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CRITICISM OF THE PROPOSITIONALIST APPROACH TO SOLVING THE PROBLEM OF OPAQUE ATTITUDE CONTEXTS, AND AN OUTLINE OF AN ALTERNATIVE

BA thesis in philosophy

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1. INTRODUCTION

The topic of this paper is the problem of opaque attitude contexts in philosophy of language. I will analyze the mainstream strategy for solving the problem and present some criticism against it. My aim is to open up possibilities for alternative accounts that may prove more efficient in treating this problem. I will develop one such alternative in this paper, and compare it to the mainstream strategy.

Roughly characterized, the problem is that sentences reporting propositional attitudes of individuals seem to behave in ways that conflict with one of the basic assumptions about how language works. The assumption is that the truth value of a propositional attitude report, like that of any other declarative sentence, should be a function of the values of its constituent expressions and their syntactic combination. In section 2 of this paper I will explain why this assumption is held, and how the conflict between it and propositional attitude reporting sentences arises.

The mainstream strategy for solving the conflict has been to treat the meanings of some of the constituents of propositional attitude reports as contributions to truth value. I refer to this strategy as propositionalism. I will give an overview of propositionalism in section 3, and introduce some criticism against both the soundness of this strategy and the need for considering it in section 4. Criticism against the soundness of propositionalism derives from the works of Charles Travis, and criticism against the need for it from the works of Lynne Rudder Baker and Bruno Mölder.

Finally, I will draw an outline of an alternative approach to solving the problem, that takes the shortcomings of propositionalism into consideration. I refer to this alternative as the model theory of propositional attitudes and it is the topic of section 5 of this paper. The last section of the paper is dedicated to comparing the model theory with propositionalism, and to showing that it can account for the problems the latter has, and is just as effective in solving the problems the latter solves. As a bonus, because of the new take it has on propositional attitude reports, it has some interesting implications to epistemology, which I will explain at the end of the final section.

2. ALETHIC COMPOSITIONALITY AND THE OPACITY OF ATTITUDE CONTEXTS

The purpose of this section is twofold. I will introduce the problem that will guide the discussion throughout the paper, namely the problem of opaque attitude contexts, but, while doing this, I will also introduce a large part of the terminology that I need in this paper. The section divides into two thematic parts. The first part (2.1–2.2) builds up to the problem – there I introduce the principle of alethic compositionality and points related to it –, and the second part (2.3) is on the problem itself.

2.1. Introduction to some basics notions of syntax

A language generally has a set of atomic expressions – its vocabulary – and a set of grammar rules for combining elements of the vocabulary into complex expressions. From the set of possible atomic expressions, I will restrict my discussion to names and predicates (non-logical atomic expressions), and some logical operators. The kind of complex expressions I will be looking at in this paper are declarative sentences (from now on 'sentences' for short).

Given that competent speakers of any language have the ability, in principle, to recognize an infinity of combinations of atomic expressions as sentences, and to distinguish them from combinations that are not sentences, the set of atomic expressions and the set of grammar rules of any language, must both be finite. Only then can this ability be learned in a finite time.

To clarify certain points in the discussion that follows, I will need to define a simple language L that only has names, one-place predicates of English[1], and a logical operator '=' (that reads 'is identical with' or 'is the same as') in its vocabulary.

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[1] Names and one-place predicates, e.g. 'green', are usually connected with the copula 'is'. Since I'm not discussing anything specifically related to the copula, I will omit it from the formal definitions, but I will keep it in the examples for readability.

Grammar rules of *L*

(i) If α is a name, and Π is a one-place predicate, then ⌜$\alpha\Pi$⌝ is a sentence of *L*.

(ii) If α and β are both names, or both one-place predicates, then ⌜$\alpha = \beta$⌝ is a sentence of *L*.

(iii) Nothing else is a sentence of *L*.

I will be referring to forms like '$\alpha\Pi$' and '$\alpha = \beta$' as *grammatical structures* of sentences.

2.2. Introduction to alethics

A widely held assumption in philosophy of language is that meaning can be understood, in some way or other, in terms of truth (e.g. Davidson 1967). Because of this, the distinction between what expressions contribute to the meanings of sentences they occur in, and what they contribute to their truth values, has become blurred. They are often both referred to as *contents* of expressions. Since in subsequent sections I will be discussing some issues concerning the relations between the two, I will separate the two notions to avoid equivocation. I will be referring to contributions to meanings as *semantic values*, and to contributions to truth values as *alethic values*.[2]

2.2.1. Alethic values of non-logical atomic expressions

Alethic values of names and predicates (or any other non-logical atomic expressions[3]) can be formally represented by constructing a model. To keep the formalism simple, I will use *extensional* models throughout this paper. An extensional model is composed of a domain, which is a set of object, and an interpretation function, which is a function that assigns alethic values to non-logical atomic expressions.

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[2] It might be worth noting that most of what formal semantics is concerned with ends up being on the side of alethics, not semantics.

[3] The alethic values of logical operators are the effects they have to the alethic values of complex expressions they are constituents of. For this reason they don't need to be assigned alethic values by an interpretation function, instead they are defined with the help of the valuation function (see 2.2.3).

In an extensional model, the alethic values of expressions are *extensions*. Extensions of sentences are truth values, which are the topic of the next two subsections.

2.2.2. Alethic compositionality

Just as competent speakers have learned in a finite time the ability to recognize, in principle, for an infinity of combinations of atomic expressions whether or not they are sentences, they have also learned in a finite time the ability to evaluate each sentence in the light of what state they take the world to be in, and to determine on that basis whether or not a given sentence is true. This means that truth values of sentences can only depend on the alethic values of their constituents plus the way these constituents are combined (the grammatical structure). This is *the principle of alethic compositionality*.

The Principle of Alethic Compositionality

For any declarative sentence ϕ: the alethic value of ϕ depends only on the alethic values of

the constituents of ϕ, and the grammatical structure of ϕ.

For example, if I am suitably informed about the world, know the grammar rules of English, and I know how 'Mary', 'the father of', and 'is rich' get their alethic values, then I can already decide whether 'Mary is rich', 'the father of Mary is rich', 'the father of the father of Mary is rich', etc, are true or not. In order for this reasoning to apply, the principle of alethic compositionality must work without exceptions.

2.2.3. Truth-condition schemas

The way truth values of sentences are determined on the basis of the alethic values of their constituents and the grammatical structures can be represented by defining a

function that assigns a truth value to every sentence relative to a model. This function –
the valuation function – must have constraints that guarantee that each grammatical
structure would entail one specific way of determining a truth value. These constraints
can be explicated by writing out biconditionals for every grammatical structure in the
language. The language L has two grammatical structures, so we must write out two
biconditionals when defining the valuation function.

> The valuation function V_M for L
>
> V_M is a function, relative to an L-model M, that is subject to the following constraints:
>
> (vi) if α is a name, and Π is a one-place predicate, then
>
>   (T^1) $V_M(\alpha\Pi) =$ true if, and only if (iff) $I(\alpha) \in I(\Pi)$.
>
> (vii) if α and β are both names, or both one-place predicates, then
>
>   (T^2) $V_M(\alpha = \beta) =$ true iff $I(\alpha) = I(\beta)$.

These biconditionals are sometimes referred to as *truth-condition schemas*. They are
hypotheses about when competent speakers of a language will count a sentence with
such-and-such grammatical structure as true, given that the speakers are in suitable
conditions for making the judgment (not distracted, decieved, etc). When the schemas
are filled out with specific atomic expressions with their respective alethic values, we
get the hypothetical *truth-conditions* of sentences. The truth-conditions of a sentence are
the necessary and sufficient conditions under which the sentence is true.

2.2.4. Alethic substitutivity

The principle of alethic compositionality entails that any two expressions with the same
alethic value are substitutable in a sentence without altering its truth value. This is *the
principle of alethic substitutivity*.

> The Principle of Alethic Substitutivity
>
> If ϕ is a sentence, and e is a constituent of ϕ, then, if we substitute e with its alethic
> equivalent e', resulting in ϕ', the alethic values of ϕ and ϕ' are the same.

An important point about substitutivity is that given that compositionality entails
substitutivity, it is in virtue of contraposition that any counterexample to the latter is a
counterexample to the former.

Before introducing possible counterexamples, I will illustrate how the compositionality and substitutivity principles work. Assume that the following two sentences of *L* are true:

(1)   Superman is flying.

(2)   Superman = Clark Kent.

From (2) and the truth-condition schema (T^2) we can conclude that 'Superman' and 'Clark Kent' have the same alethic value. From (1), the truth-condition schema (T^1), and the principle of alethic substitutivity we can now conclude that the following sentence must be true:

(3)   Clark Kent is flying.

This seems to be the right result. The same can be said about predicates. Consider the *L* sentences (4) and (5).

(4)   Clark Kent is a journalist.

(5)   A journalist = a reporter.

The principle of alethic substitutivity forces us to predict that given the truth-condition schemas (T^1) and (T^2), insofar as the sentences (4) and (5) are true, so is (6).

(6)   Clark Kent is a reporter.

This prediction seems to be accurate as well.

