Synthese (2012) 189:97–118
DOI 10.1007/s11229-012-0100-4

Structures and circumstances: two ways to fine-grain propositions

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Received: 24 February 2012 / Accepted: 24 March 2012 / Published online: 4 April 2012

Abstract This paper discusses two distinct strategies that have been adopted to provide fine-grained propositions; that is, propositions individuated more finely than sets of possible worlds. One strategy takes propositions to have internal structure, while the other looks beyond possible worlds, and takes propositions to be sets of circumstances, where possible worlds do not exhaust the circumstances. The usual arguments for these positions turn on fineness-of-grain issues: just how finely should propositions be individuated? Here, I compare the two strategies with an eye to the fineness-of-grain question, arguing that when a wide enough range of data is considered, we can see that a circumstance-based approach, properly spelled out, outperforms a structure-based approach in answering the question. (Part of this argument involves spelling out what I take to be a reasonable circumstance-based approach.) An argument to the contrary, due to Soames, is also considered.

Keywords Propositions · Circumstantialism · Impossible worlds

In this paper, I'll be concerned with propositions. Propositions have been invoked to serve many roles: they can be the compositional values of clauses, the objects of our attitudes, the bearers of truth, necessity, and possibility, components of logical arguments, and so on. It's forgivable to wonder whether any one sort of thing can bear all these distinct roles, but that won't be an issue for us here. As I'll use the word, a 'proposition' is simply the compositional value of a (closed)clause.[1]

[1] Actually, I'll ignore such complications as whether these compositional values should include relativity to variable assignments (but see footnote 13), times, judges, agents, etc., as well. If we want this relativity, we can always add it later.

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A number of authors have thought that propositions must be *fine-grained*; that is, that propositions must be individuated more finely than *coarse-grained* propositions—sets of possible worlds. I agree, and will assume as much for the purposes of the paper. In Sect. 1, I'll examine some of the arguments for this conclusion, and present two different strategies for giving a theory of fine-grained propositions—structuralism and circumstantialism. Both of these strategies have been argued for on the grounds that they address the problems faced by coarse-grained propositions. In Sect. 2, however, I'll argue that structuralism, on its own, does not do enough; it solves only certain special cases of the trouble, and must be supplemented in some way to address the full range of problems faced by coarse-grained propositions. I'll consider some of the supplements that structuralists have offered, and argue that where these supplements work, they undermine the fineness-of-grain motivation for structuralism. In Sect. 3, I'll show that circumstantialism can satisfy the fineness-of-grain motivation in its full generality. Most of this section responds to an argument due to Soames, which purports to show that circumstantialism too must fall short. In the end, then, I conclude that circumstantialism is better-positioned than structuralism to address concerns about fineness of grain; unlike structuralism, it can address the full range of fineness-of-grain considerations without supplementation. This does not, on its own, mean that we should reject structuralism in favor of circumstantialism; I intend only to undermine one familiar argument for structuralism, not structuralism itself.

I talk of compositional values rather than semantic values, mainly to avoid what I take to be an irrelevant debate. When we understand a sentence, part of what we do is to put our understandings of its components together somehow to reach an understanding of the whole. That process of composition can be studied separately from questions about whether the understandings of the components are given as part of our linguistic competence, or figured out on the fly from our best guesses at speaker's intent, or some combination of the two, or some entirely different process. Here I'm concerned with the process of composition, rather than the sources of its input. I'll take each constituent of a sentence to be associated with some compositional value—I'll say the constituent *denotes* its value—and use the compositional values of parts to derive the compositional values of wholes; I'll mostly avoid debate about what the association consists in. Except for this slight change in terminology (and so in underlying presuppositions), this is the same procedure described in Montague (2002), Gamut (1991), and von Fintel and Heim (2007).

Two key pieces of notational stuff: I use **boldface type** for quotation (cuts down on quotes everywhere), and ⟦double brackets⟧ to talk about denotations of linguistic items. So, if we think names denote their bearers, then ⟦**Mary**⟧ = Mary. Here we go!

1 Fine-grained propositions

1.1 Problems with possible worlds

The intensional semantics in von Fintel and Heim (2007) uses sets of possible worlds[2] as the compositional values of sentences and clauses. In particular, they take a clause

[2] Or, equivalently, the characteristic functions of such sets. I follow von Fintel and Heim (2007) in being harmlessly sloppy about the distinction.

to denote the set of possible worlds in which it holds. Call this the *simple possible-worlds theory*. For many applications, this works just fine—as von Fintel and Heim (2007) show, this picture of propositions allows, for the most part, for a quite natural semantics of modal verbs, conditionals, propositional attitudes, and other intensional constructions—but as has long been realized, it results in some trouble around the edges.

On the simple possible-worlds theory, any clauses true in all the same possible worlds will denote the same proposition. Suppose we have two such clauses, A and B. Then the sentences **Jacek believes that** A and **Jacek believes that** B must themselves denote the same proposition, since they are built up in the same way from parts with the same denotations; so it would be impossible for one of them to be true while the other is untrue. This is a bad consequence.

Consider the sentences (1) and (2):

(1) $2 + 2 = 4$

(2) $\mathrm{e}^{i\pi} = -1$

These sentences are true in the same possible worlds, viz all of them. And so, by the above argument, (3) and (4) must themselves denote the same proposition, and so must either be true together or untrue together:

(3) Jacek believes that $2 + 2 = 4$.

(4) Jacek believes that $\mathrm{e}^{i\pi} = -1$.

But suppose that Jacek, like many people, knows that $2 + 2 = 4$, but simply has no beliefs at all about $e^{i\pi}$. Then one of these sentences is true and the other untrue. The simple possible-worlds theory cannot provide the correct predictions here.

The problem is not restricted to propositional attitudes; it arises wherever clauses can be embedded. For example, if we consider two impossible clauses, like (5) and (6), again the simple possible-worlds theory assigns them the same compositional value—this time, the empty set of possible worlds.

(5) Amy squared the circle.

(6) Sarkozy squared the circle.

Now the same argument will force us to conclude that (7) and (8) must be either true together or false together:

(7) If Amy squared the circle, Amy would become famous.

(8) If Sarkozy squared the circle, Amy would become famous.

Again, this conclusion is wrong: (7) is true (at least given a certain generosity in standards for fame), and (8) false. And again, we can place the blame on the simple possible-worlds theory. The simple possible-worlds theory simply does not draw all the distinctions we need a compositional theory to draw; it is too coarse-grained.

1.2 Structuralism and circumstantialism

In this section, I present two possible solutions to these puzzles: structuralism and circumstantialism. Both hold that propositions must be something other than sets of possible worlds, something more fine-grained.

1.2.1 Structuralism

A structuralist approach, as the name suggests, takes propositions to have *structure*, derived in some way from the clauses that denote them.[3] Keeping track of this structure allows us to draw finer distinctions than the simple possible-worlds theory can handle. Structuralism is a common core to the distinct theories offered in Carnap (1956), Lewis (1970), Cresswell (1985), Soames (1987), Salmon (1986), King (2007), and Chalmers (2011), among others.

For the structuralist, any two sentences with relevantly different syntax must denote different propositions, since the propositions denoted will inherit their structure from the sentences that denote them, and differently-structured propositions must be different propositions.[4] But although different syntactic structure is sufficient for sentences' denoting different propositions, it is not necessary. To see this, consider the following two sentences:

(9) a. Sam saw Pam.
 b. Mark ate George.

These two sentences (suppose) share the same syntactic structure, but the structuralist will still hold that they denote different propositions, since that one syntactic structure is filled in differently. The structuralist thus appeals to both structure and content to distinguish propositions.

