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Abstract

Two intuitive analyses of propositions and attitude reports are, respectively, the *truth-supporting circumstances analysis* of propositions and the *relational analysis* of attitude reports. However, these two intuitive pictures taken together set the stage for one of the most influential arguments against propositions as sets of truth-supporting circumstances, presented by Scott Soames (1987; 2008). In this paper, I will present a detailed analysis of Soames' argument and then present a novel objection to it. I will argue that his argument relies on contentious principles concerning the interaction of attitude operators with free variables embedded in their scope. I will present an *assignment-shifting* account of attitude verbs such that the *reductio* that Soames presents no longer goes through. Finally, I will suggest a particular way of interpreting this semantics that still allows the objects of our beliefs to be sets of possible worlds.

Keywords: [Attitude Reports; Objects of Belief; Propositions; Assertoric Content; Soames; and Frege's Puzzle]

It would be a convenience, nothing more, if we could take the propositional content of a sentence in context as its semantic value. But we cannot.

Lewis (1980, p. 95)

INTRODUCTION

Let us start with two intuitive views about propositions and attitude reports. Arguably, propositions are at least some of the following things: the meanings of sentences, the things we believe, assert, etc., and the referents of 'that'-clauses. A common account concerning propositions is that they are sets of possible worlds,

namely, the set of worlds in which the proposition is true (cf. Stalnaker 1976). Call this the *truth-supporting circumstances* analysis of propositions.¹ Relatedly, attitude reports are sentences that report a certain cognitive relation between an individual and a proposition. This analysis suggests that attitude reports have the logical form they appear to have; expressing a relation between an individual and a proposition. Call this the *relational analysis of attitude reports* (Bach, 1997, p. 222). Together, these views suggest that the semantic value of the embedded ‘that’-clause of an attitude report is the relevant proposition. For example, Soames (1988, pp. 105-106) says, “attitudes are relations to propositions [...] To believe that ‘S’ is to believe the proposition that S.” The underlying idea seems to be the following: attitude reports relate an agent, α , to a proposition, φ , by sentences of the form ‘ α v’s φ ’, therefore the semantic value of ‘ φ ’ must be the proposition that α has an attitude towards. Bach (1997, p. 222) dubs this *propositionalism* – i.e. “[t]he semantic value of a ‘that’-clause is a proposition.”

Propositionalism, taken together with the relational analysis of attitude reports, sets the stage for one of the most influential arguments against propositions as truth-supporting circumstances: Soames’ (1987; 2008). In this paper I will present a novel objection to Soames’ argument; I will argue that his argument relies on contentious principles concerning the interaction of attitude operators with free variables embedded in their scope.

In the first section, I will fully explicate Soames’ argument, which takes form as a *reductio ad absurdum*. In the second section, I discuss what I take to be the best way to resist Soames’ argument, namely, changing the semantics for attitude reports and thereby rejecting Soames’ conclusion. After showing how this new semantics might block the argument, I suggest that this solution might in fact be interpreted in support of Soames’ conclusion. In the third, and final, section, I argue that there is a way of interpreting the particular semantics for attitude reports as an argument against Soames’ *reductio*. This interpretation is related to Dummett’s (1973) distinction between semantic value and assertoric content. In light of this, I suggest that it may be the case that Soames’ argument is based on a conflation of these two.

First, some notational conventions I use throughout this paper. Expressions occurring within double brackets ($\llbracket \cdot \rrbracket$) denote their extensions. To avoid unnecessary cluttering, I will suppress the quotation marks that indicate mention, instead of use, within such double brackets. For the purposes of this paper the only relevant parameters, relative to which expressions denote their extension, are the

¹Note that a ‘sets of worlds’-account of propositions is a type of truth-supporting circumstances account. Moreover, throughout this paper I will use ‘unstructured propositions’ and ‘propositions as truth-supporting circumstances’ interchangeably.

context, c , an assignment function, g , and the world-parameter, w . I will often suppress the context parameter, and any other coordinates, and simply formulate denotations as follows: $\llbracket \varphi \rrbracket^{g,w}$.

1 AGAINST UNSTRUCTURED PROPOSITIONS

In his original article, Soames (1987) goes through a variety of arguments against unstructured propositions. Importantly, his main argument is aimed at propositions as sets of truth-supporting circumstances “no matter how fine-grained” we take these circumstances to be (Soames, 1987, p. 52).² The different versions of the argument – all of which concern the ancients’ beliefs with regards to Hesperus and Phosphorus – use either names, i.e. ‘Hesperus’ and ‘Phosphorus’; demonstratives, e.g. ‘this’ and ‘that’; or variables, e.g. ‘ x ’ and ‘ y ’, but essentially all come down to the same argument. Here, I will focus on Soames’ argument concerning variables.³ My presentation of the argument is slightly altered from Soames’ original presentation, however, this is merely for ease of exposition and does not affect the argument’s content.⁴

1.1 THE ASSUMPTIONS

The argument is formed as a *reductio ad absurdum* based on seemingly innocent assumptions. To get the argument off the ground, all that is needed are some standard satisfaction conditions and a semantic clause for ‘believe’. Consider a simple first-order language with constants, a, b, c, \dots , variables, x, y, z, \dots , n -ary predicates, P^n, R^n, \dots , a belief-operator, \mathcal{B} , an existential quantifier, \exists , and two connectives \neg and \wedge .

