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LANGUAGE UNDERSTANDING AND COMPOSITIONAL SEMANTICS

by

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PREFACE

The dominant approach to explaining semantic competence relies on assumptions that have their roots in Chomskyan cognitivism. Its adherents follow the Chomsky-inspired approach to explaining ideal speakers' linguistic capacities in their approach to explain ideal speakers' semantic capacities specifically. Hence they assume that just as linguistic competence involves knowledge of the rules of a grammar, so semantic competence involves knowledge of the semantical equivalent of such rules (to wit a compositional semantics). The view relies on two assumptions that lie at its core. Briefly stated the first assumption is about the knowledge that underlies understanding the meaning of a sentence; the second assumption completes the first one by claiming the knowledge is knowledge of a compositional semantics. Call this approach *the common view* (CV).[1]

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[1] Before continuing, there is something that needs addressing. One may ask what exactly the parallel between linguistic competence and semantic competence, or grammar and meaning, consists in or whether they are parallel at all. If they are parallel one needs to investigate what underlies the parallel; if the notions are not parallel then what is their relation.
My intention here is not so much to indicate a parallel between linguistic competence and semantic competence or grammar and meaning, but rather to indicate the parallel appeal to knowledge that is made in each case of explaining competence. Thus the emphasis is on the knowledge claim, specifically the claim that speakers have tacit knowledge of a meaning theory for a particular language that explains their semantic competence, or tacit knowledge of a grammar for a particular language that explains their linguistic competence. CV theorists assume that just as linguistic competence involves knowledge of the rules of a grammar, so semantic competence involves knowledge of the semantical equivalent of such rules.

Roughly, CV theorists explain language understanding as follows: a speaker understands a sentence of her language because she has tacit knowledge of some semantic theory for that language that indicates how the meaning of the sentence depends on the meaning of its parts and their structural arrangement in the sentence. Davidsonian proponents of this approach see the explanation of language understanding as the *essential* aspect of any theory of meaning. Moreover, they argue the best candidate to serve as a theory of meaning in the offing is a compositional truth theory.

Critics of this dominant approach who challenge the assumptions CV relies on are plentiful as well. The range of critics includes those who primarily challenge CV by rejecting its basic premises, showing how a compositional semantics fails to explain competence and those who in fact offer competing accounts of semantic competence that do not appeal to a compositional semantics thereby undermining CV's premises as well.[2] Within this range some question the kind of semantics appealed to by challenging CV's extensionalist basis. Others reject any appeal to knowledge of a compositional semantics (regardless of what form it might take) in explaining language understanding. This rejection is sometimes based on the critic's conviction that natural languages do not require compositional semantics to begin with, which automatically constitutes a rejection of the notion that the explanation of

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[2] Some accuse both Chomskyan grammarians and CV theorists of conflating theories of competence with theories of syntax or semantics. These critics include Soames and Devitt & Sterelny.

language understanding motivates compositional semantics. Other critics, although not questioning the assumption that natural languages have compositional semantics, reject CV's claim that the latter are needed to explain language processing. Instead, they claim compositional semantics are required to explain the productivity and systematicity of language, but not the competence of speakers. They argue that semantics cannot be brought to bear on the psychology of competent speakers. Of course, many philosophers are engaged in challenging the Davidsonian theory of truth, claiming the latter cannot serve as a meaning theory. I address these to the extent that they are relevant.

Two main challenges I consider are: a) the one posed by Scott Soames and like-minded philosophers;[3] b) the one posed by Stephen Schiffer.[4] Soamesians question whether knowledge of any kind is needed to explain semantic competence, although they don't reject compositionality itself; in the process however some other issues arise. Schiffer doubts whether natural languages require a compositional semantic theory in order to explain semantic competence, given that he doubts that propositions are compositionally determined in the first place. In doubting this he of course also calls into question

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[3] Scott Soames, "Semantics and Semantic Competence," in *Cognition and Representation*, eds. Stephen Schiffer and Susan Steele (Boulder: Westview Press, 1988), 185-207; also Scott Soames, "Semantics and Psychology," in *Philosophy of Linguistics*, ed. Jerrold J. Katz (New York: Oxford University Press, 1985), 204-226.

[4] Stephen Schiffer, "A Paradox of Meaning," in *Nous* 28:3 (1994): 279-324; also Stephen Schiffer, *Remnants of Meaning* (Cambridge: MIT Press, 1987). In the latter see especially Chapter 7, 179-209.

the claim that any knowledge of meaning is required in explanations of competence. Thus he doubts that a speaker's psychological mechanisms at any point draw on information supplied by a compositional semantics or other semantic theory. To support his rejection of CV he offers the counterexample of Harvey, whose competence can be accounted for without appeal to knowledge of meaning. Schiffer in aiming to show he is not forced to recognize compositional semantics thus offers an alternative way to explain competence.

After considering Davidson in some detail I discuss the most recent manifestation of CV, namely Larson & Segal's *Knowledge of Meaning* which reiterates the central tenets of the Davidsonian Chomsky-inspired program, as such trying to rebut the critics. Being well aware of the criticisms out there and thus of the pitfalls of the Davidsonian program, their account has benefited insofar that it has had the opportunity to correct all the wrongs. Still, many problems remain. I offer an analysis and critique of their account along the lines of the earlier raised concerns with Davidson's account and in light of Soamesian skepticism.

My concern in this project then is with language understanding, in particular with whether one of the necessary conditions of understanding is knowledge of a compositional semantics. The issue is whether there exists any philosophical motivation for CV's claim that knowledge of meaning is needed to explain language understanding, In other words, do

we *need* to attribute knowledge of semantic properties to speakers in a hypothetical explanation of how they understand potentially indefinitely many sentences of their language? Furthermore, there is controversy about *how* this knowledge should be defined and what specific role it might play in understanding. Finally, there is the cognitive concern with whether competent speakers of a language in fact have knowledge of semantic properties.

Given the complexity surrounding knowledge of meaning, there are several directions the challenges to assumption (I) can take, besides empirical considerations. Skeptics focusing on the second issue are considering whether this knowledge speakers allegedly have should indeed be characterized as tacit and address the problems this interpretation brings with it. Soamesian skeptics focus on the main concern, i.e., whether knowledge of meaning is needed for explaining competence.

The dominant Davidsonian account seeming to have run its course, one may ask why anyone would still concern themselves with accounts that explain language understanding by appeal to tacit knowledge. But its revival through the work of both L&S as well as Lepore seems to warrant taking another look at the claims involved. The presumption among CV theorists remains that the only way to explain language understanding is by appeal to a compositional semantics. There is no way to account for the fact that we as finite creatures can understand a potentially infinite number of sentences without as-

suming that our understanding is structured and that the latter requires the semantics of a language to be compositionally determined.[5]

The motivation that natural languages need a compositional semantics to explain semantic competence is compelling. It seems a plausible way to account for the speaker's understanding of her language. But its plausibility is no guarantee of its necessity in theories of competence. Also, it does not mean that language understanding offers the most compelling argument for compositional semantics. Indeed, to others a compositional semantics plays no role in explanations of competence. Rather, they find more compelling motivation for compositional semantics in explaining other features of languages, to wit their productivity and systematicity.[6] Yet neither motivation seems decisive so far. Still, rejecting them requires a positive account of how competence

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[5] Roughly, a structured understander is a subject who understands each one of the sentences of her language because she understands the meanings of their subsentential components and their structural arrangement in the sentence; thus, her understanding is structured. Contrast this with a subject whose understanding is unstructured and who thus understands each sentence as unstructured. The difference between these two ways of understanding presumably lies in the difference between the respective appropriate meaning theories corresponding to the type of understanding.

[6] My focus on competence does not preclude a discussion of the other features and I discuss them to the extent that I see fit. Philosophers, like Fodor claim compositional semantics explain productivity and systematicity at the exclusion of language understanding. Thus technically speaking, Fodor is not a proponent of CV, insofar that he is not concerned with competence. Typically in these cases talk shifts from natural languages to languages of thought.
Fodor claims languages of thought need a compositional semantics to explain the productivity and systematicity of the language. But he agrees with Schiffer as far as the mechanics of understanding natural languages is concerned.

and productivity can be explained without appeal to compositional semantics.