2.3. Opacity of the attitude context

Sentences that report attitudes of individuals seem to pose a problem for alethic substitutivity. Attitude reports can be divided into two broad categories – propositional and non-propositional attitude reports. Throughout this paper I will be discussing the former.

Propositional attitude reports are sentences composed of a noun-phrase, a propositional attitude verb (often together with the complementizer 'that'), and an embedded

subclause, as in 'Lois believes that Superman is flying'.[4] In addition to 'believes', propositional attitude verbs include 'hopes', 'thinks', 'doubts', 'suspects', etc, and they can be viewed together with 'says', 'sees', 'guesses', and other verbs that take subclauses. I will refer to a complex of words of the form 'α A's that …' where α is a noun-phrase, and A is a propositional attitude verb, as the *attitude context*. (Words that occur in the place of the three dots are *inside* the attitude context.)[5]

The problem that I am addressing is that alethic substitutivity within attitude context seems to fail. Following Quine (1961), this feature is referred to as *opacity*.

The discovery that names seem to behave differently when inside the attitude context has been attributed to Gottlob Frege (1997 (Orig. 1892)). This is probably the most widely discussed property of the attitude context, and goes also by the name 'Frege's puzzle' (McKay, Nelson 2010). Consider the propositional attitude report (7) and the identity claim (2) from before:

> (7)   Lois believes that Superman is flying.

> (2)   Superman = Clark Kent.

As before, (2) and the truth-condition schema (T^2) guarantee that the alethic values of the names 'Superman' and 'Clark Kent' are the same. According to the principle of alethic substitutivity, given the truth of (2), if the propositional attitude report (7) is true, the following must be true as well:

> (8)   Lois believes that Clark Kent is flying.

Intuitively, however, (7) and (2) can be true without entailing the truth of (8).[6] This in turn means that the principle of alethic substitutivity seems to fail in this case, and thus

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[4] Non-propositional attitude reports are those where the attitude verb is not followed by a full sentence, but rather a *to*-construction, as in 'Lois wants to meet Superman'. They, unlike propositional attitude reports, can be used to express aims and intents (see Baier 1970).

[5] The formal definition for the grammar of propositional attitude reports will be given in the next section. It should be noted for the present discussion that the subclause of the report is a sentence of *L*.

[6] To say that (7) and (2) can be true without entailing the truth of (8), might require some clarification. What it means is that (7) and (2) can be true while (8) is false, but, when discussing the falsity of (8), it is sometimes taken to entail that 'Lois believes that Clark Kent is *not* flying' is true. This is a mistake. What the falsity of (8) entails is that '*it's not the case that* Lois believes that Clark Kent is flying' is true. It is a denial of the existence of a certain attitude, not a claim that there is an opposite attitude.

the principle of alethic compositionality seems to fail as well. The same appears to be true about predicates, as in:

> (10)   Lois believes that Clark Kent is a journalist.
>
> (5)   A journalist = a reporter.
>
> (11)   Lois believes that Clark Kent is a reporter.

It seems that (10) and (5) can be true, without (11) being true, even though the principle of alethic substitutivity forces us to say otherwise.

Given that the principle of alethic compositionality is required to explain the linguistic competence of speakers, we cannot accept these results. An ideal way to overcome this problem would be to provide a truth-condition schema for propositional attitude reports that also solves the problem of opacity of the attitude context, preserving the principle of alethic substitutivity.

In the next section I will introduce the mainstream theory about what this truth-condition schema should look like, and two different views within the mainstream theory – the Fregean and the Russellian view – about how this schema accounts for the problem of the opacity of attitude contexts.

3. PROPOSITIONALISM

In this section I will introduce propositionalism, which has been the main departure point for attempts at solving the problem of opaque attitude contexts. The purpose of this section is not just to give an overview of the theory but to explicate some of the underlying assumptions that come with it, so that they can be subjected to criticism in the next section. For this reason, I will slide over some of the details that may have high significance for propositionalists themselves. I will start by giving a short overview of what propositions are. I will then explain what it means to be a propositionalist, and which truth-condition schema she proposes for propositional attitude reports – this will be the topic of subsection 3.2. In 3.3 I will give an overview of what could have led philosophers to accept this theory. In the final two subsections I will give a brief overview of the two main varieties of propositionalism, namely the Fregean and the Russellian view, and go through their responses to the problem of opacity.

3.1. What are propositions?

There is a sense in which an English sentence 'snow is white', and an Estonian sentence 'lumi on valge' are both expressing the same thing, even though they are composed of different words. That one thing they are expressing is the proposition, namely the proposition that snow is white. Propositions are the *semantic values* of sentences – what the sentences mean. Just like alethic values of sentences, propositions must also be determined compositionally – which proposition is expressed by a sentence is determined only by the semantic values of the constituents and the grammatical structure of the sentence. Only then can competent speakers have the ability to understand more sentences than they could have learned.[7]

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[7] The following point about understanding is worth re-stating: one can understand a sentence without knowing the truth value of the sentence. So, whatever the proposition that ϕ is, it cannot be something such that knowing it entails knowing the truth value of ϕ (unless, perhaps, when ϕ is a logical truth).

Propositions are also taken to have truth values. To say something true is to assert a true proposition, and to say something false is to assert a false proposition.[8] Given that propositions are the semantic values of sentences, this makes them truth-bearers without syntax. In order to avoid conflict with the principle of alethic compositionality, propositions are taken to have structures that mirror the grammatical structures of sentences. This results in propositions being ordered n-tuples of semantic values.[9] E.g. the proposition expressed by the sentence 'Superman is flying' is an ordered pair where the first element is the semantic value of 'Superman' and the second element is the semantic value of 'flying'.

3.2. Overview of propositionalism

What I call *propositionalism*, is the theory according to which

> making true or false assertions is not the only thing we do with propositions. We also bear cognitive attitudes toward them. Propositions are what we believe, disbelieve, or suspend our judgment about. When you fear that you will fail or hope that you will succeed, when you venture a guess or feel certain about something, the object of your attitude is a proposition. (Salmon, Soames 1988: 1)

Propositionalism is therefore a theory about the role of propositions in our mental lives. It states that i) there are objects of attitudes, and ii) these objects are propositions.

The propositionalist proposal for the truth-condition schema for propositional attitude reports is based on the idea that propositional attitude reports express relations between individuals and propositions – the individual has an attitude (believing, fearing, hoping, etc) towards the proposition. The proposition the individual is said to stand in, say, the believing relation to, is expressed by the subclause of the propositional attitude report. So, the purpose of the subclause is to pick out the right proposition.

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[8] Opinions vary with respect to whether sentences should be taken to inherit their truth values from propositions, or *vice versa*. In what follows, the answer to this question is irrelevant. All that matters is that the sentence ϕ and the proposition that ϕ never differ in truth value.

[9] There is a view according to which „[a] proposition is a function from possible worlds into truth-values", and thus do not mirror the structure of sentences (Stalnaker 1987: 2; italics omitted). Due to the limits of space, I will not be discussing this view in more detail here, although some of what I am saying in this paper (section 4) also applies to it. For a detailed criticism of this view, see Soames 1988.

The propositionalist proposal is then that the alethic value (the extension) of the attitude verb should be treated as a binary relation over a set of individuals and a set of propositions. I take it that the object of a propositional attitude is therefore the alethic value of the subclause of the propositional attitude report, which, for a propositionalist, is a proposition. I will illustrate this with an example. Consider the following sentence again:

(1)   Lois believes that Superman is flying.

According to propositionalism, the sentence (1) is true if, and only if Lois is standing in the believing-relation to the proposition expressed by the subclause 'Superman is flying'. Lois's belief is true if, and only if the proposition expressed by the subclause is true.

To illustrate this in more formal terms, I will upgrade the language L from before into $L_{\mathcal{P}}$, which is just like L, except it also has propositional attitude verbs in its vocabulary, and a set of propositions as a constituent of its model. Following Heim and Kratzer (2007), I will treat the complementizer 'that' as semantically vacuous, omitting it not only from the semantics but, for clarity, also from the formal syntax. For readability, I will keep using it in the examples. For any sentence ϕ, I will use $\ulcorner\langle\phi\rangle\urcorner$ to denote the proposition that ϕ.

Grammar rules of $L_{\mathcal{P}}$

(i) All sentences of L are sentences of $L_{\mathcal{P}}$.

(ii) If α is a name, A is a propositional attitude verb, and ϕ is a sentence of $L_{\mathcal{P}}$, then $\ulcorner\alpha A\phi\urcorner$ is a sentence of $L_{\mathcal{P}}$.

(iii) Nothing else is a sentence of $L_{\mathcal{P}}$.

A model M for $L_{\mathcal{P}}$

$M = \langle\mathcal{P}, D, I\rangle$, where $\mathcal{P}$ is a set of propositions, D is a non-empty set, and I is an interpretation function that is just like the interpretation function of an L-model, except for the following addition:

(iv) if A is a propositional attitude verb, then $I(A) \subseteq D \times \mathcal{P}$.