Let us start with the simple semantic clauses for conjunction, predication, and existential quantification, where \mathcal{I} is the interpretation:

²Note that I use the phrase ‘fine grained’ here, and throughout this paper, in the most neutral way possible. All I intend to convey is that if P is more fine grained than Q , then P is able to capture distinctions that, the coarser-grained Q cannot. I mention this as the phrase ‘fine grained’ is somewhat loaded. For example, Pickel (2015) argued that Cumming’s (2008) use of ‘fine grained’ wrongfully suggests that, from any level of fine grain, one could reconstruct the coarser grain levels. I do not want to engage in this discussion here. (Thanks to Bryan Pickel for useful discussion on this point.)

³Soames (2008) focuses on the argument concerning names as these are “simple, and easy to understand.” However, variables seem to be at the heart of the problem; Soames even says that “variables alone [...] would be sufficient” (2008, p. 269). Moreover, some of the assumptions, e.g., rigidity, seem to be less controversial to make for variables than for names; in this sense, the variable argument is the strongest version.

⁴See Soames (1987, pp. 48-51) and (2008, pp. 267-268) for the original version.

- (P) If π is an n -ary predicate and $\alpha_1, \dots, \alpha_n$ are terms,
then $\llbracket \pi(\alpha_1, \dots, \alpha_n) \rrbracket^{g,w} = 1$ iff $(\llbracket \alpha_1 \rrbracket^{g,w}, \dots, \llbracket \alpha_n \rrbracket^{g,w}) \in \mathcal{I}_w(\pi)$
- (C) If φ and ψ are formulae, then $\llbracket \varphi \wedge \psi \rrbracket^{g,w} = 1$ iff $\llbracket \varphi \rrbracket^{g,w} = 1$ and $\llbracket \psi \rrbracket^{g,w} = 1$
- (E) If φ is a formula and x a variable, then $\llbracket \exists x \varphi \rrbracket^{g,w} = 1$ iff there is an assignment function, g' , such that $g'[x]g$ and $\llbracket \varphi \rrbracket^{g',w} = 1$

In the last clause, ' $g'[x]g$ ' is read as 'an assignment function g' that differs at most from g in its assignment to x '. Secondly, we need a semantic clause for attitude reports. Soames (1987, p. 49) states that "[p]ropositional attitude sentences report relations to the semantic contents of their complements," which is an instance of the relational analysis of attitude reports. Let ' $\text{BEL}_\alpha \varphi$ ' abbreviate ' α believes that φ ', then the semantic clause is as follows:

- (B) $\llbracket \text{BEL}_\alpha \varphi \rrbracket^{g,w} = 1$ iff $\forall w',$ if $w' \in \mathcal{B}(\llbracket \alpha \rrbracket^{g,w}, w),$ then $\llbracket \varphi \rrbracket^{g,w'} = 1$

(B) states that ' α believes that φ ' is true if and only if in all the worlds w' , compatible with her beliefs in w , φ is true. Finally, as we focus on Soames' argument concerning variables, we need the satisfaction conditions for atomic variables:

- (V) $\llbracket x \rrbracket^{g,w} = g(x),$ where g is an assignment function from variables to objects

Importantly, (V) entails that variables are *rigid* and *directly referential* – i.e. they have the same value in all worlds and that their semantic content is their referent.⁵ Given Kripke's (1980) definition of rigidity – "[l]et's call something a *rigid designator* if in every possible world it designates the same object" (p. 48, original emphasis) – we get:

- (R) $\llbracket x \rrbracket^{g,w} = \llbracket y \rrbracket^{g,w} \rightarrow \forall w' (\llbracket x \rrbracket^{g,w'} = \llbracket y \rrbracket^{g,w'})$

As this will be of great importance in the derivation, this is labeled (R), for rigidity. Together with (P), this means that, if $\llbracket x \rrbracket^{g,w} = \llbracket y \rrbracket^{g,w},$ then in all the worlds where x is $F,$ y is also $F.$

1.2 THE ARGUMENT

With these very minimal, standard semantic assumptions, Soames' argument can already get off the ground. The form of the argument is a *reductio ad absurdum* and takes as its starting point the following two widely accepted, pre-theoretic facts:

⁵Note that Soames (1987, p. 66, note 5) also uses a compositionality principle and a principle for distribution over conjunction of attitude verbs.