Since structuralists don't want propositions simply to *be* the sentences that denote them, the propositions they invoke won't be structured arrangements of *words*—rather, they will be structured arrangements of *what the words denote*. For Carnap (1956); Lewis (1970), and Cresswell (1985), what words denote is their possible-worlds intensions; thus these authors combine a structuralist approach to propositions with a possible-worlds theory of lexical denotation. Other authors take different approaches: Salmon (1986); Soames (1987), and King (2007) all defend a broadly Russellian approach, on which names denote their bearers and predicates denote properties; Chalmers (2011) defends a broadly Fregean approach, on which lexical items denote a combination of their possible-worlds intensions and their cognitive values. Which distinctions a structuralist theory can draw depends both on which syntactic differences the theory takes to matter, and on which differences in lexical denotation the theory takes to matter.

[3] Although (nonempty) sets of possible worlds are not *simple*—they have members—they are typically not taken to have *structure* in the way that structured propositions do.

[4] Just which differences in syntax are relevant for the proposition denoted will differ from theorist to theorist.

For the structuralist, (1) and (2) will denote structures like (10) and (11):

(10) $\langle\langle[\![\mathbf{2}]\!], [\![+]\!], [\![\mathbf{2}]\!]\rangle, [\![=]\!], [\![\mathbf{4}]\!]\rangle$

(11) $\langle\langle[\![\mathbf{e}]\!], [\![^\wedge]\!], \langle[\![\mathbf{i}]\!], [\![\times]\!], [\![\pi]\!]\rangle\rangle, [\![=]\!], [\![-\mathbf{1}]\!]\rangle$

So long as either $\langle[\![\mathbf{2}]\!], [\![+]\!], [\![\mathbf{2}]\!]\rangle \neq \langle[\![\mathbf{e}]\!], [\![^\wedge]\!], \langle[\![\mathbf{i}]\!], [\![\times]\!], [\![\pi]\!]\rangle\rangle$ or $[\![\mathbf{4}]\!] \neq [\![-\mathbf{1}]\!]$, these structures are distinct; but it is clear that both inequalities will hold on any of the above stories about lexical denotation. So the structures are distinct; structuralism can draw this distinction, where the simple possible-worlds theory failed. Similarly, (5) and (6) will turn out to denote structures like:

(12) $\langle[\![\textbf{Amy}]\!], \langle[\![\textbf{squared}]\!], \langle[\![\textbf{the}]\!], [\![\textbf{circle}]\!]\rangle\rangle\rangle$

(13) $\langle[\![\textbf{Sarkozy}]\!], \langle[\![\textbf{squared}]\!], \langle[\![\textbf{the}]\!], [\![\textbf{circle}]\!]\rangle\rangle\rangle$

So long as $[\![\textbf{Amy}]\!] \neq [\![\textbf{Sarkozy}]\!]$, these will be distinct structures; again, the structuralist is able to draw the necessary distinction.

1.2.2 Circumstantialism

Circumstantialist propositions, on the other hand, are quite like sets of possible worlds; they are sets of circumstances. We merely relax the assumption that all circumstances are possible worlds. Some circumstances are not. For example, a circumstance at which water is not H_2O is, following Kripke (1980), typically thought to be (metaphysically) impossible. Nonetheless, a circumstantialist semantics will have use for circumstances at which water is not H_2O—the proposition denoted by **Water is not $\mathbf{H_2O}$** will simply be the set of all such circumstances.[5]

Possible worlds are circumstances, and the circumstantialist certainly acknowledges them; thus, any propositions that a possible-worlds approach distinguishes will also be distinguished by the circumstantialist. However, there are sets A and B such that A and B contain all the same possible worlds, but $A \neq B$, since A and B contain different other circumstances. Thus, the circumstantialist can distinguish propositions that a possible-worlds approach must identify. This is how the circumstantialist handles the problems faced by the possible-worlds approach.

Different circumstantialists invoke different sets of circumstances. Some, notably Goddard and Routley (1973) and Priest (2005), hold (more or less) that for every set of sentences, there is a circumstance at which all and only the sentences in that set are true. These views, then, will allow propositions-as-sets-of-circumstances to cut very finely; in particular, every sentence will denote a distinct proposition. This fits with a position according to which circumstances are used to individuate intentional states, and according to which for every distinct clauses A and B there is an intentional state that can be borne towards $[\![A]\!]$ but not $[\![B]\!]$. Other circumstantialists, notably Barwise

5 Note that the circumstantialist does *not* (at least not qua circumstantialist) claim that such circumstances are possible. While someone might take issue with the (relatively orthodox) position that water is necessarily H_2O, the circumstantialist need do no such thing. (I use the water/H_2O example merely for illustration; the important part is that insofar as we can believe, doubt, wonder about, assert, question, &c. impossible propositions, the circumstantialist will invoke impossible circumstances.)

and Perry (1999), are not so liberal with their circumstances, but still allow for circumstances beyond just possible worlds. Which distinctions a circumstantialist can draw depends on which circumstances their theory involves.

Given the appropriate circumstances, the circumstantialist can also address the fineness-of-grain concerns we've seen so far. I'll write $c \vDash A$ to mean that the clause A holds at the circumstance c. Then, for any clause A, the circumstantialist holds that $[\![A]\!] = \{c : c \vDash A\}$. Thus, (1) denotes $\{c : c \vDash \mathbf{2+2=4}\}$, and (2) denotes $\{c : c \vDash \mathbf{e}^{i\pi} = \mathbf{-1}\}$. While these sets include the same possible worlds (all of them, in both cases), they are still distinct sets, so long as there is at least one circumstance c such that either $c \vDash \mathbf{2+2=4}$ and $c \nvDash \mathbf{e}^{i\pi} = \mathbf{-1}$, or $c \nvDash \mathbf{2+2=4}$ and $c \vDash \mathbf{e}^{i\pi} = \mathbf{-1}$. In fact, there will be circumstances of both types, according to most circumstantialists. They don't even need to be impossible; they might simply be incomplete, failing to render a verdict on one mathematical truth or the other. (Of course, possible worlds cannot be incomplete in this way.)

Too, the circumstantialist can draw the second necessary distinction. (5) denotes $\{c : c \vDash$ **Amy squared the circle**$\}$, and (6) denotes $\{c : c \vDash$ **Sarkozy squared the circle**$\}$. While these sets include the same possible worlds (none of them, in both cases), they are still distinct sets, so long as there is at least one circumstance c such that either $c \vDash$ **Amy squared the circle** and $c \nvDash$ **Sarkozy squared the circle**, or vice versa. Again, most circumstantialists will allow for circumstances of both types. Note that these circumstances must be impossible, in that they are circumstances at which something impossible (squaring the circle) happens. It is not enough to allow only for incomplete circumstances.

1.3 Fineness of grain as an argument

Both structuralism and circumstantialism, then, work to address the problems with (3) and (4), and (7) and (8), faced by the simple possible-worlds theory. This is not a coincidence; while there are other motivations for structuralism and circumstantialism, addressing this fineness-of-grain issue is the predominant reason cited by many advocates of both strategies for choosing the strategy they choose.

For example, Lewis (1970), motivating structuralism:

> [I]ntensions for sentences cannot be identified with meanings since differences in meaning—for instance, between tautologies—may not carry with them any difference in intension. The same goes for other categories, basic or derived. Differences in intension, we may say, give us coarse differences in meaning. For fine differences in meaning we must look to the analysis of a compound into constituents and to the intensions of the several constituents [p. 31].

As the existence of circumstantialism shows, this 'must' is at best enthymematic. Or Richard (1990):

> [Unstructured] views seem invariably to fall prey to one or another version of the same objection: They require the attitudes to have a particular sort of closure under logical consequence, which they clearly don't have [p. 10].

This, of course, is the very problem pointed to above, a problem that circumstantialism does not share with the simple possible-worlds theory. So unstructured views do not invariably fall prey to this objection. But circumstantialists have not been more ecumenical. Priest (2005) offers:

> What to do about this? A natural answer is as follows.... [T]here must be worlds that realize how things are conceived to be for the contents of arbitrary intentional states [p. 21].