The valuation function V_M for $L_{\mathcal{P}}$

V_M is a function, relative to an $L_{\mathcal{P}}$-model M, that is just like the L-valuation function, except for the following addition:

(v) if ϕ is a sentence of $L_{\mathcal{P}}$, α is a name, and A is a propositional attitude verb, then

(T^3) $V_M(\langle\phi\rangle) = \text{true iff } V_M(\phi) = \text{true}$.

$$(T^4) \qquad V_M(\alpha A \phi) = \text{true iff } \langle I(\alpha), \langle \phi \rangle \rangle \in I(A).$$

Independently of what the propositionalist takes to be the constituents of the proposition, (T^4) is what she proposes as the truth-condition schema for propositional attitude reports. The truth-condition schema (T^3) guarantees that the truth of the subclause of the attitude report entails the truth of the object of the attitude. The propositionalist needs this entailment because of the assumption that the role of the subclause is to pick out the proposition that the individual is related to.

3.3. The motivation for propositionalism

The main motivation for the first assumption of propositionalism, namely that there are objects of attitudes, seems to become salient when we look at expressions that are used alongside propositional attitude reports. For example, we say things like 'Lois Lane believes that Superman is flying, and Lex Luthor believes *it* too', and '*there is something* that Lois Lane and Lex Luthor both believe'. Both sentences seem to be truth-apt and not at all uncommon in ordinary speech. What is important here is that in both cases we use the kind of expressions that we normally use when we talk about objects. In order to study the alethics of propositional attitude reports, we must take this into account. Postulating objects of attitudes into the truth-conditions is the propositionalist way of doing this.

The motivation for the second assumption of propositionalism, namely that these objects are propositions, stems from the following observations. First, our beliefs, suspicions, thoughts, etc, seem to be such that they can be true or false, right or wrong, correct or incorrect. E.g. we say things like 'Mary suspects that someone's been stealing her cigarettes, and she's right', 'John thinks that everyone is out to get him, and its true, everyone *is* out to get him', 'Mr Smith correctly assumes that the man who gets the job has ten coins in his pocket'. The propositionalist takes this to be evidence that objects of propositional attitudes should be treated as truth-apt. This limits the search for these objects to the subclause of the propositional attitude report – the truth value of the report

can only depend on the alethic values of its constituents, and the only constituent that could itself carry a truth value, is the subclause.

Second, although truth-apt, it seems that these objects cannot have as constituents any of the syntactic elements of the subclause. We can, for example, use English to report the attitudes of people who do not speak English, and it seems that we can even report attitudes of someone who doesn't speak *any* language (Moore 1995: section 5.4). E.g. when my cat, seeing me taking a can of catfood off the shelf, runs to her bowl, it seems we are justified in saying that she believes that she will be fed. If so, then, when I put the can back, we can say that what she believes is false. Furthermore, we can *share* attitudes with someone who doesn't speak the language we speak, or any other language for that matter – e.g. 'Mary knows that the Earth is bigger than Mars, and Mari, a non-English speaker, knows *it* too', 'me *and* my cat thought that someone was at the door'. This, together with the truth-aptness requirement seems to make propositions the only available candidates for the objects of attitudes.

These (and perhaps other) considerations have led the majority of philosophers to accept propositionalism. There is, however, a lot of disagreement on what these truth-apt, structured, sentence-like entities that have no syntax, that figure as semantic values of sentences, and towards which we bear cognitive attitudes, should be taken to be composed of. I will now look at two main views on it.

3.4. The Fregean and the Russellian view of propositions

There are two mainstream views on what the constituents of propositions are: the Fregean view and the Russellian view. Frege (1997 (Orig. 1892)) drew a distinction between the *sense* (*Sinn*) and the *reference* (*Bedeutung*) of an expression. The reference of an expression, on Frege's view, is an alethic value. The sense of an expression is what determines its reference. Frege writes:

> The regular connection between a sign [an expression], its sense, and its *Bedeutung* is of
> such a kind that to the sign there corresponds a definite sense and to that in turn a definite
> *Bedeutung*, while to a given *Bedeutung* (an object) there does not belong only a single sign
> (Frege 1997: 153).

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From this it follows that two expressions with the same reference can have different senses, but two expressions with the same sense, will also have the same reference. According to the Fregean view of propositions, the constituents of the proposition that ϕ are the *senses* of the constituents of ϕ. I will refer to these propositions as *Fregean propositions*. (Frege himself used the term 'thought' for this). Since sentences are also expressions, they also have a sense and a reference. The sense of ϕ is the Fregean proposition that ϕ, and the reference of ϕ is a truth value.

In the 1904 correspondence with Frege, Bertrand Russell writes:

> I believe that in spite of all its snowfields Mont Blanc itself is a component part of what is actually asserted in … 'Mont Blanc is more than 4,000 metres high'. We do not assert the thought, for this is a private psychological matter: we assert the object of the thought, and this is, to my mind, a certain complex (an objective proposition, one might say) in which Mont Blanc is itself a component part. (*Selection* 1988: 57)

This is known as the Russellian view on the nature of propositions. The Russellian view differs from the Fregean view in that it denies the existence of senses, and takes the constituents of the proposition that ϕ to be the *referents* of the constituents of ϕ. I will refer to these propositions as *Russellian propositions*. One consequence of taking the semantic values of sentences to be Russellian propositions is that they will be less finely individuated – if two sentences ϕ and ψ have the same grammatical structure, and the constituents of ϕ are co-referring with the constituents of ψ, then, unlike the Fregean, the Russellian is forced to say that $\langle\phi\rangle$ and $\langle\psi\rangle$ are the same proposition. Another consequence is that, unlike the Fregean, the Russellian must treat the reference of an expression as a *semantic* value. (Due to semantic compositionality, a proposition, being a complex semantic value, can only have semantic values as constituents.) The Russellian takes the semantic values of names to be objects, and the semantic values of one-place predicates to be properties. Alethic values of expressions are then defined in terms of their semantic values. Alethic values of names are their semantic values, and alethic values of one-place predicates are sets of objects that instantiate the properties that are their semantic values. This makes alethic compositionality depend on semantic compositionality – the alethic value of a sentence (a truth value) is, in the end, determined only by its grammatical structure and the *semantic values* of its constituents.

3.5. The Fregean and the Russellian response to the problem of opacity

Like all propositionalists the Fregean and the Russellian propositionalists accept the truth-condition schema (T^4). Their responses to the problem of opaque attitude contexts differ because of the differences in what they take the nature of propositions to be. I will go through both responses.

Let's take the example with names from before (responses to this are also responses to the example with predicates).

(1)   Lois believes that Superman is flying.

(2)   Superman = Clark Kent.

(3)   Lois believes that Clark Kent is flying.

The problem was that intuitively, (1) and (2) can be true, while (3) is false, which would contradict the principle of alethic compositionality.

The Fregean propositionalist response to the problem is the following. Although the alethic values of sentences are truth values, what (T^4) says, is that *within an attitude context*, the alethic value of the sentence ϕ is the *Fregean proposition* that ϕ. From this and the principle of alethic compositionality we can then conclude that the alethic values of the constituents of ϕ within attitude context are the constituents of the Fregean proposition that ϕ. In other words, when within attitude context, expressions contribute their *senses* to the truth value of the propositional attitude report, not their references.

The truth of (2) entails that the names 'Superman' and 'Clark Kent' have the same reference, but they can still have different senses. So, according to the Fregean propositionalist, the intuition that the propositional attitude reports (1) and (3) differ in truth value is correct, but since 'Superman' and 'Clark Kent' in (1) and (3) occur within an attitude context, their alethic values differ, and the principle of alethic substitutivity is therefore not violated.

The Russellian propositionalist view was developed in order to account for various problems with the Fregean view, mostly originating from the fact that it requires names to have senses (Kripke 1988, Richard 1988). For the Russellian propositionalist, (T^4) also says that the sentence ϕ (and, therefore, also its constituents) within attitude

context contributes its semantic value to the truth value of the propositional attitude report. However, since Russellian alethic values are defined in terms of semantic values, shifting from one to the other will not save alethic substitutivity. The Russellian propositionalist response to the problem of opacity is that our intuition that (1) and (3) can differ in truth value, is simply wrong. The reason why it *seems* that the truth values of (1) and (3) can differ, is that we are confusing semantics with pragmatics. This idea is based on Paul Grice's view of pragmatics according to which there are conditions of appropriateness for expressions, such that to use the expression in the absence of these conditions would be *misleading*, but that this would not affect the truth value of what is said (Grice 1991: 9).

> For example, it is true but inappropriate to utter the sentence 'John is sober today' if one knows that John is always sober. Uttering that sentence is misleading because it suggests a contrast where there is none. But that doesn't make it false. (McKay, Nelson 2010)

The Russellian propositionalist attempts to explain opacity away by claiming that even though (1) and (3) say the same thing (and thus also have the same alethic values), the utterance of (3) creates the impression that Lois recognizes that the sentence 'Clark Kent is flying' expresses the proposition she believes. This makes (3) a misleading way of reporting Lois's belief, but not a false sentence.[10]

The Russellian view also has problems. For example, attitude reports are usually taken to convey potential for explaning and predicting the subject's behaviour. (1) and (3), however, do not share their explanatory and predictive potential (McKay, Nelson 2010). Also, as Stephen Schiffer (1987) has pointed out, if we attribute to someone who is aware of the fact that Superman is Clark Kent the belief that (1) is true and (3) is false (as we seem to do to ourselves for example), then the Russellian propositionalist is forced to say that we are then attributing a belief that a contradiction is true, which would violate certain minimal constraints on rationality.