R1 There is a planet x that is seen in the morning sky and a planet y that is seen in the evening sky and the ancients believed that x was seen in the morning and y was seen in the evening

$$\exists x \exists y (Mx \wedge Ey \wedge \text{BEL}_a(Mx \wedge Ey))^6$$

R2 The planet seen in the morning is the planet seen in the evening

$$\exists x \exists y (\forall z (Mz \leftrightarrow z = x) \wedge \forall z (Ez \leftrightarrow z = y) \wedge x = y)^7$$

These two innocent facts, combined with the satisfaction conditions presented above, lead to the following conclusion:

Con. The ancients believed that there was a planet that was seen both in the morning and in the evening sky

$$\text{BEL}_a(\exists z (Mz \wedge Ez))$$

Clearly, this conclusion is false. The ancients did not believe there to be one thing that was both seen in the morning and evening sky. In order to see how Soames' argument works, let us go through the details a bit more (a full explication is given in the Appendix).

First of all, note that **(R1)** and **(R2)** together entail the following:

$$\mathbf{R1-R2} \exists x \exists y (x = y \wedge \text{BEL}_a(Mx \wedge Ey))$$

The semantics of this combined sentence provides us with the two things we need to start our derivation, namely: $\llbracket \text{BEL}_a(Mx \wedge Ey) \rrbracket^{g',w} = 1$ and $\llbracket x = y \rrbracket^{g',w} = 1$. To get to the conclusion – i.e., $\text{BEL}_a(\exists z (Mz \wedge Ez))$ – it is important that *first* the semantics for the belief-operator is applied, after which the conjuncts of the embedded sentence get altered separately and grouped together again. Finally, existential generalisation is applied, still 'within' the belief-worlds, after which the semantics for 'believe' are applied in the right-to-left direction.⁸

What is crucial are the assumptions that attitude verbs do not shift the assignment function and that variable assignments are not sensitive to the world-parameter.⁹

⁶Here, and throughout this paper, 'M' and 'E' are, respectively, the predicates: 'A planet that is seen in the morning sky' and 'A planet seen in the evening sky'. 'BEL_a' is read as 'the ancients believed that'.

⁷Soames (1987, p. 60) formalises **R2** as follows, "(the $x : Mx$) = (the $y : Ey$)". However, to avoid complicating our semantics with clauses for definite descriptions, these are 'Russelled' out.

⁸Again, for a complete derivation see the Appendix.

⁹Thanks to Bryan Pickel (p.c.) for helping me get clear on this.

That is Soames' argument against propositions as truth-supporting circumstances. Given some standard satisfaction conditions and two pre-theoretic facts about the ancients' beliefs concerning Hesperus and Phosphorus, we are able to derive an absurd conclusion, namely, that the ancients believed that there was one object that was both seen in the morning sky and the evening sky. Something that is clearly false and we should not want our semantics to predict.

2 ATTITUDE REPORTS AND ASSIGNMENT-SHIFTING

In this section, I will turn to a novel way of rejecting Soames' conclusion: rejecting the assumption that attitude verbs shift *only* the world-parameter.¹⁰ That is, I will use the semantics for attitude reports known as *assignment-shifting* and apply this as a solution to Soames' argument. Note that the semantics are not new, nor my own; it is the application to Soames' argument that is novel (for accounts of assignment-shifting attitudes see, e.g., [Cumming 2008](#), [Ninan 2010](#), [Santorio 2012](#), [Pickel 2015](#), and [Rabern 2018](#)).

Here I will focus on the accounts of [Cumming \(2008\)](#) and [Pickel \(2015\)](#), according to which attitude verbs operate on something more fine grained than sets of worlds, namely sets of world-assignment pairs. As we will see below, world-assignment pairs allow for distinctions that sets of worlds do not. Accordingly, the semantic clause for 'believe' (**B**) has to be adjusted as operating on world-assignment pairs instead of sets of worlds.

2.1 OPEN- AND CLOSED PROPOSITIONS

The assignment-shifting accounts of attitude verbs are based on an independently motivated argument concerning the semantics of variables. And so, to fully understand the distinction that follows, let us briefly go over the semantics for variables again:

- For a variable x , $\llbracket x \rrbracket^{g,w} = g(x)$
- $\llbracket \forall x \varphi \rrbracket^{g,w} = 1$ iff for all $i \in D$, $\llbracket \varphi \rrbracket^{g[x:=i],w} = 1$

¹⁰Note that there are multiple points where one might object to Soames' argument. First of all, one might press a Carnapian (1956) semantics, where "individual variables in modal sentences [...] must be interpreted as referring, not to individuals, but to individual concepts" (1956, p. 180). As individual concepts can differ per world, variables are no longer rigid within the scope of belief-operators. See [Elbourne \(2010\)](#) for such an approach. Secondly, one might allow for impossible circumstances to block Soames' argument, which could, in a way, block the initial assumption (**R2**). For such an approach see [Edelberg \(1994\)](#) and [Ripley \(2012\)](#). However, I will focus on a solution that gives up less of Soames' original assumptions and is independently motivated.