Given the existence of structuralism, this 'must' too is at best enthymematic.

A slightly disguised appeal to fineness-of-grain considerations occurs when an appeal is made to 'aboutness'; the problems with the simple possible-worlds theory can equally be seen as stemming from its failure to keep track of what a clause is about. Again, both structuralists and circumstantialists have seen motivation for their views in considerations of aboutness. Here is King (2007):

> I mentioned ...that I think that propositions do have constituents. This is mainly because I find the idea of "simple fine grained propositions", fine grained propositions without constituents or parts, mysterious. What would make such a simple proposition be about, say, Paris as opposed to Santa Monica? In virtue of what would it have the truth conditions it in fact enjoys? I cannot see that these questions have answers if propositions are held to be simple and fine grained [p. 6].

Of course circumstantialist propositions are not *simple*, any more than simple possible-worlds propositions are. But King does not consider circumstantialism, any more than Barwise and Perry consider structuralism when they use the following consideration to argue for their circumstantialism: "The intuitive response to ...these cases is that the inferences obviously fail because the subject matter has changed completely" (Barwise and Perry 1999, p. 23).

Both structuralists and circumstantialists, then, have been motivated by these fineness-of-grain considerations. Often, they do not have much time for each other's views, despite the similarity in motivations.[6] It's tempting to think that, since both sorts of view can address the problems we've seen with the simple possible-worlds view, both views are equally well-motivated by fineness-of-grain concerns. If that were the case, then any decision between structuralism and circumstantialism would have to be made on other grounds. In Sects. 2 and 3, however, I will argue that this appearance is misleading. In fact, circumstantialism is much better-positioned than structuralism to address these concerns.

2 Structure does not suffice

This section will argue that, despite its success with examples like (1) and (2), and (5) and (6), structuralism fails to address the fineness-of-grain problem in its full gener-

[6] A notable exception is Soames, who, in Soames (1985, 1987, 2008), has argued that fineness-of-grain considerations support structuralism over circumstantialism. I'll address his argument in Sect. 3.

ality. It succeeds with the earlier examples because they are special cases. (1) and (2) happen to involve structural differences, which structuralism can put to use to draw the necessary distinctions; and (5) and (6) depend on easy differences in lexical denotations. In Sect. 2.1, we'll look at how the same problems can arise without structural differences or easy differences in lexical denotations. When this happens, structuralism on its own has nothing to offer. As a result, structuralists have offered separate theories to deal with these cases, which I'll go on to consider in Sect. 2.2.

2.1 Woodchucks and whistle-pigs, Vesper and Lucifer

The examples in this section, like the examples in Sect. 1.1, will not be news. Nonetheless, it helps to think them through one more time, in order to see just how powerless structuralism per se is to grapple with them. Consider the following:

(14) All woodchucks are woodchucks.

(15) All woodchucks are whistle-pigs.

(14) and (15), like (1) and (2), are both necessary truths, and so true in all possible worlds.[7] And so, as before, the simple possible-worlds theory must predict that (16) and (17) are either true together or false together.

(16) Tama fears that all woodchucks are woodchucks.

(17) Tama fears that all woodchucks are whistle-pigs.

Again, this is the wrong prediction. Suppose Tama is familiar with both woodchucks and whistle-pigs, but isn't sure that they are the same kind of critter. He's noticed the similarities, though, and so he has his suspicions. Suppose further that Tama knows he is allergic to whistle-pigs, and knows that he has just been bitten by a woodchuck. In this scenario, (17) is likely true, while (16) is almost certainly false. Again, it seems, the simple possible-worlds theory must go.

But this time, note that taking propositions to be structured will, on its own, do nothing to alleviate the problem. The structured propositions denoted by (14) and (15) will be something like:

(18) $\langle\langle [\![\textbf{all}]\!], [\![\textbf{woodchucks}]\!]\rangle, \langle [\![\textbf{are}]\!], [\![\textbf{woodchucks}]\!]\rangle\rangle$

(19) $\langle\langle [\![\textbf{all}]\!], [\![\textbf{woodchucks}]\!]\rangle, \langle [\![\textbf{are}]\!], [\![\textbf{whistle-pigs}]\!]\rangle\rangle$

These structures are distinct iff $[\![\textbf{woodchucks}]\!]$ is distinct from $[\![\textbf{whistle-pigs}]\!]$. Here, structure is no help at all; **woodchucks** and **whistle-pigs** have the same structure and the same possible-worlds intension, and pick out the same property. It is not the case, as it was with (5) and (6), that any sensible theory of lexical denotation will yield the necessary dinstinction. In fact, most theories of lexical denotation will fail to yield the necessary distinction. Of course this is not to say that *structuralists* can provide no satisfactory account of (14) and (15); it's to point out that their *structuralism* is no help in doing so. Their accounts, which I'll turn to below, must come from somewhere else.

[7] If you disagree, please substitute your favorite necessary truths of the same sort; cavils about the modal properties of woodchuckhood will not detain us here.

This example is just a variant on Frege's puzzle. It should be no surprise, then, that Frege's puzzle produces the same phenomenon: (20) and (21) are true in all the same possible worlds, but, given the appropriate choice of ancients, (22) is true and (23) false:

(20) Vesper is Vesper.

(21) Vesper is Lucifer.

(22) The ancients believed that Vesper is Vesper.

(23) The ancients believed that Vesper is Lucifer.

Again, taking account of structure is no help; the structured propositions in question are something like:

(24) $\langle [\![\textbf{Vesper}]\!], \langle [\![\textbf{is}]\!], [\![\textbf{Vesper}]\!] \rangle \rangle$

(25) $\langle [\![\textbf{Vesper}]\!], \langle [\![\textbf{is}]\!], [\![\textbf{Lucifer}]\!] \rangle \rangle$

These structures are distinct iff $[\![\textbf{Vesper}]\!] \neq [\![\textbf{Lucifer}]\!]$, but **Vesper** and **Lucifer** have the same structure, the same referent, and the same possible-worlds intension. The structuralist may have a solution to this problem (most do; solutions tend to fall into one of three camps), but it will not be a solution that relies on *structuralism*, since structure is not involved in these instances of the problem.

2.2 Structuralists' non-structuralist solutions

In Sect. 2.1, I've claimed that structuralism on its own does not help us see how (14) and (15), or (20) and (21), can denote distinct propositions, although we have evidence that they must. I know of no structuralist who claims that structure *can* help draw these distinctions. Rather, structuralists' approaches to these puzzles take one of three strategies: either propositions are distinguished based on something else, or something other than the propositions is invoked to draw the necessary distinctions, or it is argued that the undrawn distinctions shouldn't be drawn at all. In different ways, each of these responses undermines the attempt to use fineness-of-grain considerations to motivate structuralism. To show this, I'll consider representatives of each sort of response: the first sort in Sect. 2.2.1, the second in Sect. 2.2.2, and the third in Sect. 2.2.3.

2.2.1 Extra fineness in the proposition

Chalmers (2011) adopts a theory of propositions that draws very fine distinctions: he takes propositions (what he calls 'enriched propositions') to be pairs of structures. The structures themselves take into account what he calls *primary* and *secondary intensions*; the first member of each proposition is a structured complex of primary intensions, and the second member is a structured complex of secondary intensions. Secondary intensions are intensions of the familiar possible-world sort. Primary intensions, though, are a different sort of critter, invoked to capture various phenomena to do with cognitive significance.