I am aware of the significance of Katz's work in the effort to construe acceptable theories of semantics based on the work done in linguistics by Chomsky. Katz's current realist position, however, rejects any interpretation of meaning along naturalist lines. Thus his critique of a Chomskyan-based semantic theory like CV would presumably not focus on the two assumptions of CV that I take up, but would instead question CV's naturalistic basis. As to compositional semantics, he would maintain that the thesis of compositionality is strictly one about languages and never about how speakers of that language understand it. As such, to the extent that his work would fit in a discussion on language understanding it would be within the context of the Soamesian critique.[7]

OUTLINE OF WORK:

In the first chapter I introduce CV, its Chomskyan roots, the Davidsonian program in semantics and the claims of compositional semantics. The discussion here centers on articulating central aspects of CV. I first briefly motivate the Chomskyan cognitivism that informs CV's position on language understanding, after which I consider what the claims of compositional semanticists entail.

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[7] In some sense then Katz's concerns are not unlike Soames's earlier concerns in 'Semantics and Psychology", where Soames claims that competence should not form any part of the study of semantics per sé.

Chomsky's application of linguistic research to philosophical questions spawned a tradition of philosophers of language that not only recognized the relevance of linguistics to philosophy, but that moreover modeled itself after the Chomskyan program. An important feature of this program is that competent speakers have tacit knowledge of a grammar. CV theorists similarly claim semantically competent speakers have tacit knowledge of meaning and that the latter is needed to explain language understanding.

My way of characterizing CV does not entail that within this view there aren't several factions with varying semantic and psychological commitments. Davidsonians argue an extensionalist theory can explain understanding. Others, although echoing the idea that a theory of meaning is a theory of understanding, suggest that the extensionalist account is insufficient to explain meaning and understanding.

In the second chapter I address Davidson's extensionalist program in compositional semantics, the challenges it faces and its failure to meet them. Davidson's program attempted to articulate a correct meaning theory based on Tarski's theory of truth. A major tenet of this program is that a theory of meaning has to account for a speaker's ability to understand her language.

Davidson is motivated by two concerns: to offer a theory that would provide an interpretation of a potential infinity of sentences of a language based on a finite vocabulary, and to provide a theory that in doing the first provides an ex-

planation of speakers' ability to understand or learn these sentences. The latter indicates what he considers to be the general aim of theories of meaning and would be effected by means of them stating something

> knowledge of which would suffice for interpreting utterances of speakers of the language to which it applies.[8]

This concern, although not always expressed in so many words, is present throughout Davidson's work. He argues in "Truth and Meaning" that unless we can offer a meaning theory that explains how the meaning of a sentence depends on the meanings of words

> there would be no explaining the fact that we can learn a language; no explaining the fact that, on mastering a finite vocabulary and a finitely stated set of rules, we are prepared to produce and to understand any of a potential infinitude of sentences.[9]

I then discuss the problems that arise out of Davidson's extensionalist program.

In the third chapter I consider a recent extensionalist version of CV that is supposed to offer an improvement on

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[8] Donald Davidson, "Reply to Foster", in *Inquiries into Truth and Interpretation* (New York: Clarendon, Oxford University Press, 1984), 171.

[9] Donald Davidson, "Truth and Meaning" in *Inquiries into Truth and Interpretation* (New York: Clarendon, Oxford University Press, 1984), 22.

Davidson's program and discuss problems with it. This is the neo-Davidsonian line offered by Larson & Segal (L&S). They reiterate Davidson's motivations by explicitly stating that a meaning theory is a theory of understanding, a claim Davidson himself never quite makes. This distinguishes them from other CV theorists who claim a semantic theory can be part of an explanation of understanding insofar as it specifies the information on which some of the psychological mechanisms involved in the process of language understanding draw.

L&S follow Davidson in the formal aspects of their theory of meaning. As such, they hold that a correct truth theory, in particular an interpretive truth theory, for a language can function as a correct meaning theory, and thus as a correct theory of understanding for that language. L&S's account being one of the most recent manifestations of CV, they would seem least likely to be subject to CV's challengers. Nonetheless, their assumptions fall prey to criticisms similar to those posed to earlier CV theorists.

L&S's neo-Davidsonian account leaves much to be desired because ultimately their interpretive truth theory merely serves as a translation device without having any causal efficacy. Thus any translational account could do the trick. As such I argue that they undermine their own motivation for the necessity of compositional semantics in language understanding.

In chapter four I discuss Soames's skepticism about knowledge of a compositional semantics. I precede this discussion however by arguing that part of Soames's objection to CV is misdirected. This becomes obvious when we consider what the main claims of CV theorists commit them to as far as psychological explanation is concerned.

In chapter five I address the propositionalist approach to CV. I argue that given the difficulties with all forms of extensionalism, the best approach to make CV work will be by means of a propositionalist account. The propositionalist can avoid both the Davidsonian and neo-Davidsonian problems. However, they do still face one challenge posed by Soames and the challenge posed by Schiffer. I claim that Soames's argument against the necessity of knowledge of meaning does not succeed at undermining the propositionalist version of CV. However Schiffer's counterexample of Harvey, which explains language understanding by means of a translational account combined with a computational account, poses a more serious challenge.

Before considering the details of Schiffer's account however I discuss in chapter six the issues around psychological explanation based on Peacocke's analysis of the explanatory level at which a semantic theory could play a role in explaining semantic competence.

This entails shifting our emphasis from whether knowledge of meaning would be necessary *in principle* for a speaker's semantic competence to whether knowledge of meaning is

in fact employed by her when understanding sentences of her language. Such a move will worry Soamesians because it means psychological concerns reenter the debate. Yet, even they acknowledge semantic theories might be relevant to psychology, and thus that a look at cognitive systems might throw light on how these theories are psychologically relevant. What CV needs to show then is that the relevance of the theory does not lie merely in its supervenience on the psychological or physical.

Schiffer's hypothetical account of Harvey's process of understanding poses a formidable challenge to all CV theorists, including propositionalists. In chapter seven, I lay out both the consequences of and drawbacks with Schiffer's refutation of CV.

Finally, in chapter eight I argue that even Harvey fails to offer a fool-proof refutation of CV. This based on an analysis of what constitutes genuine understanding. Based on that analysis I argue that Harvey's understanding is underdescribed and that consequently we cannot attribute understanding to him. Whatever conditions he satisfies are not conditions for understanding.

To recap: a) CV theorists claim a correct meaning theory ought to provide an explanation of language understanding, in addition to being a theory that gives the meaning of sentences of the language based on the meanings of sub-senten-

tial components and their arrangement in the sentence. Specifically, they maintain that tacit knowledge of a meaning theory is required to explain semantic competence; b) CV theorists, when assuming that knowledge of a meaning theory is required to explain semantic competence, have in mind here knowledge of some form of compositional semantics. In other words, the theory ought to be one that gives the meaning of sentences of the language based on the meanings of their subsentential components and their structural arrangement in the sentence. They assume a compositional semantics is indispensable in offering adequate explanations of competence.

The problems they face are: 1) providing a convincing argument for whether semantic knowledge is indeed needed to explain competence; 2) showing that such knowledge is of a compositional semantics; 3) offering what would be the most adequate compositional semantics.

With regards to 1) I argue that without a concise description of what language understanding consists of the correctness of CV cannot be settled. I claim that it is not only counterintuitive to suggest understanding involves no knowledge, but that it is wrong. I intend to address this by considering what is required for psychological explanation generally and applying this to language understanding specifically.

The objections about conflation that Soames raises do not hold up against CV theorists and his argument against knowledge of meaning is not convincing for the following rea-

son. Although Soames offers solid argument against the sufficiency of knowing truth conditions to understanding, he does not offer any viable argument against the necessity of such knowledge. Thus neither his argument against the necessity of knowing truth conditions nor his argument against the necessity and sufficiency of knowing meanings are successful.