As mentioned earlier, on this semantics variables are rigid – i.e., they are not sensitive to the world-parameter. The semantics for the universal quantifier states that a formula containing a universally bound variable is true at an assignment g iff for all the assignments g' , ' φ ' is true with regards to g' and g' differs at most from g in that for all $i \in D$ it assigns i to x .¹¹ That is, the universal quantifier 'looks' across all assignment functions at the assigned value of the embedded variable (or formula containing it) and is true if the embedded formula is true at all assignments.

This means that the *assignment-saturated* value of the variable – its value at a particular assignment – is important for predication, etc. On the other hand, for (universal) quantification, their *assignment-unsaturated* value plays an important role. This suggests, as Pickel (2015, p. 336) says, that “quantifiers have the effect of shifting the assignment functions relative to which an embedded sentence is to be evaluated.”

This 'dual life' of variables, as Pickel calls it, leads to the distinction between *open propositions* and *closed propositions*, based on, respectively, the assignment-unsaturated and assignment-saturated value of variables.¹² Open propositions are functions from world-assignment pairs to extensions (or truth-values) or, equivalently, functions from assignments to closed propositions. closed propositions are sets of possible worlds. Importantly, this means that open propositions are *finer* grained than sets of possible worlds (i.e., closed propositions).

One might formulate the distinction between open and closed propositions as follows:¹³

OPEN PROPOSITION IN c	CLOSED PROPOSITION IN c
$\lambda g. \lambda w. \llbracket \varphi \rrbracket^{c, g, w}$	$\lambda w. \llbracket \varphi \rrbracket^{c, g_c, w}$

Note that ' g_c ' denotes the variable assignment of the context. Cumming argues that, just as the context can provide a possible world, the context can also provide a variable assignment and he notes that Kaplan (1989a) already suggested a contextually provided assignment function, when needed.¹⁴

¹¹This is equivalent to the notation earlier, i.e. ' $g'[x]g'$ '.

¹²Franz Berto (p.c.) pointed out to me that the term 'open proposition' might be misleading in that both structuralists and circumstantialists seem to agree that the term 'proposition' is reserved for saturated things that bear truth-values directly. I agree, however, I use the term in this paper in order to follow the terminology of Cumming (2008) and Pickel (2015).

¹³The λ -notation here is, as Rabern (2012a, p. 90) notes, for illustration.

¹⁴For example, “[i]f we think of the formal role played by context within the model-theoretic semantics, then we should say that context *provides* whatever parameters are needed” (Kaplan, 1989a, p. 591). Kaplan then proceeds to use the contextually provided assignment function “to handle deictic pronouns” (Cumming, 2008, p. 541).

2.2 ATTITUDE REPORTS AND OPEN PROPOSITIONS

With the distinction between open and closed propositions in place, the move to block Soames' argument should be rather intuitive. We note, with Cumming, that attitude reports "denote a relation between an individual and something *more fine grained* than a set of worlds," and now that we also have open propositions at our disposal "[t]he natural choice is the open content of the subordinate clause" (2008, p. 545, original emphasis). The claim that attitude verbs operate on open propositions amounts to reformulating the semantics for 'believe', (**B**), as follows:

$$\mathbf{B}^* \quad \llbracket \text{BEL}_\alpha \varphi \rrbracket^{g,w} = 1 \text{ iff } \forall \langle g', w' \rangle, \text{ if } \langle g', w' \rangle \in \mathcal{B}(\llbracket \alpha \rrbracket^{g,w}, w), \text{ then } \llbracket \varphi \rrbracket^{g',w'} = 1$$

Note that 'B' now is an accessibility relation that holds between an individual-world pair and all the *assignment-world pairs* that are compatible with the individual's beliefs at that world. (One may suggest that an individual's beliefs are relative to an assignment-world pair. That is, instead of 'B($\llbracket \alpha \rrbracket^{g,w}, w$)', one may use 'B($\llbracket \alpha \rrbracket^{g,w}, \langle g, w \rangle$)'. See for example Pickel (2015).)

To see how this move blocks Soames' argument, it is important to note that the assignments in the belief-space of an agent need not match up with the *contextually provided assignment*: g_c – i.e. the assignment that assigns all variables to their referents of that context. So, even if the variables x and y are both assigned to Venus by g_c :

$$\{w \mid \llbracket Mx \rrbracket^{g_c,w} = 1\} = \{w \mid \llbracket My \rrbracket^{g_c,w} = 1\}$$

This need not be the case at every world-*assignment* pair in the belief-state of the ancients:

$$\{\langle g, w \rangle \mid \llbracket Mx \rrbracket^{g,w} = 1\} \neq \{\langle g, w \rangle \mid \llbracket My \rrbracket^{g,w} = 1\}$$

As attitude reports on the latter, we can no longer alter the predication of variables inside the scope of a belief-operator. That is, it does no longer follow from the ancients believe that x has property M and the fact that $x = y$ at the actual variable assignment, that the ancients believe that y has property M . This allows us to block Soames' argument, while maintaining most of his original assumptions (albeit slightly altered).