In this section I introduced the notion of a proposition and explained what I mean by propositionalism. I then gave an overview of what I believe are the reasons that have led people into accepting the propositionalist theory. Finally, I gave a short overview of two

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[10] Another, similar strategy that some Russellians, e.g. John Perry (1988), have taken, is to draw a distinction between the proposition believed, and a way of believing the proposition – a belief state. This helps to explain how a subject can have contradicting beliefs, but not how someone could believe and, at the same time, not believe a proposition, which is what I am concerned with in this paper.

different widely held views on the nature of propositions – Fregeanism and Russellianism –, and showed how the problem of opaque attitude contexts is dealt in each camp.

In the next section I will introduce a Travisian objection against both the Fregean and the Russellian propositionalist view, showing that they share a common problem that arises from the truth-condition schemas they propose. I will also show possible ways out of the considerations that have led philosophers into proposing these schemas.

4. OBJECTIONS TO THE ADEQUACY AND NECESSITY OF PROPOSITIONALISM

My aim in this section is to show that propositionalism as such is not without problems, and that adopting propositionalism is not necessary. In other words, my aim is to show that alternatives to propositionalism are both desirable and possible. I will do this by first presenting a direct objection against propositionalism, and then showing that a lot of what has motivated philosophers to accept propositionalism, can be bypassed. The objection I am presenting has been developed by Charles Travis, and concerns the occasion sensitivity of propositional attitude reports. This is the theme of subsection 4.1. In subsection 4.2 I will show how we can avoid the assumption that propositional attitudes are truth-apt and the requirement that objects of attitudes cannot have syntactic constituents. In the next section I will use these ideas to develop an outline of an alternative to propositionalism.

4.1. A Travisian objection to the adequacy of propositionalism

Charles Travis is a critic of the Davidsonian theory of meaning according to which meanings of sentences can be understood in terms of their truth-conditions (see 2.2). The position Travis holds is that a sentence, any sentence, with one meaning can have different truth-conditions on different occasions of utterance. I will explain his position in terms introduced already in this paper.

Expressions have two kinds of properties, alethic and semantic properties. An alethic property is the property of having something as an alethic value (e.g. as an extension). A semantic property is the property of having something as a semantic value. The view Travis holds is that it is not possible to fix alethic properties of an expression by fixing its semantic properties, nor *vice versa*. If one of the properties are kept fixed, then the other ones can always vary. Although he doesn't seem to have a conclusive argument for this claim, Travis does present evidence for it. The way he does this is by means of thought-experiments like the following:

Pia's Japanese maple is full of russet leaves. Believing that green is the colour of leaves, she paints them. Returning, she reports, 'That's better. The leaves are green now.' She speaks truth. A botanist friend then phones, seeking green leaves for a study of green-leaf chemistry. 'The leaves (on my tree) are green,' Pia says. 'You can have those.' But now Pia speaks falsehood. (Travis 2008b: 111)

The semantic properties of 'the leaves are green' remain invariant across both occasions of utterance – the words 'are green' are for calling things green, and 'the leaves' are for speaking of one and the same leaves. However, the truth value of 'the leaves are green' changes (while the leaves in question don't), indicating that the alethic properties of 'the leaves are green' must be varying from one occasion to another. (Travis 2008b: 111–112)

A Travisian objection to propositionalism can now be stated. Consider the following propositional attitude report:

(1)   Lois believes that Clark Kent is flying.

Let us keep the semantic properties of its subclause 'Clark Kent is flying' fixed. So it will express the same proposition on different occasions of utterance. What (T^4) forces us to accept now is that, whenever (1) is true, Lois is related believingly to *one and the same* object – the proposition that Clark Kent is flying. Given (T^3), the truth value of the subclause on one occasion of utterance of (1) will be the truth value of the object of Lois's attitude on *every* occasion of utterance of (1).

If Travis is right about the relation between semantic and alethic properties, then it should be possible to construct thought-experiments in which the following can be observed. Uttering (1) on two different occasions, both in which (1) is true, i) the proposition expressed by the subclause of (1) doesn't change, meaning that Lois is related believingly to one and the same object on both occasions (because of (T^4)), but ii) the truth value of the object of Lois's attitude changes, contradicting (T^3).

Here's one such thought-experiment (in it, we are the speakers of (1)). Suppose Lois, after finding out that Clark Kent and Superman are the same person, sees something flying high above Metropolis, and she forms the belief that Clark Kent is flying. It happes to be that what Lois is seeing is actually a plane, and so her belief is false. So what we have is the following:

(2)   Lois believes that Clark Kent is flying, and her belief is false.

Suppose further that Lois's (and Clark Kent's) boss at *The Daily Planet* calls her later, and says that Clark Kent's plane will land in Moscow in an hour. Lois then forms the belief that Clark Kent is flying. What Lois now believes is true. (We may assume that Clark Kent is on that exact plane that Lois was looking at before.) From this we can conclude the following:

(3)   Lois believes that Clark Kent is flying, and her belief is true.

The semantic values of the subclauses in (2) and (3) are the same – 'Clark Kent' is used to speak of one and the same Clark Kent, also 'is flying' in both sentences is used to speak of being on a way from point A to point B without touching the ground between them. So, according to (T^4) Lois is related to one and the same proposition. The semantic value of 'believes' is also the same, meaning that Lois is related to that one proposition in the same way in both cases. We can even conceive of a situation where (2) and (3) are both true at the same time. However, the truth value of the object of Lois's belief changes. Since the object of her belief doesn't change, this contradicts (T^3). It seems, therefore, that the two truth-condition schemas that the propositionalist has proposed for propositional attitude reports, cannot be consistently held.

Of course, propositionalism has suffered from problems before, and as before, it might be that a way around this one will be found as well.[11] I do not, however, think that it is worth the effort. The rest of this section is dedicated to undermining the motivation for saving propositionalism.

4.2. Objections to the necessity of propositionalism

The motivation for adopting propositionalism (see 3.3) was that it is evident on the basis of linguistic analysis that i) the truth value of a propositional attitude report must

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[11] Propositionalist responses include, for example, indexical and non-indexical contextualism. The former relativizes *semantic* values and the latter relativizes *alethic* values of all expressions to various parameters of an occasion of utterance. For an overview of both and criticism of the former, see MacFarlane 2007. For Travis's criticism, see Travis 1978. One might also argue that my treatment of 'is flying' in the thought-experiment as having the same semantic value on both occasions is not warranted – that semantic values are actually more finely individuated. For a reply to this kind of objections, see Travis 2008b.

depend on whether or not the individual whose attitude is reported is related in the right way to a certain kind of object, ii) this object must be treated as truth-apt, and iii) it cannot have as constituents any of the syntactic elements of the subclause of the attitude report. If there is a way to get around these claims, or at least some of them, then the need for accepting propositionalism disappears, and options for alternatives open up.

I will now show for claims (ii) and (iii) how we can avoid accepting them. I will be discussing claim (i) in some detail in the next section.

4.2.1. Avoiding the truth-aptness assumption

The assumption that at least *some* propositional attitudes, like beliefs for example, are truth-apt, is probably considered to be the most uncontroversial assumption of propositionalism. Even if one is sceptical about propositions, the following biconditional is still usually accepted: the belief is true if, and only if the subclause of the belief report is true. There is a small problem with this.

The cases that the propositionalist takes to be evidence for the truth-aptness of beliefs, are not − at least on the face of it − cases of evaluating propositions (or subclauses). Instead, it seems that we are evaluating *the subject*, or perhaps *the state* the subject is in (the believing, not the belief). Take the following cases for example: '*Lois falsely believes* that Superman is not Clark Kent', '*Mary is right in believing* that someone's been stealing her cigarettes', 'Smith believes that Jones gets the job, but *he is mistaken/wrong*'. Compare this now with the way the propositionalist talks about beliefs: 'Lois's *belief* that Superman is not Clark Kent, *is false*', '*that* what Mary believes, *is true*', 'Smith believes *the false proposition* that Jones gets the job'. It seems that the propositionalist may have misunderstood the empirical data before her. This would explain why the propositionalist must always help herself to rather technical paraphrases in order to accommodate something into her theory that was originally meant to be the evidence for it.

The problem becomes more sever when we take seriously the following remark by Lynne Rudder Baker: „The root idea of belief is of believing. Believing that snow is

white is a property; the term 'belief' is just a nominalization of 'believing'." (Baker 2003: 185)

I will expand upon this idea a little. Believing and having a belief are mutually exclusive – we do not believe beliefs. The same is true of thinking and having thoughts, suspecting and having suspicions, and so forth. So, we have to go either for the one or the other. Baker claims that the proper way of speaking is to use the verb form. I agree (at least in Estonian, the noun forms occur very rarely outside of philosophy). The propositionalist, however, is forced to claim that the proper form is really the noun form. The verb form can always be paraphrased into the noun form, but only the noun form allows explicating truth values properly – the true essence of believing is uncovered only after we recognize that believing is really *having beliefs*. I find this argumentation question-begging. However, even if one isn't disturbed by this, if an alternative way of accounting for the apparent truth-aptness of the objects of propositional attitudes were available, the propositionalist could no longer say that these objects *must* be propositions.