The primary intension of a clause, for Chalmers, is a set of points, but these points are not to be understood as possible worlds; rather they are to be understood as *epistemically possible scenarios*. Scenarios are quite like worlds. In fact, as Chalmers points out, they can be understood as so-called 'centered worlds', but with a twist. The twist is this: the primary intension of **Lucifer**, say, will be a function from scenarios to things. But if a scenario x is a centered world, the value at x of the primary intension of **Lucifer** need not be the thing that is Lucifer at x; instead, it might be 'a bright object visible at a certain point in the [morning] sky in the environment of the individual at the center' of x, even if that object is not Lucifer. So although scenarios might be—officially—ordinary centered possible worlds, when it comes to their function in the theory, they are not like possible worlds at all. After all, on this theory, **Lucifer** can be a rigid designator, but still pick out different objects at different scenarios.

It should be clear that this framework can be used to draw the requisite distinctions pointed to in Sect. 2.1. For example, although **Vesper** and **Lucifer** pick out the same planet, and so share a secondary extension, they (can) have different cognitive significance from each other, and so have distinct primary intensions. Thus, ⟦(20)⟧ and ⟦(21)⟧ will differ, as required. Similarly, if **woodchuck** and **whistle-pig** have different cognitive significance, and so different primary intensions, then ⟦**woodchuck**⟧ and ⟦**whistle-pig**⟧ will differ, and so the framework can allow ⟦(14)⟧ and ⟦(15)⟧ to differ.

Chalmers's framework, then, is able to provide the observed differences between (16) and (17), (22) and (23). It provides these differences by considering circumstances beyond ordinary possible worlds; it is a circumstantialist solution. (That these circumstances can be understood as *really* being (centered) possible worlds is irrelevant; they're only able to do the work they do because necessary truths can fail at them, and impossibilities can hold.) As such, it is more than adequate to address the initial trouble created by (1) and (2), and (5) and (6). No appeal to structure is necessary. The structures in Chalmers's view need play no role in addressing the fineness-of-grain issue. As such, any defense of Chalmers's structuralism could not be based on fineness-of-grain considerations.[8]

2.2.2 Extra fineness from elsewhere

Crimmins (1992), on the other hand, adopts a theory of propositions according to which (20) and (21) denote the same proposition. The extra fineness comes in only when those clauses are embedded in sentences like (22) and (23). Crimmins argues that more is involved in sentences like (22) and (23) than meets the eye. According to Crimmins, these sentences make explicit reference to the ancients (with **the ancients**) and to the proposition in question (with their embedded clauses), and tacit reference to certain of the ancients' psychological particulars. These psychological particulars tell us *how* the ancients are being said to believe the proposition in question. They do believe the proposition as considered using their Vesper-notion in both argument places; they do not believe it as considered using their Vesper-notion in the first argument place and their Lucifer-notion in the second.

[8] Since writing this paper, I've come across (Yagisawa, 2010, chap. 8), which also argues that two-dimensionalism amounts to acceptance of impossible worlds.

While either sentence could be either true or false, depending on how this tacit reference turns out, the fact of a speaker's having chosen to utter (22) rather than (23) (or vice versa) can play a vital role in affecting just how this tacit reference *does* turn out, and in an ordinary context (22) will make tacit reference to the ancients' Vesper-notion in both places, and so will indeed be true; (23) will be false for the same reason, mutatis mutandis.

Here is not the place to evaluate this as a solution to the puzzle posed by (22) and (23), or by (16) and (17). Let's assume it works for these cases. There is no reason it should not work equally well for (3) and (4). We could say that, while (1) and (2) denote the same proposition, their presence in the attitude reports makes it that (3) makes tacit reference to Jacek's two-notion, plus-notion, four-notion, &c, while (4) makes tacit reference to Jacek's e-notion, i-notion, π-notion, &c. Since Jacek believes the necessary proposition as considered in the first way, but not as considered in the second, in a normal context (3) will be true and (4) will be false. If Crimmins's strategy works, then, it undermines half of the fineness-of-grain argument for structuralism; coarse-grained propositions should suffice for attitude reports.

However, Crimmins's strategy cannot be used to address (7) and (8); his theory applies only to propositional attitudes, but these examples show we need fine-grained propositions in conditional sentences as well. This might, at first, seem to leave room for a fineness-of-grain motivation for structuralism. After all, if only propositional attitudes are sensitive to the differences between coreferential terms, perhaps a bifurcated strategy is right: we could appeal to psychological particulars to draw the necessary distinction in attitude reports, appeal to structure to draw the necessary distinctions in other clause-embedding environments, like conditionals, and all would be well. Unfortunately for such a strategy, it's not the case that only propositional attitudes are sensitive to the differences between coreferential terms. Consider (26) and (27), which Crimmins would say denote the same proposition:

(26) Vesper wasn't Vesper

(27) Vesper wasn't Lucifer

The difference between these clauses can make a difference to the truth-value of sentences they're embedded in:

(28) If Vesper wasn't Vesper, the ancients' astronomy would've been right.

(29) If Vesper wasn't Lucifer, the ancients' astronomy would've been right.

(29) is true, but (28) is false; if Vesper wasn't Vesper, the ancients' astronomy would've been badly wrong (as would ours). Structuralism on its own, of course, provides no way to distinguish between (28) and (29), but Crimmins's theory, a theory only of propositional attitudes, gives no help here. So the bifurcated strategy outlined in the last paragraph doesn't work; it, too, fails to provide the fineness of grain necessary from a theory of propositions.[9]

[9] The account of attitude ascriptions in Richard (1990) is relevantly similar, and should be seen in the same light.

2.2.3 Biting the bullet

A different sort of structuralist approach is taken by Salmon (1986) and Soames (1987). These authors argue that (16) and (17), and (22) and (23), must either be true together or false together. That is, they take initial intuitions to be mistaken.

This sort of approach, as they deploy it, depends crucially on the distinction between semantics and pragmatics, a distinction that has so far played no role here. (Recall the choice to speak of *compositional values*: the point was to avoid having to decide which contributions are semantic, and which pragmatic.) In particular, Salmon and Soames argue that (22) and (23) have the same *semantics*, but differ in their *pragmatics*.

On its own, though, this is not enough to decide whether (20) and (21) have the same compositional value. While they do not seem to consider the possibility that compositional processes can take account of more than just semantics, they do not explicitly rule it out, either. In fact, there is good reason, outlined in Wilson and Sperber (2002) and Recanati (2004), to suppose that compositional processes sometimes *do* act on pragmatically determined content. With this in mind, let's suppose that Salmon and Soames are right, and that the only differences between (22) and (23) are pragmatic. Are these differences the kind of pragmatic differences that are involved in composition, or not? That is, do (22) and (23) have the same compositional value or not?[10] If they do, then this difference in compositional value should be taken account of by our propositions; propositions must be sensitive to the difference between **Vesper** and **Lucifer** (again, this would not establish any *semantic* conclusion; Salmon and Soames might have the *semantics* just right). If they do not, then perhaps Salmon's and Soames's theory about the semantic values of **Vesper** and **Lucifer** can serve as well as a theory of their compositional values.

To explore this question, we should look at further embeddings. (This test is recommended in Wilson and Sperber (2002), and is clearly diagnostic for the feature we're interested in.) If we see that the pragmatic differences between (22) and (23) can be acted on by these embeddings, then it must be making a difference to compositional value. Consider (30) and (31):

(30) If the ancients believed that Vesper was Vesper, then they believed that the morning star was the evening star.

(31) If the ancients believed that Vesper was Lucifer, then they believed that the morning star was the evening star.