2.3 WORRIES AND OBJECTIONS

There are some worries that one might have based on this assignment-shifting account of attitude reports. I will quickly discard one before I turn to what I take to be the most serious concern. The worry that I want to only briefly mention is the worry that on this account variables are no longer rigid or directly referential. This is worrisome as, according to Soames (echoing Kaplan), "[v]ariables are the paradigm examples of [directly referential] terms" (1987, p. 50).

Concerning rigidity, we can be quick. Our definition of the rigidity thesis, repeated below, is still valid on our account.

$$(R) \llbracket x \rrbracket^{g,w} = \llbracket y \rrbracket^{g,w} \rightarrow \forall w' (\llbracket x \rrbracket^{g,w'} = \llbracket y \rrbracket^{g,w'})$$

More over, on Cumming's (2008) account, metaphysical modals operate on closed propositions, that is, on the assignment-saturated value. This means that within the scope of alethic modals, variables still behave rigidly. What is no longer valid is that if variables are identical, they are identical at all *assignment*-world pairs. So, does this mean that variables are no longer directly referential? Not quite. Soames (1987, p. 51) claims that to be directly referential means that the "semantic content relative to a context (and assignment of values to variables) is [the] referent relative to the context (and assignment)." Note that this is all defined *relative to an assignment of values to variables*; and in this sense – i.e., relative to a particular assignment – variables are also still directly referential on our account. Cumming is even quite explicit about this when he compares the directly referentialness of assignment-saturated variables with the directly referentialness of indexicals on Kaplan's account. He says, "I capture the intuition of direct reference for [variables] to precisely the extent that [Kaplan] does for indexicals," that is, they are directly referential at the level of content (2008, p. 541).¹⁵

So, variables are still rigid and directly referential, in some sense, on this account. However, there is one worry, specific to the assignment-shifting accounts, that is very problematic and that might be taken to suggest a different absurd conclusion.

Believing Open Propositions

As I mentioned above, it seems that assignment-shifting accounts can accept most of Soames' assumptions without having to accept his conclusion. However, the assignment-shifting account does leave us with the question of how to interpret its semantics. This question is rather pressing and one might even suggest that interpreting this account leads to a different conclusion that is at least as bad as Soames' original conclusion.

The worry concerns the interpretation of open propositions and the fact that attitude reports operate on these as opposed to on regular propositions. Does this mean that an assignment-shifting account, such as Cumming's, commits us to the view that the objects of belief are open propositions? And if so, what

¹⁵In his paper, Cumming (2008) talks about names (instead of variables) as he argues that names are semantically on a par with variables. Hence, he refers to the intuition of direct reference for variables.

consequences does this have? Are the things we believe assignment-sensitive? Do propositions vary in truth-value across assignments of values to variables? It seems very unlikely that the things we believe are assignment-sensitive (cf. Salmon 2003; Stojnić 2017), so it would be controversial if on an assignment-shifting account they are.

At this point, Soames might point out that even though it seems that on an assignment-shifting account we can avoid the conclusion of his *reductio*, this solution comes at too high a price. If the only way to get out of Soames' argument is by accepting that the objects of our beliefs are assignment-sensitive, then this only provides more support for Soames' claim that propositions cannot be sets of truth-supporting circumstances and it is therefore better to accept his positive proposal (e.g. Soames 2012).¹⁶

3 THE SEMANTICS AND OBJECTS OF BELIEF

The most pressing worry for the assignment-shifting account is that it seems to make our beliefs assignment-sensitive and this is so unlikely that, rather than providing a solution, it presents additional support for Soames' conclusion: propositions cannot be sets of truth-supporting circumstances. In short, the response to this worry is that the fact that attitude verbs operate on open propositions does not entail that the objects of our beliefs are open propositions. Let me elaborate by comparing the assignment-shifting attitude reports to Salmon's (2003) account of temporal operators in light of Kaplan's (1989b) famous *operator argument*.

3.1 ASSIGNMENT-SHIFTING AND THE OBJECTS OF ATTITUDES

Eternalism claims that the objects of assertion and beliefs (propositions) are eternal – i.e. they have a 'fixed and unchanging' truth-value over time. So, according to eternalists (1a) is an incomplete expression and is 'time-stamped' to the time of the context to express the eternal proposition (1b).

- (1) a. [NAME AUTHOR] is writing on attitude ascriptions
- b. [NAME AUTHOR] is writing on attitude ascriptions on March 28, 2018

However, Kaplan (1989b) raised an influential argument against eternalism, known as the *operator argument*: if all propositions are eternal, then it makes no sense to have temporal operators such as 'sometimes,' 'tomorrow,' etc., in our language. That is, if propositions are eternal, then "the application of a temporal operator

¹⁶Thanks to Brian Rabern (p.c.) for helping me getting clear on this issue.

to such a content would have no effect; the operator would be vacuous" (Kaplan, 1989b, p. 504, footnote 28). Hence, propositions must not be eternal.