More specifically, 2) requires that CV theorists address Schiffer's counterexample. Of course in this case 2) is not really to be isolated from 1), in that Schiffer's objection obviously addresses both claims. I argue that there are two problems with Harvey. For one, based on an accurate definition of what language understanding consists in I claim that we cannot justifiably call any description of Harvey's language processing a complete explanation of his language understanding. His situation is underdescribed. Thus I claim that whatever Harvey has attained does not qualify as genuine understanding. I contend that Harvey's case offers only a limited explanation.

This leads us to 3). I argue that a compositional semantics can play a role only if it is not an extensionalist semantics, a claim that is underscored by the fact that Davidsonians face their most obvious difficulties in their extensionalist claims. To overcome them the CV theorist would have to flesh out an acceptable compositional meaning theory.

This cannot be done without addressing the nature of propositions. I consider the motivations underlying propositionalist accounts of meaning. The main concern is whether

propositions are compositionally determined or not. If they are then natural languages would have compositional semantics and the latter could play a role in explaining understanding. I am incurring debts by limiting my discussion of propositions to a few issues, to wit whether a coherent CV account can be offered prior to offering the specifics of a particular semantics. The presumption in addressing these will be that such a theory will be compositional, and that there is sufficient supportive argumentation for the compositional determination of propositions.

It is uncontroversial that addressing the issues from a cognitive perspective will offer new insight into both theories of competence as well as theories of meaning. It is also uncontroversial that although cognitive findings are not strictly philosophical, this does not preclude philosophers from considering them in their work. What is controversial, however, is whether CV theorists have a solid case to offer in defending their hypothetical argument concerning language understanding, and whether any cognitive findings might underscore their position.

Philosophers as such do not engage in empirical inquiry. Hence CV theorists are typically engaged in answering the hypothetical question. However in hypothesizing about language understanding they speculate to a certain extent about the functional make-up of the mind. This is what L&S in fact did, although their overall argument is not successful. The excep-

tion of course is Davidson who, although convinced about the significance of a truth conditional semantics as a theory of language understanding, never speculates about the psychology of speakers whose understanding he wants explained. All Davidson claims is that the correct compositional semantics would account for language understanding, not that it would play any role in the cognitive processes the speaker goes through.

On the other hand CV theorists and their critics are well aware of the fact that addressing explanations of language understanding from a cognitive perspective might offer new insight into the nature of semantics. Once the cognitive processes are considered speculations about the role of meaning in these processes can be reassessed. In addition, though, beyond shedding new light on hypothetical accounts, a consideration of cognitive processes also brings empirical issues into the debate. Moreover, there appear to be empirically plausible reasons for assuming the process of language understanding involves tacit knowledge of a compositional semantics specifically.[10]

Regardless, then, of the inaccessibility of neuro-physiological knowledge to us, it is likely empirical reasons can be offered in support of the CV position. If there is empirical motivation for attributing tacit knowledge of a compositional semantics to an understander, this could have implica-

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[10] Even if empirical evidence does not settle what the actual neuro-physiological states of the mind are when processing language, the evidence might strengthen CV's conceptual framework.

tions for CV.[11] Thus, it could turn out that a compositional semantics will still prove necessary in philosophical explanations of semantic competence.

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[11] Of course at this point we do not in fact have empirical a posteriori evidence.

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Chapter 1: THE COMMON VIEW AND ITS ROOTS

¶1.1 BASIC ASSUMPTIONS OF THE COMMON VIEW

1.1.1

That we humans have the unique ability to both understand and produce language seems hardly worth mentioning. Yet, because this linguistic ability is distinctly human and central to our being able to communicate our thoughts to one another, it is fair to say that coming up with an explanation of human linguistic competence is a significant task. The debate, however, around such explanations is a peculiar one for philosophers in that ultimately coming up with an explanation of what a speaker *actually* goes through when understanding a (novel) sentence is a task carved out for the empirical sciences. There is no a priori argument or demonstration of what is involved in this linguistic competence. The relevance of philosophy to the debate, then, lies in answering the hypothetical question of what might constitute a *necessary* and/or *sufficient* explanation of this competence.

An explanation of a speaker's *semantic competence* has to form part of any full explanation of her ability to understand the language. By *semantic competence*, I mean the implicit ability in principle of a speaker to understand the meanings of utterances of (indefinitely many novel) sentences of her language, i.e. the speaker's ability to establish the meaning of a sentence *s* of her natural language by determining either the truth conditions for *s* or by establishing the

proposition that is the content of *s*. In this study I am concerned with explanations of this competence, in particular with whether explanations of semantic competence require appeal to knowledge of a compositional semantics.

1.1.2

According to the Common View (CV) an explanation of language understanding requires a compositional semantics, i.e., it requires an appeal to a speaker's knowledge of a compositional semantics. CV's explanation of semantic competence merges linguistic and philosophical concerns with formulating adequate theories of semantics. Linguists and philosophers have a converging interest in the topic of semantics for the following reasons. The presumption among linguists is that an adequate grammar for a natural language must integrate a semantics with both a syntax and a phonology for the language. The presumption among philosophers is that an adequate semantics for a natural language must at least contain a theory of truth conditions that characterizes the logical properties and relations of the language; in other words, an adequate semantics must be (at least) truth-conditional. Both are of the opinion that an adequate grammar must have a truth-conditional semantics as part of it. Thus the mutual interest in semantics per se.

In addition, linguists and philosophers share an interest in the linguistic abilities that speakers of natural languages exhibit. In particular, the fascination is with estab-

lishing what it is by virtue of which speakers are in effect linguistically competent, i.e., with establishing what it is that enables a speaker to understand (and use) her language. And the presumption here typically is that in order to explain the speaker's competence we will have to refer to the grammar, and thus in the case of CV specifically to the truth-conditional semantics.

As it turns out, various speculations about the relationship between grammars and psychological theories of competent speakers have led some linguists to espouse the view that

> (A) linguistics is a branch of cognitive psychology

thus suggesting that

> (B) the rules and representations that make up a grammar are psychologically real mechanisms which are causally responsible for (some significant portion of) a speaker's linguistic competence.

In the case of CV, (A) and (B) would entail that, if an adequate semantics for a grammar is a truth conditional compositional semantics, this semantic theory forms part of cognitive accounts of language understanding. In this case

> (C) compositional semantics are theories of the cognitive structures and processes underlying semantic competence.

(D) The rules that make up a compositional semantics are psychologically real mechanisms which are causally responsible for a speaker's semantic competence.[12]

CV clearly is concerned both with the semantic content of sentences of a language and with how competent speakers understand the contents of these sentences.[13] These converging concerns with semantics and language understanding are reflected in the following assumptions CV theorists make:

(I) Knowing or understanding the meaning of a sentence is based on one's—perhaps tacit—knowledge of the meanings of its words and knowledge of its syntax. This entails this knowledge is required to explain semantic competence.

(II) There is no way to make (I) precise without appeal to a compositional semantics.

(I) and (II) underlie CV's position on semantics and semantic competence. Thus, the essence of CV is not only that meanings are compositionally determined and that the compositional semantics ought to account for the ability of speakers to understand their language but, most importantly, knowledge of a

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[12] For a general discussion on these issues refer to Soames "Semantics and Psychology", 204-226.

[13] Clearly, in a broad sense these are all semantic issues; distinguishing these domains is thus to a some extent an exercise that draws our attention away from the true matters at hand, i.e., claims about tacit knowledge speakers are said to possess, that are themselves not trivial.

compositional semantics is needed to explain semantic competence. Only then can one explain how a speaker can understand the contents of indefinitely many utterances.

CV theorists then could be said to assume a semantic theory *is* a theory of semantic competence, insofar as the theory is presumed to be that in virtue of which a speaker is said to be semantically competent. This has led Soamesian skeptics to accuse CV theorists of conflation. In fact (A) through (D) are all claims Soamesian skeptics are intent on refuting. However, I argue that they are not all claims that can indeed be attributed to CV theorists.

Whether CV is guilty of conflation is a meta-theoretical question concerning the distinction between semantics and psychology and their respective proper domains of inquiry. Although this dispute is largely verbal and thus inconsequential to this discussion, it requires minimal consideration.