Here's one such alternative. I will follow Baker in that there are no beliefs, only believing. Instead of saying that correctly believing and incorrectly believing are really having a true belief and having a false belief, respectively, like the propositionalist does, I will say that they are both *special kinds* of believing. This way the need for assigning truth values to objects of beliefs (and other propositional attitudes) is eliminated. What the propositionalist is trying to say with 'Mary believes that someone's been stealing her cigarettes, and her belief is true/false' I am saying with 'Mary correctly/incorrectly believes that someone's been stealing her cigarettes'[12].

4.2.2. Avoiding the no-syntax-of-the-subclause requirement

To have a propositional attitude is to instantiate a mental property. What must be noted about the claim that the objects of attitudes (or more precisely, the alethic values of the

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[12] I chose the terms 'correctly' and 'incorrectly' for the explicit negation in the latter. I am not claiming that these terms can be used in all circumstances and alongside every propositional attitude verb. In cases where they don't apply or where they convey different meaning, I suggest paraphrasing.

subclauses) cannot have as constituents any of the syntactic elements of the subclauses, depends on the theory of mind that one presupposes in one's treatment of propositional attitude reports.

The no-syntax-of-the-subclause requirement must be assumed only if we adopt a theory of mind according to which the access to propositional attitudes is privileged to those who have them.[13] On this view, when others report my attitudes, they are trying to predict which objects I am personally related to in my mind. If, *while holding this view*, we postulated syntactic elements of the subclause as constituents of the object of the attitude, then we'd be forced to conclude that no propositional attitude report expressed in, say, Spanish could be true about me. This is because I, as someone who doesn't understand a word of Spanish, would simply not be related to any objects with Spanish syntax in my mind.

However, theories that take mental properties to be privileged in this way, are not the only ones available. I will now give a brief overview of a theory that allows us to give up on the no-syntax-of-the-subclause requirement, namely *interpretivism*. The brand of interpretivism that I suggest here is *the ascription theory* as defended by Bruno Mölder (2010). My reason for choosing this particular brand is that it explicitly remains neutral with respect to the question of alethic values of subclauses, and (as a bonus) the ascription theory and Travis's position seem to be fully compatible. The theory can be summed up as follows:

> There is no deeper reality to having a belief than having it ascribed in accordance with certain conditions. /---/ [M]ental terms are applicable in virtue of us sharing a folk-psychological conception that determines which sort of mental states are required in order for us to make sense of given behaviour in a given environment. (Mölder 2010: 149)

An ascription of an attitude that conforms with these conditions (*a canonical ascription*) is constitutive for the attitude. The conditions that an ascription must meet, in order to be canonical, include coherence with various data sources, which include what other mental states are ascribable to the subject, facts about her behaviour, environment, and personal background. Also, no warranted objections or actual defeaters to the ascription must be present.

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[13] Theories of this kind include dualism, functionalism, and identity theory. For an overview of these theories and arguments against them, see Mölder 2010: ch 2.

Notice that there is no requirement that the ascriber must share a language with the subject. Nor does the ascriber need to be able to put herself „in the shoes" of the subject. „[I]t is not required that the subject of the ascription herself needs to agree with the ascription. There is no absolute first-person authority." (Mölder 2010: 174) This seems to be assumed also by Travis when he claims that „[i]n a belief ascription, we are, as it were, fitting the believer into *our* picture of the world, not fitting ourselves behind his 'window of it'" (Travis 2008a: 197–198).

In the light of this, we can say that under the right conditions, if I ascribe to myself and my cat the belief that someone's at the door, then she and I share a belief, even though we do not share a language. This belief – the object we are both related to – can include syntax insofar as it is the syntax familiar to the ascriber, i.e. me. In Travisian terms, I'm fitting my cat into my picture of the world. If I need language to do it, I will use the language I know. Going back to the propositional attitude reports in Spanish, if a native speaker of Spanish ascribes a propositional attitude to me, and this ascription meets the conditions of canonicality, then I will have that attitude irrespective of my lack of the ability to understand Spanish. Thus we have a theory of mind that allows us to drop the no-syntax-of-subclauses requirement.

What this means is that a variety of alternative theories about propositional attitude reports become available, including, e.g., *sententialism*. Sententialism is the view that objects of attitudes are not the meanings of the relevant subclauses, but the subclauses themselves.[14] The no-syntax-of-subclauses requirement has been the main motivation for rejecting this view. (McKay, Nelson 2010)

The ascription theory also allows for the occasion-sensitivity of which ascriptions count as canonical, and thus which attitudes the subject of the ascription has on a given occasion.

> As any ascription is done in a particular setting, the features of that situation determine what sort of information is relevant and which revisions may be needed. (Mölder 2010: 174)

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[14] One proponent of sententialism has been, for example, Quine (1956).

This makes the ascription theory compatible with Travis's position introduced in the beginning of this section, namely that what the subject counts as believing, suspecting, hoping, etc, depends on the occasion of utterance of the propositional attitude report.

In this section I first provided a direct objection to propositionalism, that I borrowed from Charles Travis. I showed that the truth-condition schemas that the propositionalist proposes for propositional attitude reports run into contradiction when occasion-sensitivity of propositional attitude reports comes into the picture. After this I presented a way out of two of the assumptions that have led philosophers into accepting propositionalism. In the next section I am proposing an outline of an alternative to propositionalism that makes use of the ideas introduced in this one.

5. THE MODEL THEORY OF PROPOSITIONAL ATTITUDES

In this section I will introduce my alternative to the propositionalist truth-condition schemas for propositional attitude reports. I will first explain what the theory is about, and then develop its outline in more detail. This will be done in 5.1 and 5.2. In 5.3 I will give an argument for the support of my theory, and in 5.4 I will look at two possible objections to it.

5.1. Models as objects of propositional attitudes

The propositionalist proposal was that objects of propositional attitudes, or more precisely, the alethic values of subclauses of propositional attitude reports, are propositions – the semantic values of the subclauses. As I showed in the previous section, this proposal has problems and the reasons for adopting this view could be bypassed. What I propose as an alternative, is that objects of propositional attitudes are models. I will refer to this theory as *the model theory of propositional attitudes*.

When I propose that objects of attitudes are models, I am not claiming that we believe models (nor do we suspect or think them), we believe, for example, *that Mr Smith will get the job* or *what we can see* or *everything Mary told John*. These expressions may well be about propositions. We must distinguish between what the subject believes, suspects, hopes, etc, and the object of her attitude – the thing she must be related to in order for a given propositional attitude report to be true about her. The former is what is *expressed* by the subclause, the latter is what the subclause contributes to the truth-value of the report. The idea that propositional attitude reports express relations between individuals and propositions, is not incompatible with the model theory. What the model theory rejects is that the *alethic value* of the subclause is a proposition, and consequently, it rejects the truth-condition schemas that the propositionalist proposes for propositional attitude reports.

Before moving on to specifics, two things should be noticed. First, models are not truth-bearing entities. So, objects of propositional attitudes, according to the model theory,

are not truth-apt. But as I showed in the previous section, there is a simple way to get around this. I will make use of it in what follows. Second, models have syntactic constituents – they interpret atomic expressions of a language. Again, as I showed in the previous section, this is not a problem if one adopts interpretivism. The form of interpretivism I introduced, namely the ascription theory, is the one that I will be assuming also in this section.

5.2. An outline of the model theory of propositional attitudes

I will now explain the formal aspects of the model theory of propositional attitudes. First, I will quickly go over the notion of a model again, and then introduce the notion of a complete model and the submodel relation. I will use these tools to build the set of all models for a language, which I will then use to upgrade the language *L* from section 2 in order to give a formal account of the truth-condition schemas that I propose for propositional attitude reports.

5.2.1. Complete models, submodels, and the model set

A model is a set-theoretic construction that assigns extensions to the atomic expressions of a language. Given alethic compositionality, sentences (insofar as they are complex expressions) have alethic values relative to a model (or: *in* a model). An *L*-model is an ordered pair of the form $\langle D, I \rangle$, where D is a domain – a non-empty set, and I is an interpretation function – a function that assigns an extension to every atomic expression of *L*. These extensions were taken from the domain.

The interpretation function of an model can be thought of as a set of ordered pairs $\langle s, e \rangle$ where s is an atomic expression, and e is an extension. So, models have syntactic constituents, namely the atomic expressions of the language for which the model is defined. We can make this salient by writing out *L*-models not as ordered pairs but as ordered triplets of the following sort: $\langle S, D, I \rangle$, where D and I are as before, and S is a

set of atomic expressions of L for which the function I delivers an output. Notice that we haven't introduced anything new – S has been a hidden component of the model all along.

We can now see all the possible ways two models could differ from one another – they can differ with respect to the number and kind of elements in S, D, and I. What kind of elements I has, depends on what kind of elements S and D have, but is not determined by it – it is still open which extensions are assigned to which elements of S.