Salmon argues that Kaplan drew the wrong conclusion from the operator argument. Instead of concluding that propositions are not eternal, the right conclusion is that "temporal operators do not operate on propositions" (Salmon, 2003, p. 131). That is, Salmon argues that Kaplan conflates propositions with the objects on which temporal operators operate. To maintain the merits of the Kaplanian theory, Salmon argues that there is an intermediate level of semantic value, distinct from propositions, that temporal operators take as their argument. He dubs this semantic value the *content base*, which is a function from times to intensions or, similarly, from time-world pairs to extensions.¹⁷ So, on Salmon's account, the objects that temporal operators operate on (i.e. the temporally neutral content base) come apart from the objects of belief and assertion (i.e. eternal propositions).

Let us return to the assignment-shifting accounts of attitude reports and compare it with Salmon's (2003) account of eternal propositions and temporal operators.¹⁸ Both accounts posit an intermediate level of content that is both more fine grained than sets of worlds are and that is a function from sets of [something]-world pairs to extensions.¹⁹ Given these similarities, maybe we can make a move in light of the worry presented above similar to the move made by Salmon in light of the operator argument.

Salmon concluded that "temporal operators do not operate on propositions" (2003, p. 131); temporal operators operate on the content base, whereas the objects of assertion and belief are propositions. A parallel conclusion for an assignment-shifting account is that attitude verbs do not operate on propositions; attitude verbs operate on the open propositions, whereas the objects of belief are propositions. On this interpretation of the assignment-shifting accounts, the question "what does it mean to believe an open proposition?" conflates two distinct questions. Namely, a question concerning the semantics of attitude reports and a question about the objects of beliefs. One does not believe an open proposition, the objects of our beliefs are (closed) propositions.

¹⁷Formally, this could be regimented as follows:

CONTENT BASE IN c	PROPOSITION IN c
$\lambda t. \lambda w. [\varphi]^{c,t,w}$	$\lambda w. [\varphi]^{c,t,w}$

¹⁸Thanks to Brian Rabern (p.c.) for directing my attention to this similarity.

¹⁹For the former similarity, compare (Salmon, 2003, p. 121) and (Cumming, 2008, p. 542) and for the latter compare the formalisation of open propositions (p. 7) with the formalisation of the content base in footnote 17.

This way we *can* apply the assignment-shifting accounts against Soames' argument. As the distinction above indicates we can hold on to (closed) propositions as the objects of beliefs, while accepting the assignment-shifting semantics for 'believes'.

3.2 SOAMES, SEMANTIC VALUE, AND ASSERTORIC CONTENT

A final thing to note is that this distinction – between what belief-operators operate on and the objects of belief – is itself independently motivated and is in fact something that Soames himself seems to be committed to.

The distinction that Salmon (2003) makes is reminiscent of Dummett's (1973) distinction between *assertoric content* and *ingredient sense*. Dummett, who originally made the distinction when noticing a failure of compositionality discussing Frege's equivalence thesis (see Dummett 1973, ch. 13 and Rabern 2012b, ch. 4), noted;

We must distinguish [...] between knowing the meaning of a statement in the sense of grasping the content of an assertion of it, and in the sense of knowing the contribution it makes to determining the content of a complex statement in which it is a constituent: let us refer to the former simply as knowing the content of the statement, and to the latter as knowing its ingredient sense (1973, pp. 446-447).

Hence, following Dummett, the assertoric content is *what is said* by a sentence, what is believed or asserted, and what is true or false; the semantic value is what an expression contributes to a more complex sentence in which it is embedded.²⁰ Thus, in general we might distinguish questions regarding compositional semantics from questions regarding the objects of attitudes.²¹

Importantly, Rabern (2012b, 2013) has argued that distinguishing between assertoric content and semantic value is important even when only dealing with basic variable-binding operations (see also Yalcin 2014). This suggests that Soames, who in his argument explicitly makes use of the semantics of variables, is also

²⁰I follow Ninan (2010) and Rabern (2012a) by following Lewis (1980) in saying 'semantic value' where Dummett (1973) says 'ingredient sense' and following Dummett in saying 'assertoric content' where Lewis says 'propositional content'.

²¹See also Lewis' remarks quoted in the epigraph and Yalcin (2014, p. 19), who says that "there is little motivation for theorizing under the assumption that the compositional value of a sentence relative to context is the sort of thing that also plays certain of the other key roles paradigmatically associated with the notion of content."

committed to such a distinction.²² Interestingly, in recent work Soames himself seems to warn us *against* conflating the notions of content base and (eternal) propositions:

The technical demands on temporal operators tell us *nothing* about whether the propositions sentences express are time-neutral, or time-specific. That issue must be resolved independently (2011, p. 130, original emphasis).

If the distinction between the content base and propositions is related to the distinction between assertoric content and semantic value, then it seems that Soames could also be interpreted as warning us against conflating these two notions.