More importantly, skeptics argue that a compositional semantics is not needed to explain semantic competence. Some argue this by illustrating that knowledge of a compositional semantics does not guarantee understanding, i.e., is not sufficient for understanding. Other skeptics argue such knowledge is not necessary for understanding. Here some offer alternative explanations of semantic competence that do not appeal to compositional semantics, thereby showing compositional semantics are not needed in such explanations. Although both kinds of argument outright reject CV's position on knowledge of meaning, in and of themselves either one of

these arguments could remain neutral on whether natural languages actually have compositional semantics or not. In fact, Soamesians, as well as Fodor, do not reject compositionality; they just don't see compositional semantics having a place in explanations of competence. But they maintain that a compositional semantics is required to explain two other features of natural languages, namely their *productivity* and *systematicity*. Schiffer, on the other hand, not only denies compositional semantics their role in competence, he rejects compositionality as well.

1.1.3

Typically a semantic theory is supposed to provide the content of expressions of a language and a semantic competence theory is supposed to account for a speaker's capacity to grasp the meaning of utterances of these expressions by pairing them with their contents, i.e., it is supposed to explain language understanding. Now, CV theorists claim a semantic theory ought to tell us not only what the semantic contents of sentences are, but in addition ought to clarify how it is that human speakers can understand utterances of those sentences, thus echoing Davidson's concern with language understanding. But they take this concern one step further.

Having knowledge of a semantic theory would entail this theory is internally represented and as such would put the speaker in the position to understand the meanings of a po-

tentially infinite number of sentences of her language.[14] Then, a speaker's semantic competence would be explained by a language processing mechanism in which the internally represented semantic theory aids in computing the semantic contents or properties of sentences of the language. CV theorists claim the speaker's semantic competence is based on an internally represented compositional semantics of which she has *unconscious* or *tacit* knowledge. However, they are not agreed on what role the internally represented theory really plays, if any, and that is what the debate between them is largely about. In addition CV theorists disagree about the kind of compositional semantics that would play this role. Regardless of the problems with extensionalism, throughout this discussion I take the assumption that semantics will at least include a truth-conditional component that determines the conditions under which a sentence is true as uncontroversial. This means knowledge of semantic properties must at least include knowledge of truth conditions. A speaker's semantic competence would then at least involve this speaker's ability to understand utterances of sentences through pairing those sentences with their appropriate truth conditions.

What CV theorists do have in common is that they follow Chomsky's approach to explaining the semantic capacities of speakers. The approach entails accepting the thesis that we humans acquire at an early age, that is, if we are not in-

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[14] The idea that the semantics is internally represented is based on Chomsky's notion of knowledge of grammar.

nately endowed with, tacit knowledge of a grammar or compositional semantics that is of explanatory relevance to a theory of linguistic competence, i.e., to their understanding their language.[15]

CV is most recently manifested in Larson & Segal's (L&S) *Knowledge of Meaning* where they explain semantic competence by appealing to knowledge of meaning.[16] L&S offer an extensionalist semantic theory inspired not only by Chomskyan cognitivism as far as their methodological alliances are concerned, but by Davidson's program in meaning as far as their formal/structural alliances are concerned. Thus L&S see semantics as a theory not just about the meanings of sentences, but about speakers' ability to grasp those meanings. They are committed to interpreting semantics as a science, i.e., as the empirical study of a particular human cognitive competence. They flesh out the formal structure of this semantics along Davidsonian lines. This move suits them particularly well since the Davidsonian program sees it as part of the task of a meaning theory that such a theory account for how we understand the language.[17] As far as structure is con-

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[15] The actual status of the innateness debate is not something I address in this discussion. My concern is with the knowledge presumed to be required for understanding a language. This focus however might at some points necessitate reference to the question of language acquisition and the linguistic capacities humans are endowed with.

[16] Richard Larson & Gabriel Segal, *Knowledge of Meaning: An Introduction to Semantic Theory* (Cambridge: MIT Press, 1995).

[17] I address the details of Davidson's program in the next chapter but note that there are philosophers who, although they agree with Davidson's assessment that a correct meaning theory ought to account for language understanding, would disagree that a truth theory can serve as

cerned, the Davidsonian program assumes the correct meaning theory to fulfill the task would be a truth theory serving as a meaning theory. L&S claim knowledge of meaning is knowledge of an *interpretive* truth theory and this theory explains language understanding.

¶1.2 LANGUAGE UNDERSTANDING

1.2.1

CV's concern with knowledge of meaning and language understanding is inspired by Chomsky's general concern with explaining the richness of the cognitive systems humans develop based on the limited evidence available to them.[18] Assuming these systems result from the interaction of experience and one's method of constructing that experience, Chomsky appealed to both an innate endowment and knowledge attained to bridge the gap between cognitive capacities and experience. Part of his project is determining which system of knowledge has been attained and based on that what to attribute to a speaker's innate cognitive faculty so as to account for her acquisition of knowledge.

Chomsky focuses on the cognitive domain of language, i.e. on the knowledge of language competent speakers have. His presumption here is that the mind is modular, that there is a language faculty to which we can attribute properties

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a correct meaning theory. Thus Dummett's views fall within the cognitivist as well as compositionalist programs, but he feels that a more robust meaning theory is required to fulfill the role.

[18] Noam Chomsky, *Knowledge of Language* (New York: Praeger Publishers, 1986).

that are distinctly linguistic, and thus that a competent speaker has a distinct linguistic competence that enables her to understand the language.[19] This linguistic competence is based on certain mental structures of linguistic rules and representations and knowledge of a language would be both analyzed and explained in terms of them.[20]

According to Chomsky these structures take the form of a transformational generative grammar that explains the form and meaning of expressions of the language in relation to the language faculty of an ideal speaker. The grammar is *generative* in that it is a system of rules with a syntactic component that generates phrase structures which contain all the information relevant to a single structural interpretation of a sentence and semantic and phonological components that respectively relate the generated structure to a semantic representation and a phonetically represented signal. As such the grammatical rules iterate to generate indefinitely many sentences of the language and their structural descriptions, thus determining the properties of each sentence of the language.

The grammar is *transformational* in that grammatical transformations play a central role in formal operations of

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[19] Although we may speculate on the existence of this language faculty, the truth about the modularity of the mind comes down to empirical research. I assume throughout this discussion that the mind is indeed modular since the available evidence suggests this is the case.

[20] Noam Chomsky, *Rules and Representations* (New York: Columbia University Press, 1980), 49. What exactly these structures are remains to be established and will be addressed later to the extent possible.

the grammar on the language. These transformations represent the structure of a sentence at different levels: a phonetic level representing its *surface structure*, and phonological, syntactic and semantic levels representing its *deep structure*.[21] The surface structure is determined by a repeated application of grammatical transformations, which are formal operations, to more elementary objects. Hence, the surface structure and deep structure are not identical.[22]

Chomsky's generative transformational grammars describe the processes that make possible a language's infinite uses of finite means by generating an infinite number of sentences from a finite set of recursive rules and principles.[23] But this by itself does not yet explain the speaker's knowledge of her language.

1.2.2

For Chomsky, a speaker's knowledge of a language entails her implicit ability in principle to understand indefinitely many novel sentences of the language. In other words, her

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[21] In particular, the syntactic component must specify a deep structure that determines a semantic and phonological interpretation and a surface structure that determines a phonetic interpretation.

[22] Noam Chomsky, *Aspects of the Theory of Syntax* (Cambridge: MIT Press, 1965).

[23] In addition the generative grammar offers a way to deal with the well-known problem of the grammatical form of a sentence hiding its underlying logical form. The structural analysis of sentences in terms of surface and deep structures now allows logical form to be studied as part of sentence grammar. And the problem can be re-interpreted as a problem about surface structure and deep structure, where the surface structure of a sentence hides its deep structure.

linguistic competence is based on her knowledge of language. This knowledge in turn is knowledge of a grammar. CV's major concern with the fact that finite creatures like us indeed have the ability to understand infinite language requires an account with a finite theory at its basis as well. CV thus explains a speaker's ability to understand her language on the basis of her knowledge of a compositional semantics.