Ordinarily, a model is taken to be *complete*. A model is complete if, and only if S has all the atomic expressions of a language as elements. One complete L-model assigns an extension to each atomic expression of L, but there is a variety of complete L-models – models that each assign an extension to every atomic expression of L, but nevertheless differ from one another. Complete L-models that use the same domain, can differ with respect to which elements or sets of elements of the domain the interpretation function assigns to atomic expressions. Even more varieties open up, if different domains are used as well.

For every model, there are one or more *submodels* of that model. The submodel relation is subject to the following constraints: for any two models $M = \langle S, D, I \rangle$ and $M' = \langle S', D', I' \rangle$, M' is a submodel of M iff i) $S' \subseteq S$, ii) $D' \subseteq D$, iii) if Π is a predicate in S', then $I'(\Pi) \subseteq I(\Pi)$, and iv) if α is a name in S', then $I'(\alpha) = I(\alpha)$. Let '$M' \Longrightarrow M$' be short for 'M' is a submodel of M'.

Two things are worth noting about the submodel relation. First, every model is a submodel of itself, and second, if $M' \Longrightarrow M$, then any sentence that is true in M', is also true in M.

Now, since every model is a submodel of itself, the set of all submodels of complete L-models is the set of all L-models. Let $\mathcal{M}$ be that set. There is a set of this kind for every language. I will refer to the set $\mathcal{M}$ of a language as *the model set* of that language. The model set of a language contains all possible models of the language, complete or otherwise.

5.2.2. The language $L_{\mathcal{M}}$

The language $L_{\mathcal{M}}$ can now be defined. It is just like the language L I defined in section 2, except it includes propositional attitude verbs and a logical operator 'τ' that attaches to propositional attitude verbs, forming a new predicate, and reads 'correctly' (or something similar, like 'unmistakenly'). I will not introduce a negation operator, but if I did, the predicate 'correctly believes' in the scope of a *de re* negation would read 'incorrectly believes' (or 'mistakenly believes' or 'falsely believes', or something similar).

Grammar rules of $L_{\mathcal{M}}$

(i) Every sentence of L is a sentence of $L_{\mathcal{M}}$.

(ii) If α is a name, A is a propositional attitude verb, and ϕ is a sentence of $L_{\mathcal{M}}$, then $\ulcorner \alpha A\phi \urcorner$ and $\ulcorner \alpha\tau A\phi \urcorner$ are sentences of $L_{\mathcal{M}}$.

(iii) Nothing else is a sentence of $L_{\mathcal{M}}$.

A model M for $L_{\mathcal{M}}$

$M = \langle \mathcal{M}, D, I \rangle$, where $\mathcal{M}$ is the model set of $L_{\mathcal{M}}$, D is a non-empty set, and I is an interpretation function that is just like the interpretation function of an L-model, except for the following addition:

(iv) if A is a propositional attitude verb, then $I(A) \subseteq D \times \mathcal{M}$.

The valuation function V_M for $L_{\mathcal{M}}$

V_M is a function, relative to an $L_{\mathcal{M}}$-model M, that is just like the L-valuation function, except for the following addition:

(v) if α is a name, A is a propositional attitude verb, and ϕ is a sentence of $L_{\mathcal{M}}$, then

(T[5]) $V_M(\alpha A\phi) = $ true iff $\langle I(\alpha), M' \rangle \in I(A)$, such that $V_{M'}(\phi) = $ true

(T[6]) $V_M(\alpha\tau A\phi) = $ true iff $\langle I(\alpha), M' \rangle \in I(A)$, such that $V_{M'}(\phi) = $ true, and $M' \Longrightarrow M$.

The truth-condition schemas (T[5]) and (T[6]) are what I propose as an alternative to the propositionalist's proposal. (T[5]) is the truth-condition schema for propositional attitude reports, and (T[6]) is for accounting for the evaluation of propositional attitudes. What the τ-operator adds to the truth-conditions of the propositional attitude report is that the model adopted for the subject of ascription is a submodel of the model in which the report is evaluated. I will refer to the former as *the inner model*, and the latter as *the outer model*.

5.3. Belief ascriptions as model adoptions

An argument can be given for the claim that adopting a model for a subject entails ascribing a propositional attitude to her. I will assume that we adopt models with the help of words – we have to say something in order to do it.

It seems that i) saying that α takes the sentence ϕ to be true, is sufficient for ascribing the belief that ϕ to α. For example, if we say (in some circumstance) that Lois takes 'Superman was seen flying over Metropolis' to be true, then we are ascribing the belief to Lois that Superman was seen flying over Metropolis. This ascription may be uncanonical, but it would nevertheless be an ascription.

Truth, however, is always *truth in a model*. So, adopting a model for α in which ϕ is true, is necessary for saying that α takes the sentence ϕ to be true. Furthermore, we may say that it is also sufficient for it. In other words, ii) when we adopt a model for α in which ϕ is true (by producing some sort of words in order to do it), then we are already saying that α takes the sentence ϕ to be true.

Therefore (from (i) and (ii)), adopting a model for α in which ϕ is true, is sufficient for ascribing the belief that ϕ to α. For a parsomonious account of propositional attitudes we may assume that adopting a model is all there is to ascribing a belief, and furthermore, that it is all there is to ascribing *any* propositional attitude.

5.4. Possible problems with objectivity

There are two problems that can be raised for the model theory of propositional attitudes (and also for Travis's position introduced in the previous section), both of which have to do with objectivity. First, what determines the inner model – the model adopted for the subject, and second, what determines the outer model – the model in which the propositional attitude report is evaluated.

The first problem can be rephrased as a problem of speaker-dependence of propositional attitudes. If the object of the propositional attitude is a model which is adopted by the

speaker of the propositional attitude report (the ascriber), then what propositional attitudes someone has become speaker-dependent. It might be said that this is simply too counter-intuitive. As Fodor and Lepore have put it, „if anything is metaphysically independent of anything, surely your repertoir of potential beliefs is independent of anybody else's repertoir of potential speech acts" (Fodor, Lepore 1993: 71).

It's possible, however, that this intuition is really grounded in the fear of relativism, not of speaker-dependence. If so, then there is no reason for worry. The canonicality constraint on ascriptions that was mentioned in the previous section (see 4.2.2 and Mölder 2010: 159–178) eliminates relativism. Mölder writes:

> As interpretivism suggests, the way others come to appreciate one's mental states also plays a role in fixing what states one has. It does not follow, however, that the matter of mental state possession thereby becomes relative to the conceptual resources, intellectual level or interests of the interpreters. Since the possession is fixed by the canonical ascription, the varying standards of different interpreters do not have an effect on possession, if they fail to match up to the level of canonical ascribers. (Mölder 2010: 196)

In principle, we can adopt any model for any subject, but only those models that are adopted under the canonicality conditions will count. If a propositional attitude is reported while the canonicality conditions are not met, then the resulting statement is false. To make this salient, the following constraint must be placed on (T^5) and (T^6): the inner model must be adopted under the conditions of canonicality.

The second problem has specifically to do with the truth-condition schema (T^6). What (T^6) suggests is that the correctness of propositional attitudes of subjects depends on which outer model is used. Given that the outer model is adopted by the speaker, the correctness of propositional attitudes ends up being speaker-dependent. This seems even more counter-intuitive than the first issue – if anything is metaphysically independent of anything, surely the *truth* of your beliefs is independent of anybody elses speech acts.

The solution to the first problem will not solve the second. If we applied the same criteria for what counts as the right outer model (taking the speaker to be the subject), then this would only result in the speaker being right about what she *takes* to be the facts – what she belives, suspects, etc. What we need the speaker to be right about is what the facts *are*.

I do not have a conclusive answer to this problem yet, but I can give an outline of what the answer should consist in. First, as it is with the inner model, the speaker must be able to adopt any model as the outer model, but only some of them may count as the right ones. This will account for the possibility of error. Second, what counts as the right outer model, must be determined to some degree by certain factors of the circumstance in which the propositional attitude report is made, and furthermore, different factors can be relevant in different circumstances – there cannot be a single model for all purposes. This will account for occasion-sensitivity of propositional attitude reports (and any other sentence we utter). Third, given that the world itself does not determine which is the right way of dividing it up into objects, properties, and relations (and therefore cannot settle what is the right model all by itself), something like conversational goals must be relevant.

In this section I introduced my alternative to the propositionalist truth-condition schemas. In short, my proposal was to treat the extension of the propositional attitude verb as a binary relation over a set of individuals and a set of models, not a set of propositions. After explaining the details of how this can be done, I provided an argument for the idea that propositional attitude ascriptions (at least ascriptions of beliefs) are really adoptions of models for subjects. Finally, I looked at two problems that my proposal might be taken to have. In the next section I will compare my alternative to the propositionalist proposal, and point out an interesting implication it has for epistemology.

6. IN COMPARISON WITH PROPOSITIONALISM

The aim of this section is to show that the model theory of propositional attitudes is a viable alternative to propositionalism. I will show that it has tools for accounting for Travis-type thought-experiments and for solving the problem of opaque attitude contexts. After this I will explain why the entailment from the truth of the subclause of a true belief report to the correctness of the belief fails in the framework of the model theory, and what implications this has for the study of knowledge.