(The relevant readings involve de dicto/narrow scope occurrences of **the morning star** and **the evening star**.) It is tempting to call the first of these false and the second true—as tempting as it is to call (22) true and (23) false. Suppose, with Salmon and Soames, that this temptation is due to a pragmatic difference between the instances of (22) and (23) contained in (30) and (31), respectively. Then the explanation must work like this: this difference leads us to interpret the antecedents of these conditionals as

[10] In relevance-theoretic terminology (for which see Wilson and Sperber 2002), this is approximately the question whether the pragmatic differences matter to *explicature*, or only *implicature*, and in the terminology of Recanati (2004), it's a question of whether the pragmatic differences are *primary* or *secondary*; but the question makes sense even outside these frameworks.

specifying *different* conditions. In one of these conditions, the consequent would not (necessarily) hold, while in the other it would; this is why we're tempted to call (30) false and (31) true. The details can be filled in in various ways; for our purposes, it's sufficient to note that the evaluation of the conditional depended on taking the antecedents to specify different conditions; they must, therefore, be contributing distinct compositional values to our understanding of the conditionals as a whole. As a result, something like the strategy of Sect. 2.2.1 is called for in a theory of compositional values, even on Salmon's and Soames's views.

3 Circumstances do suffice

So structuralism must be supplemented with additional non-structural fineness in order to address the fineness-of-grain problem in its full generality. This only supports circumstantialism as an approach to the fineness-of-grain problem if circumstantialism needs no such supplementation. However, an influential argument due to Soames purports to show that circumstantialism, on its own, cannot solve the fineness-of-grain problem in its full generality either. This section will first show how the circumstantialist can address the full range of phenomena considered so far, and then turn to Soames's argument, showing that it fails as an argument against the circumstantialist.

3.1 A circumstantialist approach

Here, I'll show that a circumstantialist theory of propositions can address the full range of phenomena so far considered. The circumstantialist theory to be offered here is a variant on the theory of Priest (2005). The theory in Priest (2005) is almost adequate to the full range of phenomena, but allows for substitution of identicals in conditionals, and so cannot distinguish (28) from (29). However, the theory presented here, which is a much-simplified version of Priest's theory, handles these cases as well. Notation and vocabulary are also changed slightly, to fit the present discussion.[11]

First, a regimentation of the language. We'll have a stock of names a, b, c, …; a stock of n-ary predicates P^n, Q^n, R^n, …(n to be dropped when clear from context, which is always) for each n; a stock of n-ary function symbols f^n, g^n, h^n, …for each n; a stock of variables x, y, z, …; quantifiers $\forall$ and $\exists$; a negation $\neg$; conjunction and disjunction $\wedge$ and $\vee$; a conditional $\rightarrow$; an identity $\approx$ (the reason for the squiggly symbol will be discussed presently); and a belief operator β, which forms a formula from a name and a formula.[12]

We also use Priest's definition of a *matrix*: "Call a formula a matrix, if all its free terms are variables, no free variable has multiple occurrences and—for the sake of definiteness—the free variables that occur in it are the least variables greater than all

[11] Note that this theory ignores tense, plurality, indexicality, and a number of other features that would need to be accommodated by a fuller picture; the point here is only to show how the examples so far discussed can be addressed.

[12] There is no trouble expanding the language to treat an arbitrary number of operators like β, for knowledge, doubt, desire, &c.

the variables bound in the formula, in some canonical ordering, in ascending order from left to right." Thus, assuming the natural order on variables, Px and $\exists y \neg Q(fz, hy)$ are matrices, but $\forall x P(x, fz, a)$ is not. Note that every formula can be gotten from a unique matrix by substituting terms (including possibly variables) for the matrix's free variables; let $\overline{A}$ be the unique matrix that A can be gotten from. We use matrices for the evaluation of quantifiers, which are, as usual, noncompositional.[13]

Now, a model theory.

Definition 1 A *model* M is a tuple $\langle P, C, @, D, [\![\ ]\!]\rangle$, where:

- P is a set of possible worlds;
- $C \supseteq P$ is the set of all circumstances;
- $@ \in P$ is the actual world;
- D is a set of objects;
- $[\![\ ]\!]$ is a denotation function for $\langle P, C, @, D\rangle$.

Denotation functions have a lot of work to do:

Definition 2 A function $[\![\ ]\!]$ is a denotation function for a tuple $\langle P, C, @, D\rangle$ iff it meets the base conditions, the recursive conditions, and the possibility conditions:

- Base conditions:
  - For a name a: $[\![a]\!] \in D$;
  - For an n-ary predicate P^n (including $\approx$), $[\![P^n]\!] \in (D^n)^C$;
  - For a matrix $\overline{A}$ with n free variables: $[\![\overline{A}]\!] \in (D^n)^C$;[14]
  - For a function symbol f^n: $[\![f^n]\!] \in D^{D^n}$;
  - For a variable x: $[\![x]\!] \in D$;
  - For an n-ary connective $\oplus$ (in $\{\wedge, \vee, \rightarrow, \neg\}$): $[\![\oplus]\!] \in (\wp C)^{(\wp C)^n}$;
  - For the belief operator β, $[\![\beta]\!] \in (\wp C)^{D \times (\wp C)}$;

- Recursive conditions:
  - For an atomic (or $\approx$) sentence $A = P(t_1, t_2, \ldots, t_n)$: $[\![A]\!] = \{c \in C : \langle [\![t_1]\!], [\![t_2]\!], \ldots, [\![t_n]\!]\rangle \in [\![P]\!](c)\}$;
  - For a belief sentence $A = t\beta B$, $[\![A]\!] = [\![\beta]\!]([\![t]\!], [\![B]\!])$;
  - For a quantified sentence $A = \overline{A}(t_1, t_2, \ldots, t_n)$: $[\![A]\!] = \{c \in C : \langle [\![t_1]\!], [\![t_2]\!], \ldots, [\![t_n]\!]\rangle \in [\![\overline{A}]\!](c)\}$;
  - For a negation $\neg A$: $[\![\neg A]\!] = [\![\neg]\!]([\![A]\!])$;
  - For a conjunction, disjunction, or conditional $A \oplus B$: $[\![A \oplus B]\!] = [\![\oplus]\!]([\![A]\!], [\![B]\!])$;

- Possibility conditions: for any $p \in P$,
  - $p \in [\![\forall x A(x)]\!]$ iff $p \in [\![A(x)]\!]'$ for every x-variant $[\![\ ]\!]'$ of $[\![\ ]\!]$;
  - $p \in [\![\exists x A(x)]\!]$ iff $p \in [\![A(x)]\!]'$ for some x-variant $[\![\ ]\!]'$ of $[\![\ ]\!]$;
  - $p \in [\![A \wedge B]\!]$ iff $p \in [\![A]\!] \cap [\![B]\!]$;
  - $p \in [\![A \vee B]\!]$ iff $p \in [\![A]\!] \cup [\![B]\!]$;
  - $p \in [\![\neg A]\!]$ iff $p \notin [\![A]\!]$;

[13] Compositionality can easily be restored, however, by replacing each compositional value v below with a function from variable assignments to things of type v. As usual, this replacement isn't worth the ink it would take.

[14] This clause will only get used when A's main connective is a quantifier.

- $p \in [\![t_1 \approx t_2]\!]$ iff $P \subseteq [\![t_1 \approx t_2]\!]$;
- $p \in [\![t_1 \approx t_1]\!]$;
- $p \in [\![t_1 \approx t_2]\!]$ iff $p \in [\![t_2 \approx t_1]\!]$; and
- if $p \in [\![t_1 \approx t_2]\!]$ and $p \in [\![t_2 \approx t_3]\!]$, then $p \in [\![t_1 \approx t_3]\!]$.

Say that a sentence A *holds at* a circumstance c in a model M iff $c \in [\![A]\!]$ in M. There are a few things to note about this model theory:

Direct reference (DR): The denotation of a term is simply a member of the domain.

Rigid designation (RD): The denotation of a term does not vary from circumstance to circumstance.

Necessity of identity (NI): An identity statement holds at a possible world iff it holds at all possible worlds.

Classical possible worlds (CPW): Quantifications, conjunctions, disjunctions, negations, and identity all behave classically at possible worlds.

