{e})(\mathbf{y}); (\text{NP} \setminus \text{s})/\text{NP} \quad \text{Tom} \Rightarrow \mathbf{tom}; \text{NP} \\
 \hline
 \text{fears} \frown \text{Tom} \Rightarrow [\lambda \mathbf{y}.\lambda \mathbf{x}.\lambda \mathbf{e}.\text{fear}(\mathbf{e}) \text{ and in}(\mathbf{e})(\mathbf{x}) \text{ and theme}(\mathbf{e})(\mathbf{y})](\mathbf{tom}); \text{NP} \setminus \text{s} \quad /E \\
 \text{Jerry} \Rightarrow \mathbf{jerry}; \text{NP} \quad \text{fears} \frown \text{Tom} \Rightarrow \lambda \mathbf{x}.\lambda \mathbf{e}.\text{fear}(\mathbf{e}) \text{ and in}(\mathbf{e})(\mathbf{x}) \text{ and theme}(\mathbf{e})(\mathbf{tom}); \text{NP} \setminus \text{s} \quad \beta \\
 \hline
 \text{Jerry} \frown \text{fears} \frown \text{Tom} \Rightarrow \lambda \mathbf{e}.\text{fear}(\mathbf{e}) \text{ and in}(\mathbf{e})(\mathbf{jerry}) \text{ and theme}(\mathbf{e})(\mathbf{tom}); \text{s} \quad \setminus E, \beta \\
 \hline
 \text{Jerry} \frown \text{fears} \frown \text{Tom} \Rightarrow (\mathbf{some})\lambda \mathbf{e}.\text{fear}(\mathbf{e}) \text{ and in}(\mathbf{e})(\mathbf{jerry}) \text{ and theme}(\mathbf{e})(\mathbf{tom}); \text{s}^* \quad \delta
 \end{array}$$

In this derivation, the sequents on the top row and the left of the third row are from the lexicon (recall $\text{VP} = \text{NP} \setminus \text{s}$). On the right of the third row we have generated a more economical term for the meaning of $\text{fears} \frown \text{Tom}$ than on the second, by applying β -reduction, which removes the initial $\lambda \mathbf{y}$ and substitutes \mathbf{tom} for every occurrence of \mathbf{y} that comes free as a result. $\setminus E$ and β -reduction are used to obtain the penultimate row, and the conclusion is obtained by default existential quantification, which, I am supposing, reclassifies $\text{Jerry} \frown \text{fears} \frown \text{Tom}$ as s^* , a finalized sentence. For the case of propositional ascriptions like *Holmes* \frown *fears* \frown *that* \frown *Moriarty* \frown *has* \frown *returned*, we derive the semantics for *Moriarty* \frown *has* \frown *returned*, then apply the complementizer, for which we have the entry *that* $\Rightarrow \lambda \mathbf{p}.\mathbf{p}; \text{s}_c/\text{s}^*$, an expression that takes a finalized sentence into a sentential clause; s_c combines with clausal ‘fear’, which has the category VP/s_c (see (6b)). $\lambda \mathbf{p}.\mathbf{p}$ is the identity function on sentence meanings, hence if sentences have propositions as their meanings, so do ‘that’-clauses. Thus (ii) of the relational analysis (see note 1) is vindicated.

required, but the clausal verb might be said to assign the **theme** role to the clause's meaning, just as the transitive verb assigns that role to the meaning of its direct-object NP. Then exactly the same role relations would appear in both entries. As a result, replacing clause by propositional description in a version of (1) with 'accept' or 'deduce' would not change any role-ascriptions at all, making for a good sense in which (1)-style substitutions with these verbs are valid. On this proposal, deducing that p , say, is equivalent to deducing the proposition that p because they are the very same action, in each case the reasoner being the agent and the proposition being the theme of the act.

There is a second possible explanation why variants of (1) with 'accept', 'deduce', and so on, are necessarily truth-preserving. The verbs' lexical entries retain the form of (6), with the clausal verb assigning the role **content** to the meaning of the 'that'-clause. But for each verb in the group there is also a meaning-postulate to the effect that necessarily, for every event e satisfying the predicate corresponding to the verb, for any proposition p , p is theme of e iff p is the content of e . The outcome of this approach is that variants of (1) with 'accept' or 'deduce' are necessarily truth-preserving for reasons idiosyncratic to these verbs. So one would not want to classify the inferences as valid.

It is not easy to discern which of these two accounts of the lexical entries of the verbs in question is correct. One might argue that since these verbs are all action verbs, their transitive forms cannot have entries assigning **content**, since only states, not actions, have propositional content. If correct, this would be a sweep-

ing objection to propositionalism as regards, for example, search and depiction verbs. If acts of hunting or drawing cannot have propositional content, then the putative proposition that is the complement of ‘hunt’ or ‘draw’ would have to be the theme, there being no plausible alternative. So a proposition gets hunted, or drawn. But of course, this may be an objection to propositionalism, not to the denial of propositional content to actions. There are also independent considerations against such a restriction, however.²⁹ So resolving the matter is likely to require an investigation of some length.

Fortunately, both options are entirely within the spirit of our approach to (1) and parallel instances of substitution-failure. So the variants of (1) that save truth do not stand as inexplicable phenomena in our framework: we have two ways of accounting for them, and need not pursue the choice between them any further here. To conclude, we return instead to the standard view about the semantic shape of ‘that’-clause attitude ascriptions, that they are fundamentally relational. In the suggested semantics for (5a), namely, (5c), (5a)’s verb does not correspond to any term which is a relation between persons and propositions; in (5c) there are

²⁹ One argument concerns what Moltmann (2004, 2008) calls ‘special quantifiers’, as exemplified in ‘Holmes {fears/suspects} something’, which we are to think of as directly inferred from (1a). That is, we are quantifying into complement position of the *clausal* verb, a possibility which explains Pryor’s “there’s something John hopes” (see note 4), whose acceptability is puzzling if there is no transitive ‘hope’ in English. This ‘something’ cannot be replaced by ‘some proposition’, so it doesn’t seem to be a standard objectual quantifier, nor is it a substitutional quantifier (Moltmann 2004:4, 2008:§5). On the account of this paper, special quantifiers are quantifiers over contents, as opposed to themes. Applied to the current problem, this seems to support retaining **content** in the lexical entries for clausal ‘deduce’ and ‘accept’, since we also have ‘Holmes accepted something’ and ‘Holmes deduced something’ as one-step inferences from propositional ascriptions. But I am not confident that this ‘something’ is the special quantifier of ‘Holmes {fears/suspects} something’. ‘Holmes deduced some proposition’ is also acceptable, so the ‘something’ in ‘Holmes deduced something’ could just be the residue when the sortal ‘proposition’ is stripped off.

only terms for relations to events. Nevertheless, I take a semantics like (5c) to be a vindication of the standard view. This is because in the likes of (5c) we are offering an *analysis* of the binary relation between persons and propositions that a transitive or clausal verb expresses. The analysis gives an account of what the binary relation between the person and the proposition consists in, so it is not at all a version of scepticism about there being such a binary relation that might be prompted by the substitution-failure we have been discussing.³⁰

³⁰ I have benefited from discussions of this material with George Bealer, Keith DeRose, Itamar Francez, Kathrin Koslicki, Kirk Ludwig, Friederike Moltmann, Terence Parsons, Greg Ray, Mark Richard, Hans-Christian Schmitz, Magdalena Schwager, Zoltán Szabó and Ede Zimmerman. Thanks also to input from audiences at Frankfurt, Yale, and Wyoming.

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