Throughout this section I will make reference to the truth-condition schemas and the submodel relation developed in the previous section. For readability, I will write them out here as well.

If α is a name, A is a propositional attitude verb, and ϕ is a sentence of $L_{\mathcal{M}}$, then

(T⁵) $V_M(\alpha A \phi) = $ true iff $\langle I(\alpha), M' \rangle \in I(A)$, such that $V_{M'}(\phi) = $ true

(T⁶) $V_M(\alpha \tau A \phi) = $ true iff $\langle I(\alpha), M' \rangle \in I(A)$, such that $V_{M'}(\phi) = $ true, and $M' \Longrightarrow M$.

For any $M = \langle S, D, I \rangle$ and $M' = \langle S', D', I' \rangle$: $M' \Longrightarrow M$ iff i) $S' \subseteq S$; ii) $D' \subseteq D$; iii) if Π is a predicate in S', then $I'(\Pi) \subseteq I(\Pi)$; iv) if α is a name in S', then $I'(\alpha) = I(\alpha)$.

6.1. Compatibility with Travis's position

The propositionalist and I can both agree that the semantic properties of the subclause of the propositional attitude report pick out a proposition. In the propositionalist truth-condition schema, however, that proposition was then treated as the alethic value of the subclause. This was the reason why it was vulnerable to Travis-type thought-experiments. The model theory does not use the proposition as an alethic value. Instead, it introduces models for this. Therefore, it should be able to handle Travis-type thought experiments. I will now show how it does that.

Take the thought-experiment from the previous section. (I will make the relevant modifications in order to analyse it in the light of the model theory.) On one occasion, the following sentence was true:

(1)   Lois incorrectly believes that Clark Kent is flying.

On another occasion, the following sentence was true:

(2)   Lois correctly believes that Clark Kent is flying.

There was no change in the world with respect to what Clark Kent was doing, the subclause 'Clark Kent is flying' expressed the same proposition on both occasions, and yet, Lois was mistaken on the first occasion, while on the second occasion she was not.

There are two alternative ways to account for this in the framework of the model theory. We either take the outer models on each occasion to be different, or we take them to be the same. In the former case it is us for whom different activities count as flying. What counts as flying for Lois, will be irrelevant. In the latter case it is only Lois for whom different activites count as flying, and we must decide beforehand what counts as flying for us on both occasions. The second option is the more interesting one, so I will only look at that one.

Let's keep the outer model the same for both (1) and (2), and only count flying with the help of a plane as flying. The interpretation function of the outer model will then assign 'is flying' a set that includes the individual Clark Kent as an element, along with other passengers and, presumably, a pilot or two.[15]

Assume that the sentence 'Lois believes that Clark Kent is flying' is true on both occasions. This, together with the truth-condition schema (T^5), entails that there is a model adopted for Lois on both occasion – an inner model for (1) and an inner model for (2). The sentence 'Clark Kent is flying' is true in both models. This in turn means that the interpretation function of both models assigns a set of elements to 'is flying' that includes the individual Clark Kent as an element.

On the first occasion, however, what counts as flying for Lois is the kind of flying that is done without the help of a plane, so in addition to the individual Clark Kent, the extension of 'is flying' includes, say, some birds and planes (we, insofar as we are canonical ascribers, are the judges of that). Given that the extension of 'is flying' in the inner model is not a subset of the extension of 'is flying' in the outer model, the inner

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[15] If intensional models were used, namely models where expressions get assigned functions from possible worlds to extensions, then we wouldn't need to introduce extra elements into the extension of 'is flying'. The reason we need to do it now, is that we need to avoid accidental co-extensionality.

model is not a submodel of the outer model. From this and the truth-condition schema (T^6) (and the law of non-contradiction), it follows that (1) is true.

On the second occasion, what Lois counts as flying is the same as what we ourselves count as flying, so the interpretation function of the inner model we adopt for Lois when uttering (2), assigns 'is flying' the same extension as the interpretation function of the outer model does. The submodel relation is therefore not violated, and, given (T^6), the sentence (2) is true.

I have now shown that (1) and (2) can both be given consistent readings in the framework of the model theory. Therefore, the theory is compatible with Travis's position.

6.2. Solution to the problem of opaque attitude contexts

Let's look at the problem of opaque attitude contexts. The problem was that intuitively, (3) and (4) can be true while (5) is false, but if we accepted that, then it would be a violation of the principle of alethic substitutivity which in turn would be a violation of the principle of alethic compositionality. The latter was needed to explain the linguistic competence of speakers.

    (3)   Lois believes that Superman is flying.

    (4)   Superman = Clark Kent

    (5)   Lois believes that Clark Kent is flying.

As with explaining the Travis-type thought-experiment, there are again two ways of showing that the sentences are compatible. We can let the outer model vary, or we can use one and the same outer model for all three sentences. Again, since the second option is the more challenging one, let's use one and the same outer model. This model will be the one in which (3) and (4) are true, and (5) is false. Given that (3) is true, there is a model adopted for Lois in which 'Superman is flying' is true. Given that (5) is false, there are no models adopted for Lois in which 'Clark Kent is flying' is true. These two results are compatible because the model in which 'Superman is flying' is true, can be such that the name 'Clark Kent' gets no interpretation in it. Remember, models can vary

with respect to the number of elements in the set of all atomic expressions interpreted in them. What the truth of (4) entails is that 'Superman' and 'Clark Kent' have the same extension in the outer model. This is compatible with 'Clark Kent' not getting an interpretation in the model adopted for Lois. So, all three claims are compatible. At the same time, the truth-condition schemas (T^5) and (T^6) guarantee that alethic compositionality is preserved. (The solution for the problem with substituting co-extensional predicates is similar to this.)

We should now see whether or not we can still count Lois as being right, given (T^6). Let's substitute (3) with (6).

> (6)   Lois correctly believes that Superman is flying.

The model we adopted for Lois has the expressions 'is flying' and 'Superman' as members of the set of atomic expressions. The model we have as the outer model has 'Clark Kent', 'believes', and 'Lois' in addition to these two. So, the set of atomic expressions of the inner model is a subset of the set of atomic expressions of the outer model. Also, the domain of the inner model must include only one element, namely the individual Clark Kent. The outer model has it as an element as well. Finally, the extension of 'is flying' in the inner model has no elements that the extension of 'is flying' in the outer model doesn't. Therefore, no constraint on the submodel relation is violated – the model adopted for Lois „fits into" the outer model. Thus, according to (T^6), (6) is true.

I have now shown how the problem of opaque attitude contexts is solved by the model theory of propositional attitudes. This alone should put it on a par with propositionalism, but as I showed above, it doesn't have difficulties with Travis-type thought-experiments either.

6.3. No entailment from the truth of the subclause to the correctness of the belief

Given the constraint on the interpretation function for propositional attitude verbs (see 5.2.2), the way propositional attitudes are individuated in the framework of the model theory differs from how they are individuated in the propositionalist framework. For

each model that is (canonically) adopted, there corresponds one propositional attitude. This means that many different propositional attitude reports can be true because of one ascription. E.g. when 'Lois believes that Superman is flying' is true, then Lois has one belief. This one belief is sufficient for also the sentences 'Lois believes that someone is flying', 'Lois believes that Superman exists', and 'Lois believes that not everyone is not flying' to be true, and more. This is a big difference comparing to how the propositionalist is forced to individuate beliefs, namely she has to postulate a different belief for every subclause of a true propositional attitude report. The reason that the propositionalist has to do this, is that, given her framework, objects of propositional attitudes are individuated in terms of what the subclauses express. The subclauses of 'Lois believes that Superman is flying' and 'Lois believes that not everyone is not flying' express different propositions.

A consequence of individuating propositional attitudes differently is that the entailment from the truth of the suclause of the propositional attitude report to the correctness of the propositional attitude (like belief) fails. Consider the reverse entailment first.

(i)   If α correctly believes that ϕ, then ϕ is true.

Entailment (i) holds in the framework of the model theory. This is because, given (T^6), if the antecedent 'α correctly believes that ϕ' is true, then ϕ is true in the inner model, and the inner model is a submodel of the outer model. Any sentence that is true in the submodel, is true in the supermodel. Therefore, the truth of the consequent of (i), namely ϕ, is guaranteed by the antecedent. Now consider (ii).

(ii)   If ϕ, and α believes that ϕ, then α correctly believes that ϕ.

The truth of the second conjunct 'α believes that ϕ' guarantees that there is a model adopted for α in which ϕ is true. The truth of the first conjunct, namely ϕ, guarantees that ϕ is also true in the outer model. However, there can be two models in which ϕ is true without the models standing in the submodel relation to one another. E.g. 'there is a bottle of water on my desk' could be true in two models, one with an interpretation function that assigns 'water' the kind of liquid you can find in Emajõgi, and another with an interpretation function that assigns it pure H_2O. This makes the interpretation functions incompatible, and therefore, also the two models cannot stand in a submodel relation to one another. So, it could be that there is a bottle of water on my desk, and

that Mary believes that there is a bottle of water on my desk, but Mary can still be wrong.