We can define validity as preservation of holding-at-@ in all models. (Equivalently, we could define it as preservation across all members of P, since there is nothing to distinguish @ from any other member of P.) Because of CPW, validity will be classical (if we take $\rightarrow$ and β to form new atomic sentences). The nonclassicists among us are welcome to modify the possibility conditions to produce their favorite logic; nothing about this approach requires any particular logic rather than any other.

I've left $\rightarrow$ unconstrained so as to avoid irrelevant debates about the evaluation of conditionals. We can fill in just about any evaluation strategy we like, however, by adding another possibility condition.[15] It's important, however, that whether an $\rightarrow$-sentence holds or not at a possible world can depend on what goes on at circumstances that are not possible worlds; witness (7) and (8), or (28) and (29).

β is also unconstrained. This strikes me as quite plausible: I think it's possible to believe that A without believing that B for any distinct A and B. But you might disagree; you might think, for example, that if someone believes that $A \wedge B$, they must believe that A as well. If so, additional possibility conditions can address this as well. As things are, though, the argument from $t\beta A$ to $t\beta B$ is invalid for any distinct A and B. Already, this is enough to show that the argument from (3) to (4) is invalid, as well as the argument from (22) to (23).

Let's take a look at the argument from (22) to (23). These sentences can be formalized as (32) and (33):

(32) $a\beta(v \approx v)$

(33) $a\beta(v \approx l)$

Here's a countermodel: $M = \langle P, C, @, D, [\![\ ]\!]\rangle$, where

- $P = @$
- $C = \{@, c\}$

[15] For reasons to think that this strategy ought to involve a ternary relation on circumstances, see Beall et al. (2011).

- $D = \{a, v, l\}$
- $[\![a]\!] = a$; $[\![v]\!] = v$; $[\![l]\!] = l$
- $[\![\beta]\!](a, C) = C$; $[\![\beta]\!](a, \{@\}) = \emptyset$
- $[\![\approx]\!](@) = \{\langle a, a\rangle, \langle v, v\rangle, \langle v, l\rangle, \langle l, v\rangle, \langle l, l\rangle\}$; $[\![\approx]\!](c) = \{\langle a, a\rangle, \langle v, v\rangle, \langle l, l\rangle\}$

The rest of the model can come out however, so long as it obeys the conditions in Definition 2. On this model, $[\![v \approx v]\!] = C$, and $[\![v \approx l]\!] = \{@\}$. Because $@ \in [\![\beta]\!]([\![a]\!], [\![v \approx v]\!])$, this is a model of (32), and because $@ \notin [\![\beta]\!]([\![a]\!], [\![v \approx l]\!])$, this is not a model of (33). For good measure, this *is* a model of $v \approx l$. But although $v \approx l$ holds at @ in this model (and so at every possible world in the model), it does not hold at every circumstance. The ancients' beliefs are directed at the set of circumstances where $v \approx v$ (in this model, the set of all circumstances), not at the set of circumstances where $v \approx l$ (in this model, $\{@\}$).

In fact, all the arguments that ought to come out invalid given the discussion in Sects. 1 and 2 come out invalid on the present model theory. So this gives us the shape of a circumstantialist theory that uses a single strategy—acknowledging varied circumstances—to address the full range of phenomena we've so far considered.

This is not yet quite what we're after. After all, a model theory is all well and good, but we're looking for more than just mathematical models of what our words might mean. We want our theory to tell us about the *actual* meanings of various sentences. Fortunately, we're very close. We suppose there is a special model: the *intended model*. Our ordinary models don't quite assign compositional values willy-nilly—every n-ary predicate gets a value appropriate to an n-ary predicate, for example—but they're pretty close to arbitrary. The intended model M_I, on the other hand, has some nice features. Its set P of possible worlds is the *real* set of possible worlds, its set C of circumstances is the *real* set of circumstances, its @ is the *real* actual world, and its domain D includes everything.[16] Moreover, it assigns each constituent its *real* compositional value. So if Q is the predicate **squared the circle**, for example, then $[\![Q]\!]$ in M_I is the function that takes each circumstance to the set of things that squared the circle in that circumstance. For any possible world, this will be the empty set; it's impossible to square the circle. But there will be impossible circumstances at which this is not the empty set. Similarly, if v is **Vesper** and l is **Lucifer**, there will be (impossible) circumstances at which $v \approx l$ does not hold—at which Vesper and Lucifer fail to be identical.

This intended model serves an important role: while the model theory on its own can show us what words might have meant to provide a counterexample to the inference from, say, (22) to (23), the intended model shows us, *given what the words actually mean*, how it is that (22) is true and (23) is false. The key is that $[\![v \approx v]\!] \neq [\![v \approx l]\!]$ in the intended model, and this is possible because $[\![v]\!] \neq [\![l]\!]$ in the intended model. That is, Vesper and Lucifer are *distinct*.

Despite their being distinct, they are identical at the actual world, and at all possible worlds. Let's call this relation—the relation that holds between two things when they

[16] I ignore possible cardinality problems here; that's a separate issue, which all model-theoretic approaches must face. Similarly, I ignore debates as to the nature of circumstances, both possible worlds and others. Again, this is a separate issue, which all world-invoking theories must face.

are identical at all possible worlds—*shmidentity*. Shmidentity requires the notion of being identical at a circumstance, and it's this notion that I've been writing $\approx$. When we learn that Vesper is Lucifer, we learn something important: that they are shmidentical. In our terms, we learn that $P \subseteq [\![v \approx l]\!]$ in the intended model. (Given our possibility constraints, it suffices for this to learn that $@ \in [\![v \approx l]\!]$—that they are identical at the actual world.) We do not learn that they are identical *simpliciter* (and so everywhere); they are not. The situation with regard to Vesper and Lucifer, as Edelberg (1994) emphasizes, is like that of two roads that overlap for part of their respective lengths. They are the same road *here* but not *there*, and that suffices for them not to be the same road *simpliciter*. Similarly, Vesper and Lucifer are identical at the actual world, but not at some circumstances; they too are distinct simpliciter, because distinct somewhere.[17]

Shmidentity has many of the properties identity has long been thought to have. In particular, it holds necessarily if it holds at all. What's more, there are certainly some predicates that shmidentity is a congruence for. Take **kicked**. If Alice has kicked Vesper, she's certainly kicked Lucifer; their shmidentity prevents kicking one without kicking the other. On the other hand, shmidentity is not a congruence for every predicate. Take **was believed by the ancients to be identical with Vesper**. Vesper satisfies this predicate, but Lucifer does not, despite their shmidentity.

On the other hand, identity simpliciter—which I've been writing =, and which we can understand as identity at all circumstances—*is* a congruence for every predicate. Given the compositional setup of the present model theory, this must be so: if $[\![t_1]\!] = [\![t_2]\!]$, then $[\![A(t_1)]\!] = [\![A(t_2)]\!]$, simply in virtue of compositionality. So far, identity simpliciter has occurred only in the metalanguage, and not at all in the object language. But there is no reason we cannot add it into our object language. To do this, we require of all circumstances c that $c \in [\![t_1 = t_2]\!]$ iff $[\![t_1]\!] = [\![t_2]\!]$; this way, we are sure to have our object-language identity match our metalanguage identity.

As we regiment natural-language claims into our formal language, we must be careful in our choice between identity-at-a-circumstance and identity everywhere; when someone claims that Vesper is Lucifer, we can regiment their claim using either $\approx$ or =. Usually, the most natural understanding will involve $\approx$; = is a notion not of much everyday use. However, sometimes = is the better choice, particularly in certain philosophical discussions. The care we need to take here is no different from the care that usually needs to be taken in providing formal counterparts to natural-language utterances.