The roots of CV's cognitivism then lead back to Chomsky. Chomsky's rationalism construes generative grammars to be not only theories of a language but theories of the linguistic competence of ideal speakers specifically.[24] Thus, a generative grammar is not just a set of rules specifying structural descriptions for a potentially infinite array of sentences of a language, but the structural descriptions indicate how the sentences are understood by the speaker. Every competent speaker of the language has mastered and internalized a grammar that expresses that knowledge of the language.[25] Now, just

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[24] The generative transformational grammar should be distinguished from the *Universal Grammar* (UG) which is a general framework of principles common to all acquirable languages. Chomsky's UG is an ideal language learner's initial, innate knowledge of universal rules and representations of language, prior to any acquisition through experience. Under appropriate environmental conditions UG gives rise to the learner's acquired knowledge of her natural language's generative transformational grammar. Given that the input from experience alone is too impoverished for language acquisition to take place we need to appeal to innate knowledge to explain language acquisition.

[25] A precondition for language learning is that a speaker must possess: (a) a linguistic theory that specifies the form of the grammar; and (b) a strategy for selecting a grammar of appropriate form that is compatible with the primary linguistic data. When a linguistic theory succeeds in selecting a descriptively adequate grammar based on the primary data it is considered *explanatorily adequate*. The speaker who has learned a language has developed an internal representation of a generative grammar, based on the observation of primary linguistic data.

as Chomsky claims a speaker's linguistic competence is explained by her knowledge of the rules and principles of a grammar, CV theorists claim a speaker's semantic competence is explained by her knowledge of the rules and principles of a theory of meaning. Thus CV theorists set up a theory of semantics along a parallel structure to the generative grammar and in doing this follow an analogous line of argument about speaker competence.

Because the principles of a compositional semantics, just like those of a generative grammar, are highly abstract rules and representations the standard cognitivist presumption is that the speaker has no awareness of her knowledge of the theory's principles. Thus, although every speaker of a language has mastered and internalized a compositional semantics that expresses her knowledge of meaning, the cognitive processes that follow the theory's abstract rules and principles take place far beyond the level of consciousness. This has lead to some controversy about what it means to say that we as ideal speakers have knowledge of a semantic theory. It is not clear whether this knowledge is a form of propositional knowledge, or alternatively whether it is knowledge 'how' or knowledge 'that'.

Generally, knowledge of meaning is construed as a form of tacit, subpersonal knowing, referred to by Chomsky as cognizing. Cognizing has the structure and character of knowl-

edge, but may be inaccessible to consciousness.[26] However, it is disputed whether these tacit states ought to be distinguished from ordinary propositional attitude states. Most CV theorists would argue that states of tacit knowledge are not to be treated as typical propositional attitude states, because there are specific implications in attributing tacit knowledge to a speaker. Tacit knowledge of a compositional semantics—although a mental state of the speaker—does not qualify as a regular propositional attitude state. Instead, the nature of the tacit states of knowledge is best captured by Stich's notion of *subdoxastic* states. Subdoxastic states are like propositional attitude states insofar as they have content, but differ from propositional attitude states insofar as they do not play a role in inferential processes. Thus a tacit state of knowledge is distinct from mental states like beliefs in that it cannot interact with other belief states.[27] Even granting this distinction it remains difficult to draw a clear line between the two kinds of states.[28]

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[26] The fact that this knowledge is tacit is best illustrated by cases where seemingly identically structured sentences turn out not to be structurally identical. In these cases a speaker might be erroneously led to believe that these sentences will receive the same structural analysis. The difference will be exposed when the speaker subdoxastically recognizes that although the sentences have the same surface structure, they have a different deep structure. Similarly, in the case of ambiguous sentences the speaker fails to realize that his internalized grammar assigns radically different syntactic descriptions to the one ambiguous sentence, thus accounting for the different meanings of the one sentence.

[27] Evans suggests that there are other points of likeness between ordinary propositional attitude states or states of knowledge and states of tacit knowledge. These similarities occur at the level of output where one would be disposed to do and think the same things whether one were to have tacit or ordinary knowledge that p. At the level of input

Regardless, CV theorists assume with Chomsky that whatever semantic knowledge speakers have, they have it at a tacit level.[29] The question is whether tacit states of knowledge do play a role in derivational processes.

Since CV and Chomsky rely on knowledge of meaning or grammar (respectively) to explain competence we should clarify Chomsky's notion of competence. He distinguishes *competence* from *ability*. He states

> by 'grammatical competence' I mean the cognitive state that encompasses all those aspects of form and meaning and their relation, including underlying structures that enter into that relation, which are properly assigned to the specific subsystem of the human mind that relates representations of form and meaning.[30]

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acquiring knowledge that p probably happens under the same circumstances whether tacit or ordinary. He concludes that states of tacit knowledge then should not be treated as a species of belief. Gareth Evans, "Semantic Theory and Tacit Knowledge", *Collected Papers*, ed. A. Phillips (New York: Oxford University Press, 1985), 322-342.

[28] Stephen Stich, "Beliefs and Subdoxastic States", in *Philosophy of Science* 45 (1978), 499-518. Another way to say it is that subdoxastic states are information-bearing states that are not beliefs in that they are not available to consciousness. They are unconscious information-bearing states.
Davies addresses the difficulties of distinguishing subdoxastic states from ordinary propositional attitude states. Martin Davies "Tacit Knowledge and Subdoxastic States", in *Reflections on Chomsky*, ed. Alexander George (Cambridge: Basil Blackwell, 1989), 131-152.

[29] Incidentally, in Chomsky's case whenever offering an explanation of linguistic competence both the innate knowledge of UG as well as the acquired knowledge of grammar are presumed to be tacit.

[30] Chomsky, *Rules and Representations*, 59. This statement also reflects Chomsky's belief in the modularity of mind, the subsystem referred to here being the language faculty.

Grammatical competence for Chomsky is the mental state of knowing a language. To know a language is to have a certain mental structure consisting of a system of rules and principles that generate and relate mental representations of various types. The reason Chomsky doesn't like the interpretation of *competence* as *ability* is that the latter suggests a system of dispositions in which case behavior would provide a criterion for knowledge. But he points out that our linguistic abilities or dispositions are based on knowledge of language and thus on competence. Knowing the language is just having the appropriate mental structure, apart from the speaker's disposition to use that knowledge. This means that the generative grammar does not prescribe the functioning of actual linguistic performance, only that of the speaker's grammatical competence, i.e., her potential to use or understand the language.[31]

In light of this interpretation I should note the following. First of all, when I characterize semantic competence as the ability to understand the language, I do not intend to suggest that a speaker's competence is merely a system of behavioral dispositions. Nor do CV theorists intend it as such. Thus, although we may deduce knowledge from behavior, this

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[31] Thus a child who might not yet be able to understand or say certain things, nonetheless already has this mental structure. Note that Chomsky at times introduces a related distinction, namely that between grammatical competence and pragmatic competence, where the latter reflects the knowledge the speaker has of the conditions under which a sentence of the language may be appropriately used. The two together find their place in a theory of performance. In fact performance relies on competence. See Chomsky, *Rules and Representations*, 224-226.

does not suggest that without behavioral evidence we could not attribute competence to the speaker. If we construe competence as the ideal speaker's ability-in-principle, then we can construe performance as her actual application of this ability (as evidenced by behavior). On this construal there is no substantive difference between my and Chomsky's notion of competence.[32]

Secondly, the reader may notice I use the terms *semantic competence* and *language understanding* interchangeably. There is reason to distinguish competence from understanding by noting that competence is the ability on the part of speakers to both understand as well as generate indefinitely many novel sentences of the language they speak. But at this point in the discussion nothing important hinges on this distinction insofar as its impact on the need for compositional semantics in explaining either one. Clearly the Chomskyan interpretation of competence is what is in dispute in this dissertation to begin with, even though his remark about competence underlying performance seems not to conflict my interpretation of competence.