6.4. Exposing pseudo Gettier cases

An interesting consequence of the failure of entailment (ii), is that some of the Gettier-type counterexamples to some theories of knowledge turn out to be pseudo counterexamples. Suprisingly, the most famous ones that turn out to be pseudo counterexamples are the two provided by Gettier (1963) himself. They are directed against the theory that knowledge is justified true belief (JTB). I will go through both cases.

The first thought experiment that Gettier provides is the following. Suppose that Smith and Jones are applying for the same job, and that Smith is justified in believing the following statement:

> (8)   Jones is the man who will get the job, and Jones has ten coins in his pocket.

From (8), Smith deduces the following statement:

> (9)   The man who will get the job has ten coins in his pocket.

But as it turns out, Smith himself, against all odds, gets the job and discovers that he too has ten coins in his pocket. Gettier then concludes that Smith has a justified true belief that (9), but does not know that (9). (Gettier 1963: 122)

According to the model theory of propositional attitudes, Smith's belief is not true, or more precisely, he does not correctly believe that (9). In the example, Gettier jumps from the truth of the subclause to the correctness of the belief. This inference, as I showed, is invalid. We must check whether or not the model adopted for Smith (the inner model) is a submodel of the model in which the belief report 'Smith believes that the man who will get the job has ten coins in his pocket' is evaluated (the outer model). As it turns out, the interpretation function of the latter assigns the set {Smith} as the

extension of 'will get the job', while the interpretation function of the former assigns it the set {Jones}, thus violating the submodel relation, making Smith's belief incorrect.

In the other case that Gettier presents, Smith is justified in believing that

(10)   Jones owns a Ford.

Smith then deduces, among other statements, that

(11)   either Jones owns a Ford, or Brown is in Barcelona.

It turns out that Jones does not own a Ford, but Brown is in Barcelona. According to Gettier, Smith now has a justified true belief. (Gettier 1963: 122–123)

In the model adopted for Smith, 'Jones owns a Ford' is true, while in the model in which the attitude report 'Smith believes that Jones owns a Ford, or Brown is in Barcelona' is evaluated, the sentence 'Jones owns a Ford' is false. Again, this violates the submodel relation, making Smith's belief incorrect.

There could of course be genuine counter-examples to JTB, but whether or not there are any, is beyond the scope of this paper. In any case, when attempting to provide a counterexample to a theory of knowledge while operating in the framework of the model theory, one cannot make the jump from the truth of sentences to the correctness of beliefs.

In this section I compared the alternative I developed in the previous section with propositionalism – the theory I introduced in section 3 and criticised in section 4. I showed that my alternative can easily account for Travis-type thought-experiments that the propositionalist has difficulties with. Then I explained how it solves the problem of opaque attitude contexts – the problem to which the various schools of propositionalism also have their answers. After that, in order to tip the scales in my favour, I showed how adopting the theory I developed would bring some new perspective into epistemology.

7. CONCLUSION

In this paper I showed why propositionalism might not be the best approach to solving the problem of opaque attitude contexts, and that alternative approaches are not only possible but available. I explained the origin and nature of the problem of opaque attitude contexts in section 2. In short, the problem is the following. In order to explain certain aspects of linguistic competence, we must assume that expressions with the same alethic value should be substitutable in declarative sentences without affecting the truth value of the sentence. However, when an expression is within an attitude context, this substitution seems to fail.

Propositionalism has been the mainstream strategy for solving the problem. According to propositionalism, a propositional attitude report is true just in case the subject of the report stands in a certain relation to the proposition expressed by the subclause of the report. The proposition expressed by the subclause is therefore taken to be not only its semantic value, but also its alethic value. I gave an overview of propositionalism and the two main forms it comes in, in section 3.

In section 4 I introduced a direct objection to propositionalism, that has been developed by Charles Travis. The objection stems from the propositionalist assumption that semantic values can fix alethic values. I also showed how re-phrasing noun forms like 'belief', 'suspicion', 'thought', etc, into verb forms like 'believing', 'suspecting', 'thinking', etc, respectively, can help us avoid accepting the need to consider propositionalism, and how accepting an interpretivist theory of mind opens up new alternatives for solving the problem of opaque attitude contexts.

After that I presented an alternative to the propositionalist proposal, which I referred to as the model theory of propositional attitudes. According to the model theory, a propositional attitude report is true just in case the subject of the report stands in a certain relation to a model in which the subclause is true. Developing the details and accounting for possible objections to this theory was the topic of section 5.

In section 6 I compared the model theory with propositionalism, showing that it solves the problem of opaque attitude contexts without being vulnerable to Travis's objection. I also showed that, after we adopt the model theory, some Gettier-type counterexamples

to theories of knowledge turn out to be pseudo counterexamples. Perhaps this will bring some new perspective to epistemology and the study of knowledge in particular.

RESÜMEE

Seletamaks kõnelejate keelelist kompetentsi, on vaja eeldada, et väitlausete tõeväärtused on determineeritud kompositsionaalselt. Väitlause tõeväärtus saab sõltuda ainult tema osade panusest tõeväärtusele ja viisist, kuidas need osad väitlauseks kombineeritud on. Mida see eeldus endaga kaasa toob, on ennustus, et vahetades ühe lauseosa teisega, mille panus tõeväärtusele on sama, jääb lause tõeväärtus muutumatuks.

Üheks probleemiks sellele on väitlaused, mis raporteerivad hoiakuid, nagu uskumused, kahtlused, arvamused, jne. Toon näite. Tundub, et lausete 'Lois usub, et Superman lendab' ja 'Lois usub, et Clark Kent lendab' tõeväärtused võivad erineda, isegi kui 'Superman on Clark Kent' on tõene.

Paradigmaatiline strateegia selle probleemi lahendamisel on olnud kõrvallause osade *tähenduste* kohtlemine panustena kogulause tõeväärtusele. Nimetan sellist strateegiat propositsionalismiks. Näiteks on propositsionalismi järgi lause 'Lois usub, et Superman lendab, ja tal on õigus' tõene siis, ja ainult siis, kui väljendi 'Lois' panus tõeväärtusele, on sobivas relatsioonis lause 'Superman lendab' tähendusega – propositsiooniga, mida see väljendab –, ning see propositsioon on tõene.

Oletused, mis propositsionalismini on viinud, on, i) et hoiakute objekte tuleb kohelda kui tõeväärtuse kandjaid, ning et ii) neil objektidel ei saa olla süntaktilisi osi, kuna üht keelt kõneleva subjekti hoiakuid on võimalik raporteerida mõnes teises keeles. Eeldus, mida propositsionalist on seejuures sunnitud tegema, on, et fikseerides lause tähenduse, fikseerime ka tõeväärtuse. Viimane on aga problemaatiline. Näiteks võib lause 'lehed minu puul on rohelised' olla tõene olukorras, kus olen just lehed oma puul roheliseks värvinud, aga väär olukorras, kus pakun neid samu lehti botaanikule uurimiseks. Mõlemal juhul ütleb lause aga üht ja sama, nimelt seda, et lehed minu puul on rohelised.

Et avada võimalusi alternatiivseteks strateegiateks hoiakuraportite probleemi lahendamisel, tuleb leida viis, kuidas mööda pääseda oletustest, mis propositsionalismini viivad. Esimesest oletusest saame mööda, koheldes uskumist (ja teisi hoiakuid) omadusena, ning tõeselt ning vääralt uskumist selle omaduse eriliikidena. Teisest oletusest saame mööda, võttes omaks vaimuteooria, mis ei anna

hoiaku subjektile privileegi otsustamaks, milline on objekt, millega ta vastavas relatsioonis on. Selliseks teooriaks on näiteks interpretivism.

Alternatiiviks, mille propositsionalismi asemele välja pakun, on, et hoiakute objektid on mudelid. Mudelid on hulgateoreetilised objektid, mis lause osadele väärtuseid määravad, mis seejärel on panusteks, mida vastavad lauseosad tõeväärtusele annavad. Igasugune tõeväärtus on tõeväärtus mudelis.

Strateegia, mille välja pakun, on analüüsida hoiakuraporteid järgmiselt. 'Lois usub, et Superman lendab, ja tal on õigus' on tõene siis, ja ainult siis, kui väljendi 'Lois' panus tõeväärtusele on sobivas relatsioonis mudeliga, milles 'Superman lendab' on tõene, ning see mudel on alam-mudeliks mudelile, milles hoiakuraport (analüüsitava konjunktsiooni esimene pool) on tõene. Üks mudel on alam-mudeliks teisele parajasti siis, kui hulgad, millest esimene koosneb, on alam-hulkadeks hulkadele, millest teine koosneb.

See alternatiiv suudab hoiakuraportite probleemi lahendada, arvestades samas sellega, et tähendus ei fikseeri tõde. Samatähenduslike lausete jaoks võib kasutada erinevaid mudeleid. Üheks tagajärjeks, mis sellise strateegia omaks võtmisel on, on see, et hoiakud on individueeritud uut moodi. Näiteks võib leiduda olukordi, kus laused 'Lois usub, et Superman lendab' ja 'Lois usub, et leidub keegi, kes lendab' omistavad Loisele vaid ühe uskumuse. Propositsionalist on aga sunnitud ütlema, et see ei ole võimalik – vastavate osalausete tähendused on igal juhul erinevad.

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