This suggests that a valuable lesson can be drawn with regards to Soames' argument against unstructured propositions in general (i.e., not only with regards to the variable-version). To see what lesson this is, let us repeat Soames' argument one more time in the simplest way possible. Soames (1987; 2008) aims to provide an argument against a particular view of what the objects of our beliefs are, namely that they cannot be sets of truth-supporting circumstances. Soames argues against this particular view using a *reductio ad absurdum* based on the semantics of attitude reports. Hence, he argues against a metaphysical picture using arguments based on our semantics. However, what I have argued is that, to paraphrase Soames (2011), the technical demands on attitude verbs tell us nothing about what the objects of our beliefs are. That issue must be resolved independently.

3.3 A METAPHYSICAL RETREAT

In response to all the above, Soames might argue that his argument remains; he might argue that the *objects* of belief cannot be sets of worlds and that his argument could be reformulated as a purely metaphysical argument.

If the ancients believe that Hesperus is seen in the evening sky and Phosphorus in the morning sky, the object of that belief is the set of worlds where this is the case. And, given that Hesperus is Phosphorus, in all those worlds it is also the case that Hesperus is seen in the evening sky and that Phosphorus is seen in *the evening sky* – i.e. the latter is the same 'object of belief' as the former. Therefore,

²²Moreover, Yalcin (2014, p. 27) points out that philosophers often talk about 'semantic content', in ways that tend "to blur a conceptually important distinction" between *semantic* value and assertoric *content*. Yalcin explicitly discusses Soames' (1989, p. 394) definition of a semantic theory and points out that "[Soames'] conception of semantics is problematic. It underestimates the gap between the notion of compositional semantic value and the notion of content" (Yalcin, 2014, p. 30).

one might be tempted to conclude that if the ancients believe that Hesperus is seen in the evening sky, then the ancients believe that Phosphorus is seen in the evening sky.

However, even though these would be the same objects of belief, it does *not* follow that if the ancients believe that Hesperus is seen in the evening sky, that they then also believe that Phosphorus is seen in the evening sky. There are plenty of accounts of beliefs and attitude reports where what matters for one to believe something is not only the content itself, but specifically *how* one believes it or the *way* one takes it. For instance, Perry (1979) distinguishes “the belief state one is in” from “what one thereby believes” (p. 18) and, somewhat relatedly, Salmon (1986, especially ch. 8) distinguishes the content of belief from the ways-of-taking the content (or guises of the content). Very crudely, on such accounts an agent might believe a certain content relative to one way of taking it (or one guise), while failing to believe *that exact same content* relative to another way of taking it.

Hence, the ancients might have a belief with the set of worlds where Hesperus is seen in the evening sky as its content in a “Hesperus” guise, while failing to believe that content in a “Phosphorus” guise. Relatedly, on a view where attitude verbs are sensitive to assignments, the assignment-sensitivity might be construed as tracking “ways-of-taking” the reference relation. Cumming (2008) even says that his “treatment of attitude verbs as operators that shift the assignment tallies with the reflection that attitude ascriptions can convey things about *how an agent conceives of the reference relation*” (p. 550, original emphasis).

4 CONCLUSION; SEMANTICS AND METAPHYSICS

I have argued that there is a way to resist Soames’ argument, namely by applying an assignment-shifting account of ‘believe’ to Soames’ *reductio*. There are two crucial moves made in my argument: (i) distinguishing between the assignment-saturated and -unsaturated value of variables and (ii) the distinction between assertoric content and semantic value. What is important is that both moves are *independently* motivated by, respectively, the standard semantics of variables and quantification and metasemantic considerations concerning compositionality. These independent motivations thus also support the arguments made in this paper. Let me end with a concluding remark.

Distinguishing between assertoric content and semantic value is definitely not the orthodox view and Humberstone (1976) touches a nerve when he asks if this distinction should worry us. It seems that many philosophers do not make this distinction, because it *does* worry them that these two notions come apart. This worry, which Rabern (2012b) dubs the *mismatch worry*, links back again to the

relational analysis of attitude reports. Remember, if we distinguish between semantic value and assertoric content what is important for sentences of the form ' α v's φ ' is the semantic value of ' φ '. The worry is that the metaphysics 'calls' for a relation between α and a proposition, thus not between α and a semantic value.

There should indeed be a relation between the semantic value and the content of sentences (cf. Lewis 1980; Stojnić 2017). But just as on Lewis' (1980) account, one can easily retrieve one from the other on the assignment-shifting account of attitude reports.

So, we have found a way to hold on to the truth-supporting circumstances analysis of propositions as well as to the relational analysis of attitude reports. What we have given up is *propositionalism*: the idea that the semantic value of an embedded sentence needs to be the proposition the sentence expresses.