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[32] Rather, he and I choose to use the word ability in slightly different ways. At the same time, there is the distinction between the competence and performance of ideal speakers that Chomsky makes. Here competence is the speaker's knowledge of his language and performance is the speaker's actual use of the language, where competence nonetheless underlies performance. Noam Chomsky, "Methodological Preliminaries" in *Aspects of the Theory of Syntax* (Cambridge: MIT Press, 1965).

1.2.3

Despite its popularity amongst CV theorists and linguists Chomsky's rationalist project remains controversial. Skeptics object in various ways to the possibility that the principles of a generative grammar constitute knowledge *that* or knowledge *how*.[33] One objection is that there is no way to establish whether an extensionally equivalent set of principles, meaning a set of rules and principles that would result in the same output as the grammar, might not lie at the root of linguistic competence.

Another controversy is CV's attempt to formulate a theory that a speaker tacitly knows, thereby suggesting the theory forms part of a speaker's psychology, instead of formulating a theory that states explicitly known facts. Thus most skeptics deny that a semantic theory should be interpreted as a component of the mind or its processes. Some even accuse Chomsky and CV theorists of conflating a theory of language with a psychological theory. Ironically, though, Chomsky distinguishes the linguist's grammar, which is an explicitly stated scientific theory that expresses

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[33] In fact, these principles might be indistinguishable from other principles to which we would never grant epistemic status. One example of such principles would be those of riding a bike, which whatever they might be are surely assumed to be unconscious and not of epistemic significance. Chomsky addresses this, as do Devitt & Sterelny. Michael Devitt & Robert Sterelny, *Language and Reality*, (Cambridge: MIT Press, 1987).
Personally, I am not convinced that we can draw comparisons between cognitive and motor skills and hence I do not believe this objection is successful.

> the rules and principles of the grammar in the mind of the ideal speaker[34]

from the grammar that is a cognitive structure of the mind that makes the speaker a competent speaker. The linguist's theory is correct if it accords with the internally represented grammar. To Chomsky the theory is considered descriptively adequate if it correctly describes the speaker's intrinsic competence of her language.[35] Similarly, Davidson considers a correct meaning theory for a language adequate if it accounts for the speaker's ability to understand her language. However, descriptive adequacy does not guarantee explanatory efficacy. And of course the problem for CV theorists is that they maintain that a compositional semantics is necessary in explanations of competence.

Hence, the point of much of the skepticism is that meaning theories cannot be considered explanatorily efficacious; they can be merely descriptive. If a speaker's use of the language results in output that has the form that would be generated by following a set of rules, it still would not follow that it is by an internal computational process of following those rules that the output comes to have the form

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[34] Chomsky, *Rules and Representations*, 220. He points out that "[i]t is common to use the term "grammar" with systematic ambiguity, letting the context determine whether it refers to the internalized grammar or to the linguist's theory".

[35] In order to achieve a certain level of descriptive adequacy, however, the grammar for a particular language needs to be supplemented with UG. Otherwise there is no fully bridging the gap between knowledge and experience.

it has. In other words, any perceived isomorphism between theory and psychological structure is most likely accidental. Whatever success the rules of a meaning theory have in describing the facts does not guarantee that these rules give the correct account of the actual mental processes a speaker goes through.

Skeptics concede that a meaning theory might reveal the semantic machinery which competence negotiates, but that it in fact leaves the psychological form of competence undetermined.[36] The interesting question is whether the mind's processes could be said to follow such rules as the theory purports to provide.

Chomsky objects by asking what it is his grammar lacks such that it would leave the psychology of a speaker undetermined. Thus he demands from critics an account of what it is that another theory, that does determine the psychology, would provide. As far as he is concerned in order to discover the psychological form of competence we should try to construct the best theory that can explain the significant evidence.

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[36] They deny any psychological reality can be attributed to grammars or meaning theories, given evidence that suggests that psychological processes most likely do not exhibit the kind of complicated structure we assign to the theory in question. As I argue later, most CV theorists can skirt these objections even though they will maintain that a meaning theory is needed to explain a speaker's ability to understand sentences of her language.

§1.3 COMPOSITIONAL SEMANTICS

1.3.1

CV's explanation of language understanding is not complete without a discussion on how assumption (I) can be fleshed out. CV theorists owe us an account of the nature of the semantic properties referred to in (I). In other words, the need to make assumption (I) more precise motivates assumption (II). If CV theorists want to explain a speaker's language understanding by appealing to knowledge of meaning, i.e., if natural languages need compositional semantics to account for language understanding, then the only way to do that will be by specifying the compositional semantics.

The fact that finite competent speakers can master infinite natural languages reflects a feature of the psychological constitution of the speakers. Normal speakers of a natural language are able, remarkably so, to understand—as well as produce— utterances of indefinitely many novel sentences of that language, hence the difficulty in explaining semantic competence. Supposedly, we would not be able to account for this competence if it were not for semantics being compositional and for the speaker having knowledge of this semantics.[37] Those who deny this should not only raise objections to CV but also offer an account of why the explanation of natural language understanding would not require a composi-

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[37] I should qualify this statement by pointing out that these claims about semantic competence apply only to the mastery of infinite languages. Thus even a CV theorist might concede that in the case of a finite language a speaker's understanding might be explained as not being structured.

tional semantics. Ideally, this account would include an alternative explanation of language understanding that offers a positive account of how competence can be explained without appeal to compositional semantics.

The claim that natural languages have compositional semantics is based on the platitude that the meanings of sentences are determined by the meanings of their component words and the latter's structural arrangement in the sentence; at the same time it is supposed to explain the platitude. A compositional semantics for a natural language would be a finitely statable theory specifying the semantic primitives of the language and specifying (compositional) rules for determining the complex expressions of the language. In other words, a compositional semantics constructs the meaning of complex expressions out of the meanings of their component parts and their structural arrangement in the complex expression.

The platitude does not actually provide philosophical motivation for holding that each natural language has a compositional semantics. Instead, the most often proffered motivation, the one pertinent to CV theorists, is [C]:

> [C] It would not be possible to account for a speaker's semantic competence, i.e., her ability to understand the meanings of utterances of indefinitely many novel sen-

> tences of a language, without assuming that that language had a compositional semantics.[38]

One dominant motivation for the need of compositional semantics (for natural languages) is the observation that to understand a language a competent speaker, as a finite creature, must have a *finitely* based ability to understand any of a potentially *infinite* number of sentences. Then we can account for a speaker's amazing feat of understanding as follows. When a speaker encounters a novel sentence and understands it, she is not confronted with new expressions and syntax but with familiar subsentential expressions that have been structurally organized via known rules to create a novel sentence. Thus a speaker is semantically competent because she can determine the meaning of a sentence based on her knowing both the meanings of its component expressions and the principles of syntax. This knowledge enables a speaker to understand a potentially infinite number of novel utterances of her language. Although the claim that natural languages need compositional semantics to account for semantic competence is compelling, it is not decisive.