3.2 Soames's argument

In Soames (1985, 1987, 2008), Soames presents a reductio argument, intended to support the claim that compositional values must take account of more than circumstantialism can allow for. Here, I consider Soames's argument in light of the circumstantialist theory presented in Sect. 3.1. The argument proceeds from a number of assumptions (among them circumstantialism), and concludes that we can validly infer (37) from (34), via (35) and (36):

[17] For recent defenses of similar metaphysics of objects, see Priest (2005) and Yagisawa (2010).

(34) The ancients believed that 'Hesperus' referred to Hesperus and 'Phosphorus' referred to Phosphorus.

(35) The ancients believed that 'Hesperus' referred to Hesperus and 'Phosphorus' referred to Hesperus.

(36) The ancients believed that 'Hesperus' referred to Hesperus and 'Phosphorus' referred to Hesperus and, for some x, 'Hesperus' referred to x and 'Phosphorus' referred to x.

(37) The ancients believed that for some x, 'Hesperus' referred to x and 'Phosphorus' referred to x.

(Crucially, (36) and (37) are to be understood with **for some x** taking narrow scope.) Since (given the appropriate choice of ancients) (34) is true and (37) is false, the assumptions must have gone wrong somewhere. In Soames (1987), it is argued that the culprit is the assumption of circumstantialism. Soames argues that the invalid step in the above argument occurs between (35) and (36), and that the circumstantialist cannot give an account of why that step is invalid.

Here is the full budget of assumptions listed in Soames (2008) as key to the argument:

(38) The semantic content of a sentence or formula (relative to a context and assignment of values to variables) is the collection of circumstances supporting its truth (relative to the context and assignment).

(39) A conjunction $\ulcorner$P & Q$\urcorner$ is true with respect to a context C, assignment A, and circumstance E iff P and Q are both true with respect to C, A, and E. Thus, the semantic content of a conjunction, relative to C and A, is the intersection of the semantic contents of the conjuncts, relative to C and A.

(40) An existential generalization $\ulcorner$For some x: Fx$\urcorner$ is true with respect to a context C, assignment A, and circumstance E iff there is some object o in E such that 'Fx' is true with respect to an assignment A′ that differs from A at most in assigning o as value of 'x'. The semantic content of $\ulcorner$For some x: Fx$\urcorner$ relative to C and A is the set of circumstances E such that for some object o in E, o satisfies 'Fx' with respect to C, A, and E.

(41) Propositional attitude ascriptions report relations to the semantic contents of their complements—i.e. $\ulcorner$x v's that S$\urcorner$ is true with respect to a context C, assignment A (of values to variables) and a circumstance E of evaluation iff in E, the referent of 'x' with respect to A bears R to the semantic content of S relative to C and A. (When v is the verb 'believes', R is the relation of believing, when v is the verb 'says' or 'asserts', R is the relation of saying, or asserting, and so on for other attitude verbs.)

(42) Many attitude verbs, including 'say', 'assert', 'believe', 'know', and 'prove' distribute over conjunction. For these verbs, $\ulcorner$x v's that P & Q$\urcorner$ is true with respect to C, A, and E only if $\ulcorner$x v's that P$\urcorner$ and $\ulcorner$x v's that Q$\urcorner$ are too.

(43) Names, indexicals, and variables are directly referential—their semantic contents, relative to contexts and assignments, are their referents with respect to those contexts and assignments.

(44) If S_1 and S_2 are non-intensional sentences/formulas with the same grammatical structure, which differ only in the substitution of constituents with the same semantic contents (relative to their respective contexts and assignments), then the semantic contents of S_1 and S_2 will be the same (relative to those contexts and assignments).

As we've seen in Sect. 3.1, though, there is a straightforward circumstantialist theory on which *every* step in the argument from (34) to (37) is invalid.[18] For the steps from (35) to (36) and from (36) to (37), this is for relatively uninteresting reasons; the theory simply does not verify Soames's assumptions (39), (40), or (42) (as applied to belief). Since the step from (35) to (36) relies on (39) and (40), and the step from (36) to (37) relies on (42), it's unsurprising that these steps don't go through on the present theory. Thus, Soames's argument doesn't reveal any trouble in the present theory, and in fact it doesn't purport to; it only purports to apply to theories that accept the key assumptions in play.[19]

However, if one is so inclined, one can modify the above theory to satisfy assumptions (39), (40), and (42),[20] and it will still provide a counterexample to Soames's argument. The misstep is in the inference from (34) to (35). Intuitively, of course, this is what we should expect. That the ancients believed 'Phosphorus' referred to Phosphorus certainly doesn't seem to guarantee that they believed 'Phosphorus' referred to Hesperus. Soames claims that this step *is* guaranteed by assumptions (41), (43), and (44), but the circumstantialist theory under consideration accepts all of these assumptions and still invalidates the inference. Thus, Soames's reductio, in addition to making assumptions that make it inapplicable to the present theory, fails on its own terms as well.

In a moment, we'll look at how. First, though, it's worth pausing to clarify the role of the intended model in this discussion. As Soames (2008) makes clear, Soames does not mean to claim that there are no circumstantialist countermodels to the inference from (34) to (37). Rather, he means to claim that no circumstantialist theory (meeting his assumptions) can account for the truth of (34) and falsity of (37), *given what they actually mean*. His objection, then, is about the intended model, which must take these actual meanings into account. The response to Soames's argument that I give here is substantially the same response given in Edelberg (1994). Unfortunately, Edelberg is not clear about the role of the intended model in his response. By clarifying

[18] Recall that every inference of the form 's believed that p, therefore s believed that q', where $p \neq q$, is invalid on the above theory.

[19] Elbourne (2010) attacks Soames's argument by attacking (43); Elbourne's approach thus shows a different way in which circumstantialism can be defended from Soames's argument. For my purposes here, though, I'll stick to (43).

[20] To guarantee assumptions (39) and (40) requires imposing additional recursive conditions, corresponding to the possibility conditions for $\wedge$ and $\exists$. To guarantee (42) requires an additional possibility condition.

Soames's understanding of his reductio, Soames (2008) responds to the letter of Edelberg's criticism but not the spirit. Here, hopefully, the letter and the spirit are better aligned. To ensure this, in what follows, all $[\![\ ]\!]$s should be understood as denotations assigned *by the intended model*.

Soames argues that (35) follows from (34) as follows: first, that $[\![$**'Hesperus' referred to Hesperus and 'Phosphorus' referred to Phosphorus**$]\!] = [\![$**'Hesperus' referred to Hesperus and 'Phosphorus' referred to Hesperus**$]\!]$, by assumptions (43) and (44); second, that since (41) tells us that propositional attitudes are relations to propositions, if the ancients bore a certain relation to one of these (identical) propositions, they must have borne it to the other. The circumstantialist should object to the first step here; (43) and (44) do not jointly guarantee that $[\![$**'Hesperus' referred to Hesperus and 'Phosphorus' referred to Phosphorus**$]\!] = [\![$**'Hesperus' referred to Hesperus and 'Phosphorus' referred to Hesperus**$]\!]$.

Let's see how this plays out on the theory under consideration. We can regiment the language as follows: let h be **Hesperus**, h' be **'Hesperus'**, p be **Phosphorus**, p' be **'Phosphorus'**, and Rxy be the binary relation x **referred to** y. Then Soames argues that, given (43) and (44), $[\![Rh'h \wedge Rp'p]\!] = [\![Rh'h \wedge Rp'h]\!]$. This is because (43) guarantees that $[\![h]\!]$ = Hesperus and $[\![p]\!]$ = Phosphorus. Given that Hesperus = Phosphorus, we can conclude that $[\![h]\!] = [\![p]\!]$; (44) then allows substitution of these identicals. Importantly, this argument depends on the premise that Hesperus = Phosphorus. It is not enough for the argument to go through that Hesperus is *shmidentical* to Phosphorus. The premise must be that they are *identical*. This premise, though, is rejected by the present circumstantialist theory.