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APPENDIX

In this Appendix I present the fully worked out derivations that are discussed in section 1. First the derivation from **(R1-R2)** to the intermediate conclusion:

$$\begin{aligned} \mathbf{R1:} \quad & \exists x \exists y (Mx \wedge Ey \wedge \text{BEL}_a(Mx \wedge Ey)) \\ \mathbf{R2:} \quad & \exists x \exists y (\forall z (Mz \leftrightarrow z = x) \wedge \forall z (Ez \leftrightarrow z = y) \wedge x = y) \\ \therefore \quad & \exists x \exists y (x = y \wedge \text{BEL}_a(Mx \wedge Ey)) \end{aligned}$$

1.	$\exists x \exists y (\forall z (Mz \leftrightarrow z = x) \wedge \forall z (Ez \leftrightarrow z = y) \wedge x = y)$	Δ , R2
2.	$\exists x \exists y (Mx \wedge Ey \wedge \text{BEL}_a(Mx \wedge Ey))$	Δ , R1
3.	$\forall z (Mz \leftrightarrow z = a) \wedge \forall z (Ez \leftrightarrow z = b) \wedge a = b$	1, EI
4.	$Mc \wedge Ed \wedge \text{BEL}_a(Mc \wedge Ed)$	2, EI
5.	$\forall z (Mz \leftrightarrow z = a)$	3, CE
6.	$Mc \leftrightarrow c = a$	5, UI
7.	Mc	4, CE
8.	$c = a$	6,7, MP
9.	$\forall z (Ez \leftrightarrow z = b)$	3, CE
10.	$Ed \leftrightarrow d = b$	9, UI
11.	Ed	4, CE
12.	$d = b$	10,11, MP
13.	$a = b$	3, CE
14.	$c = a \wedge a = b \rightarrow b = c$	Transitivity
15.	$c = a \wedge a = b$	8,13, CI
16.	$b = c$	14,15, MP
17.	$d = b \wedge b = c \rightarrow c = d$	Transitivity
18.	$d = b \wedge b = c$	12,16, CI
19.	$c = d$	17,18, MP
20.	$\text{BEL}_a(Mc \wedge Ed)$	4, CE
21.	$c = d \wedge \text{BEL}_a(Mc \wedge Ed)$	19,20, CI
22.	$\exists x \exists y (x = y \wedge \text{BEL}_a(Mx \wedge Ey))$	21, EG

QED

Secondly, going through the semantics of this intermediate conclusion gets us all that we need to start the derivation.

$$\begin{aligned} \llbracket \exists x \exists y (x = y \wedge \text{BEL}_a(Mx \wedge Ey)) \rrbracket^{g,w} = 1 \text{ iff} \\ \text{there is an assignment function } g'[x,y]g \text{ such that}^{23} \end{aligned}$$

²³The notation ' $g'[x,y]g$ ' is a simplification of 'there is an assignment $g'[x]g$ such that ... and there is an assignment $g''[y]g'$ such that ...' to avoid cluttering.

$$\begin{aligned} & \llbracket x = y \wedge \text{BEL}_a(Mx \wedge Ey) \rrbracket^{g',w} = 1, \text{ which is the case iff} \\ & \llbracket x = y \rrbracket^{g',w} = 1 \text{ and } \llbracket \text{BEL}_a(Mx \wedge Ey) \rrbracket^{g',w} = 1 \end{aligned}$$

Note that the first conjunct, in combination with **(R)**, entails the following:

$$\forall w' (\llbracket x \rrbracket^{g',w'} = \llbracket y \rrbracket^{g',w'})$$

Finally, the derivation from the reformulated **(R1-R2)** to the absurd conclusion (note that this is a semi-formal, semantic derivation, where the bold-faced letters refer to the assumptions made by Soames (1987, 2008) as formalised above):

$$\mathbf{R1-R2:} \quad \exists x \exists y (x = y \wedge \text{BEL}_a(Mx \wedge Ey))$$

$$\therefore \quad \text{BEL}_a(\exists z (Mz \wedge Ez))$$

1.	$\exists x \exists y (x = y \wedge \text{BEL}_a(Mx \wedge Ey))$	Δ
2.	$a = b \wedge \text{BEL}_a(Ma \wedge Eb)$	1, (E)
3.	$\text{BEL}_a(Ma \wedge Eb)$	2, (C)
4.	$\forall w' \in \mathcal{B}_a(Ma \wedge Eb)$	3, (B)
5.	$\forall w' \in \mathcal{B}_a(Ma)$	4, (C)
6.	$a = b$	2, (C)
7.	$a = b \rightarrow \forall w' (a = b)$	6, (R)
8.	$\forall w' (a = b)$	6, 7, MP
9.	$\forall w' \in \mathcal{B}_a(Mb)$	5, 8, (P)
10.	$\forall w' \in \mathcal{B}_a(Eb)$	4, (C)
11.	$\forall w' \in \mathcal{B}_a(Mb \wedge Eb)$	9, 10, (C)
12.	$\forall w' \in \mathcal{B}_a(\exists z (Mz \wedge Ez))$	11, (E)
13.	$\text{BEL}_a(\exists z (Mz \wedge Ez))$	12, (B)

QED

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