1.3.2

To avoid possible confusion about the notion of a *compositional semantics*, we should distinguish *compositional meaning theories* and *compositional truth theories*, both of which

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[38] This is basically Schiffer's characterization of hypothesis [U], see Schiffer, *Remnants of Meaning*, 5.

are theories that are covered by the term compositional semantics. A *compositional semantics* for a language would, to a first approximation, be a finitely statable theory that specifies the semantic values of a finite set of semantic primitives and specifies the compositional rules that regulate how the complex meanings of complex expressions of the language could be formed from the semantic primitives. More specifically, a compositional semantics for a particular natural language will generate by means of a recursive system for all sentences of the language the propositions they express. Then under the presumption that meaning determines reference the theory will derive the truth conditions of the sentences in question from those propositions. This first approximation of the nature of a compositional semantics is based on a nonindexical unambiguous language, because indexicality and ambiguity bring with them certain complications for the theory.[39]

I want to look at what the relation is between a compositional meaning theory on the one hand and a compositional truth theory on the other hand, based on the distinction below. Note that the following characterization is intended as a gloss of these theories, again ignoring both indexicality and ambiguity as well as any nonindicative sentences of a

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[39] Grandy suggests indexicality can be accommodated by making explicit how indexical features function; ambiguity unfortunately is more complicated. For simplicity's sake, throughout the discussion *L* is taken to be an unambiguous nonindexical language, unless noted otherwise. Richard Grandy, "Understanding and the Principle of Compositionality", *Philosophical Perspectives*, 4, *Action theory and Philosophy of Mind* (1990): 557-572.

language *L* to simplify the account for present purposes. First, consider a compositional meaning theory:

> (CMT) A compositional meaning theory for a language *L* is a finitely axiomatized theory of *L* which assigns meanings to all the primitive expressions of *L* and specifies compositional rules which show how these meanings determine the meanings of the indefinitely many complex expressions of *L*.[40]

Such a compositional meaning theory issues, for each sentence of *L*, in a theorem of the form

> σ means *s* in *L*,

where 'σ' is replaced by a structural description of a sentence of *L*, i.e., 'σ' is a name or description of an *L*-sentence, and '*s*' is replaced by a sentence in the metalanguage that translates 'σ'. Further analysis of '*s*' then depends on how we analyze that-clauses. The most congenial way to do this is by saying they are propositions. Then, '*s*' would be a variable whose substitution instances are referential singular terms.

Next consider a compositional truth theory:

> (CTT) A compositional truth theory for a language *L* is a finitely axiomatized theory of *L* which assigns proper-

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[40] For a discussion of compositional meaning theories see Schiffer, *Remnants of Meaning*, especially chapter 7. The description I have provided here is based mainly on his account.

> ties to the primitive expressions of *L* and specifies the compositional operations in such a way as to determine for each of the indefinitely many truth-evaluable complex expressions of *L* the conditions under which they are true.[41]

Such a compositional truth theory issues, for each sentence of *L* whose tokens can have truth values, in a theorem of the form

> σ is true in *L* iff *p*,

where 'σ' is replaced by a structural description of a sentence of *L* and '*p*' is replaced by a sentence in the metalanguage, which states the necessary and sufficient conditions under which the sentence is true.[42] In other words, the theorems of the compositional truth theories assign to each sentence of *L* the conditions under which an utterance of it would be true.

1.3.3

CV then can take on two forms, depending on whether the CV theorist constructs a compositional semantics as a compositional meaning theory or as a compositional truth theory.

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[41] Again, for a discussion of compositional truth theories see Schiffer *Remnants of Meaning*, chapter 7.

[42] The sentence in the metalanguage cannot itself contain a reference to the sentence referred to by σ, i.e., it cannot contain a structural description of σ.

And this in turn depends on one's philosophical alliances, as far as what constitutes meaning is concerned.

There are Davidsonian CV theorists who interpret meaning as extension, where all there is to the meaning of a term is its reference and where the meaning of a sentence is determined by its truth conditions. Those who construct meaning extensionally will claim that a truth theory can serve as a correct meaning theory and thus that a compositional truth theory is needed to explain language understanding. On the other hand there are Fregean CV theorists who interpret meaning as intension, where the meaning of a term includes both the term's *reference* (the object it denotes) and the term's *sense* (the mode of presentation of the referent) and the meaning of a sentence includes its *reference* (its truth value) and its *sense* (the proposition it expresses).[43] Those CV theorists who construct meaning intensionally will claim a compositional meaning theory is needed to explain language understanding.

On the propositionalist assumption that a sentence's meaning determines its truth conditions, a natural language cannot have a compositional meaning theory that does not also determine a compositional truth theory for that language. Thus assuming the more foundational nature of meaning, establishing whether natural languages (or languages of thought)

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[43] There are propositionalists who construct sentence meanings as propositions but who nonetheless espouse the notion that word meanings are references.

have compositional meaning theories by default establishes whether they have compositional truth theories.

Of course, extensionalists take exception to the claim that meaning determines truth, given that they believe that to understand the meaning of a sentence amounts to knowing the truth conditions for that sentence. Thus, on any extensionalist account, since meaning does not determine truth, the compositional meaning theory does not determine a compositional truth theory.[44] Instead, the compositional truth theory serves as the compositional semantics.

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[44] One result of these two positions then is that intensionalism allows for a logical inference from -σ means p in L- to -σ is true in L iff p-. In other words, if *shortbread is buttery* means in English that shortbread is buttery then one can infer that *shortbread is buttery* is true in English iff shortbread is buttery. For extensionalists the reverse inference does not (and cannot) hold.

Chapter 2: THE EXTENSIONALIST PROGRAM

§2.1 DAVIDSON'S CRITERION

2.1.1

CV's motivation for claiming that natural languages need a compositional semantics is that without it we would not be able to account for a speaker's ability to understand her language. Thus CV theorists claim that a compositional semantics is required to explain language understanding. And this motivation is clearly based on Davidson's requirement that a compositional semantics--in order to be considered a correct meaning theory for a language--has to account for language understanding.

However, what distinguishes Davidson from most later CV theorists is that he does not make any cognitive commitments to a compositional semantics necessarily entering into an explanation of a speaker's ability to understand language. In other words, Davidson does not make any cognitive claims about the psychological processes and mechanisms that are involved in language understanding. A correct meaning theory for Davidson simply would be a semantics that can account for language understanding, precisely because it would offer a constructive account of meaning. Thus Davidson only makes a philosophical claim, i.e., offers a hypothetical account, about correct meaning theories and language understanding. From any CV theorist's point of view the problem Davidson incurs here is that his constructive account--if successful--

would be merely descriptively adequate but would not entail any causal or explanatory efficacy.

What Davidson does have in common with CV is the conviction that a speaker's having knowledge of a compositional semantics for her language would enable or allow her to understand sentences of the language. More importantly, though, Davidson's significance to CV lies in his development of the correct semantics for natural languages and not in the lack of contribution to the cognitive program of CV. His contribution then lies in narrowing down the potential candidates to play any kind of role in accounts of language understanding.

2.1.2

Davidson's primary concern is with determining the correct form of a meaning theory for a natural language. Davidson wants to provide a satisfactory meaning theory that can explain language learning and understanding. A learnable language according to him requires a constructive account of the meaning of a sentence from the meaning of its parts. In other words, given that the speakers of a language can effectively determine the meanings of a potentially infinite number of sentences of the language, his aim is to offer a constructive account of how the meaning of a sentence is derived from the meanings of its subsentential components and their structural arrangement in the sentence.

This correct theory of meaning ought to not only provide an effective means of generating the meaning of a sentence

based on the meanings of its parts but ought to do so for every possible sentence of the language since speakers could in principle understand any number of novel sentences of their language. This constructive account would qualify as a correct theory of meaning for that language. In essence then Davidson's concern is with determining compositional semantics for natural languages.

But in considering existing theories of semantics, Davidson finds fault in both referential theories of meaning and Fregean theories of meaning. As such he wants to do away with the notion of meaning altogether and instead focus on the semantic notion of truth. His rejection of referential and Fregean theories is fueled by his conviction that they fail to meet the standards of a satisfactory meaning theory. He claims a satisfactory meaning theory for a language must give an account of how the meanings of sentences depend on the meanings of words. But he dismisses the idea that meanings, references, or propositions can play the role they ought to in the meaning theory, insofar as this theory has to provide meanings for every sentence of the language.

Instead, Davidson offers a new take on what kind of theory would satisfy this requirement, and he sets out to define such a theory. As far as he is concerned, the correct meaning theory for a natural language has to be a statement that contains a *generative* or *recursive* function. In other words, the theory has to contain a compositional function relating all sentences to their meanings, just as a compositional seman-

tics would. A compositional semantics would be a finitely statable recursive theory that can generate the meaning for any sentence of the language based on the meanings of its subsentential components and their structural arrangement in the sentence in question. Compositionality as such would explain the following aspects of languages and speakers, namely language acquisition and language productivity & systematicity, the production and understanding of an infinity of sentences from a finite vocabulary and finitely stated set of structural rules.