One could support this premise by smuggling in an extra assumption, and indeed this seems to be Soames's strategy. Edelberg (1994) notes this, and calls the extra assumption 'Weak Matching'. The assumption is this: that if $@ \in [\![t_1 \approx t_2]\!]$, then $[\![t_1]\!] = [\![t_2]\!]$; that is, that identity at the actual world is sufficient for identity simpliciter. By applying Weak Matching to the intended model, we can conclude that, since Hesperus and Phosphorus are identical at the actual world, they must be identical; and with this in hand, Soames's argument goes through.

As Edelberg (1994) points out, Weak Matching is a controversial assumption, and it needs defense if Soames is to appeal to it. Soames, though, does not provide that defense, or even acknowledge his appeal to the principle. In his response Soames (2008) to Edelberg, he writes:

> What the original reductio demonstrated was that no semantic theory T incorporating [(38)–(44)], can be correct because: (1) being correct requires assigning 'Hesperus' and 'Phosphorus' the same referent (Venus) …

This is presumably a direct appeal to Weak Matching. It does not follow from the fact that Hesperus and Phosphorus are identical at the actual world that 'Hesperus' and 'Phosphorus' must be assigned the same referent (thus guaranteeing their identity at all circumstances); this follows only if we assume Weak Matching (and Direct Reference). The theory outlined above, as well as the theories in Edelberg (1994); Priest (2005), and Yagisawa (2010), however, violate Weak Matching for a variety of motivations.

Thus, circumstantialist theories of content can avoid Soames's reductio: there is no need for them to resort to structuralism to address fineness-of-grain issues in their full generality. Circumstances suffice, so long as we allow for appropriate ones—ones where identity can vary.

4 Conclusion

In this paper, I've argued that circumstantialism addresses the fineness-of-grain problem better than structuralism does. This is because structuralism per se addresses only special cases of the problem, and must be supplemented to deal with the problem in its full generality. This supplementation, though, if it works, works on the special cases as well, and so undermines any fineness-of-grain motivation for structuralism.

Circumstantialism, on the other hand, is better-equipped to handle the fineness-of-grain problem; it can address it in its full generality. Above, I've presented a circumstantialist framework that can address a wide variety of sentences that pose difficulties for both structuralism and the simple possible-worlds theory. Soames's argument purporting to show that circumstantialism founders on a certain form of the fineness-of-grain problem does not apply to this theory, as it relies on several assumptions the theory doesn't share. However, even a modification of the present theory set up to validate all of Soames's explicit assumptions still evades Soames's argument, since the argument relies on an unacknowledged premise: Weak Matching. Circumstantialists can and do reject this premise, and so Soames's argument fails.

This does not yet show that circumstantialism wins the day, in two key ways. First, I've only considered one of the ways in which structuralism and circumstantialism differ—in their approaches to the fineness-of-grain problem. Although circumstantialism works better here, it's entirely possible that there are other factors constraining our choice of theory which could push in a different direction, and possibly outweigh the arguments above. Although fineness-of-grain considerations have often been used to motivate both structuralism and circumstantialism, they are not the only possible considerations. Second, there are fine-grained theories of propositions that do not fall neatly into either camp, and so have not been discussed here, such as the algebraic theories of Thomason (1980) and Bealer (1998). In fact, theories like these seem to fare as well as circumstantialist theories on the variety of data I've mentioned above. A decision, then, between circumstantialist and algebraic theories will have to wait on consideration of other factors.

Acknowledgments Various predecessors of this paper have been given at a number of conferences, workshops, and other events, and have been much helped by the process. Many thanks are due to the organizers and audiences of the First and Second Propositions and Same-Saying Workshops, the Kioloa Metaphysics Retreat, Semantics and Philosophy in Europe 3, and the 2009 and 2010 Australasian Association of Philosophy conferences, as well as audiences at Logos and Institut Jean-Nicod, particularly Rachael Briggs, David Chalmers, Dana Goswick, Mark Jago, Max Kölbel, Dan Korman, Michael Murez, Daniel Nolan, Graham Priest, Greg Restall, and Jonathan Schaffer. Thanks as well are due to Robert Adams, Sean Frenette, Thomas Hodgson, Thomas Hofweber, Bill Lycan, Dean Pettit, Laura Schroeter, Keith Simmons, Michael Terry, and Dan Zeman. To be singled (doubled?) out for special thanks are Manuel García-Carpintero and François Recanati, whose questions occasioned a major shift in the thesis of the paper (although they're not to be blamed for what I made of it; I think I ponensed their tollenses).

References

Barwise, J., & Perry, J. (1999). *Situations and attitudes*. Stanford, CA: CSLI Publications.

Bealer, G. (1998). Propositions. *Mind, 107*(425), 1–32.

Beall, J., Brady, R., Dunn, J. M., Hazen, A., Mares, E., Meyer, R., Priest, G., Restall, G., Ripley, D., Routley, R., Slaney, J., & Sylvan, R. (Forthcoming). On the ternary relation and conditionality. Journal of Philosophical Logic

Carnap, R. (1956). *Meaning and necessity*. Chicago: University of Chicago Press.

Chalmers, D. (2011). Propositions and attitude ascriptions: A Fregean account. *Noûs, 45*(4), 595–639.

Cresswell, M. J. (1985). *Structured meanings*. Cambridge, MA: MIT.

Crimmins, M. (1992). *Talk about beliefs*. Cambridge, MA: MIT.

Edelberg, W. (1994). Propositions, circumstances, objects. *Journal of Philosophical Logic, 23*(1), 1–34.

Elbourne, P. (2010). Why propositions might be sets of truth-supporting circumstances. *Journal of Philosophical Logic, 39*(1), 101–111

Gamut, L. (1991). *Logic, language, and meaning, Vol. 2: Intensional logic and logical grammar*. Chicago: University of Chicago Press.

Goddard, L., & Routley, R. (1973). *The logic of significance and context* (Vol. 1). Edinburgh: Scottish Academic Press.

King, J. C. (2007). *The nature and structure of content*. Oxford: Oxford University Press.

Kripke, S. (1980). *Naming and necessity*. Cambridge, MA: Harvard University Press.

Lewis, D. (1970). General semantics. *Synthèse, 22*, 18–67.

Montague, R. (2002). The proper treatment of quantification in ordinary English. In P. Portner & B. H. Partee (Eds.), *Formal semantics: The essential readings* (pp. 17–34). Oxford: Blackwell.

Priest, G. (2005). *Towards non-being: The logic and metaphysics of intentionality*. Oxford: Oxford University Press.

Recanati, F. (2004). *Literal meaning*. Cambridge: Cambridge University Press.

Richard, M. (1990). *Propositional attitudes: An essay on thoughts and how we describe them*. Cambridge: Cambridge University Press.

Salmon, N. (1986). *Frege's puzzle*. Cambridge, MA: MIT.

Soames, S. (1985). Lost innocence. *Linguistics and Philosophy, 8*, 59–71.

Soames, S. (1987). Direct reference, propositional attitudes, and semantic content. *Philosophical Topics, 15*(1), 47–87.

Soames, S. (2008). Why propositions cannot be sets of truth-supporting circumstances. *Journal of Philosophical Logic, 37*, 267–276.

Thomason, R. H. (1980). A model theory for propositional attitudes. *Linguistics and Philosophy, 4*(1), 47–70.

von Fintel, K., & Heim, I. (2007). Intensional Semantics. Unpublished. Available at http://tinyurl.com/intensional.

Wilson, D., & Sperber, D. (2002). Truthfulness and relevance. *Mind, 111*, 583–632.

Yagisawa, T. (2010). *Worlds & individuals, possible & otherwise*. Oxford: Oxford University Press.