Although Davidson's criteria on a correct meaning theory--that of explaining the meaning of a sentence and that of accounting for language understanding--might suggest natural languages need a compositional meaning theory, Davidson rejects the possibility that a *compositional meaning theory* could satisfy his criteria on a correct meaning theory. He offers various other solutions and proceeds to reject them all. Instead he suggests the correct semantics has to be a *compositional truth theory*.

Davidson claims that an extensionalist account of meaning--in particular a truth theory constructed along the lines of a Tarskian truth definition--can serve as a meaning theory. Thus he offers his compositional truth theory that serves as a satisfactory meaning theory. Moreover, such a theory, appropriately modified to apply to a natural language, is enough for interpretation, because it would pair truths with truths and falsehoods with falsehoods. The virtue

of compositional truth theories is that they do not make use of meanings as abstract entities, since meanings can't do the work they're supposed to, and yet being compositional they are able to crank out an infinite number of theorems that state the truth conditions of each possible sentence of a language from a finite set of axioms. The compositional truth theory is a finitely statable theory that provides the truth conditions for every sentence of the language by cranking out truth theorems of the form "σ is true iff p", where 'σ' stands for a structural description of the sentence and 'p' stands for a translation of the sentence in the metalanguage which gives the necessary and sufficient conditions under which what the sentence states is true. For Davidson, knowing for any sentence of a language what it is that makes it true, i.e., knowing the necessary and sufficient conditions for the truth of the sentence, amounts to knowing the meaning of the sentence; to know this for every possible sentence of the language amounts to understanding that language.

2.1.3

Consider the requirements Davidson puts on a correct meaning theory more carefully. Beyond the requirement that a correct meaning theory has to be a finitely statable theory that can generate the meaning for any arbitrary sentence of the language, i.e., that it has to be a compositional semantics, there is another important criterion. And as we already found this is Davidson's criterion that the correct meaning

theory in some way account for a speaker's language understanding.

Roughly stated, Davidson's intuitively correct criterion in this case is that a correct meaning theory for a natural language would be a theory that puts you in a position to understand utterances of the language, if you know the theory and know that it meets certain conditions. In particular, Davidson claims that

> someone is in the position to interpret the utterances of speakers of a language *L* if he has a certain body of knowledge entailed by a theory of truth for *L*—a theory which meets specified empirical and formal constraints—and he knows that this knowledge is entailed by such a theory.[45]

Davidson's criterion can be more precisely stated as follows. A correct meaning theory for a language satisfies the criterion of accounting for a speaker's language understanding if it is a finitely axiomatized extensionalist meaning theory á la Tarski and

> a) The speaker knows the theory and has knowledge of what is stated by the axioms of the theory.
>
> b) The theory satisfies certain formal and empirical constraints.

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[45] Davidson, "Reply to Foster", 171, 172, 174.

c) the speaker knows a) and b) to be the case.

Thus characterized, the compositional truth theory would account for language understanding as follows: a speaker understands an utterance of a sentence of the language when she knows the associated or relevant truth theorem for that sentence generated by the theory and knows this theorem was derived from a correct semantic theory for the language. The constraints that need to be satisfied include the extensionalist constraint of not introducing any entities such as propositions as the contents of sentences and adhering to the principle of charity.

But what makes Davidson's criterion stand out is that this explanation of language understanding does not require the speaker to actually know the derivational processes of that theory. In other words, the speaker does not have to consciously know the axioms or derivational processes according to which the theory operates to crank out the desired theorems; she need only know that the theory she knows issues in the appropriate T-sentences in a way that satisfies the constraints. Moreover note that Davidson overtly avoids talk of speaker competence. Thus he is not claiming that a) and b) are required for language understanding, but rather that they are required for a theory to qualify as the correct one. The fact that a speaker would understand her language if she knew the correct truth theory does not entail she has to have tacit knowledge of the theory in order to understand a sentence of her language.

§2.2 A COMPOSITIONAL TRUTH THEORY

2.2.1

To motivate his rejection of compositional meaning theories in favor of compositional truth theories Davidson considers various methods of construing meanings, such as the well-known referential theory of meaning that construes meanings as references. Although this approach has its merits when specifying the meanings of subsentential natural language expressions, it does not hold water when applied to whole sentences. The problem of course is also well-known, namely that in the case of sentence meaning, equating meaning with reference entails equating the meaning of the sentence with its truth value. This has unacceptable consequences.

One consequence is that on this account every sentence with the same truth value has the same meaning.[46] Another consequence is that in the case of opaque contexts, or in *oratio obliqua* as Davidson calls it, sentences may contain subsentential components which when substituted by co-extensive (co-referential) expressions will not preserve the truth value of the sentence.

The problem in opaque contexts such as propositional attitude or indirect discourse sentences is that the *surface*

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[46] Similarly, a simple Fregean account which refers to the meanings of words but which in fact does not describe the role of those meanings in the generation of the meaning of the sentence, will not yield the meaning of a sentence in a non-vacuous way. See Davidson's example of the Fregean account of the meaning of "Theaethetus flies". Davidson, "Truth and Meaning", 20.

structure of the sentences does not reveal the *logical* structure of the sentence. As such, referential analyses of opaque contexts have no way of offering an appropriate logical account of the semantic contribution of the embedded clause to the semantic character of the whole sentence. Since referential theories of meaning do not guarantee substitution salva veritate of co-extensive subsentential components in opaque contexts, they cannot qualify as correct meaning theories for a natural language because they fail to give a compositional recursive account of meaning that is foolproof. In other words, Davidson contends that when it comes to establishing the meaning of whole sentences the meanings that referential theories of meaning ascribe to subsentential components do not guarantee compositionality. A referential theory fails to provide compositionally determined meanings for every sentence of a language because it is unable to provide such compositionally determined meanings for opaque context sentences.

That is why when it comes to establishing the meaning of whole sentences, Davidson instead proposes the following. Although we should see the subsentential components of a sentence as making a systematic contribution to the meaning of the whole sentence, this does not require that every subsentential component has a meaning ascribed to it except for in

the ontologically neutral sense that it contributes to the meaning of the sentence.[47]

2.2.2

In order to satisfy Davidson's requirement of compositionally determining a meaning for every possible sentence of a natural language the correct meaning theory for that language has to issue in semantic theorems for each sentence that in one form or another define the relation between this sentence and its meaning or content. On a first approximation the theory might issue in theorems or M-sentences that are of the form

(M) σ means p (in L)

for each sentence of the language, where 'σ' is a structural description of a sentence of the language and 'p' is replaced by a complex singular term referring to the meaning of that sentence. According to Davidson, the problem with these M-sentences is that 'p' as a complex singular term would presumably refer to a Fregean proposition. Thus, a Fregean analysis entails that the theory issues in theorems that define the meaning of a sentence as an abstract entity.

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[47] Davidson claims knowledge of the meanings of the parts of the sentence plus knowledge of a syntax is not enough to provide knowledge of the truth conditions of belief sentences. Therefore "[I]f sentences depend for their meaning on their structure and we understand the meaning of each item in the structure only as an abstraction from the totality of sentences in which it features then we can give the meaning of any sentence or word only by giving the meaning of every sentence or word in the language". Davidson, "Truth and Meaning", 22.

Here again the problem of *oratio obliqua* or propositional attitude sentences comes up. Fregean meaning theories do not guarantee substitution *salva veritate* of synonymous propositions in opaque contexts. Hence they cannot qualify as correct meaning theories for a natural language because they also fail to give a compositional recursive account of meaning that is foolproof. In other words, in cases of oratio obliqua the analysis would fail to offer an account of the meaning of a sentence based on the meanings of its sub-sentential components and their arrangement in the sentence.

Davidson therefore dismisses the idea that Fregean propositions can play the role they ought to in the meaning theory. Davidson's concern here--unlike Quine's--is not that propositions are obscure entities but rather that they don't turn out to be at all useful, because they do not meet his requirement of compositionality for a correct meaning theory.

Given the problems both references and propositions incur Davidson wants to avoid introducing meanings or propositions into the picture. As an alternative he proposes to reanalyze 'σ means p' in a way that links descriptions of sentences to sentences rather than to propositions. Thus he comes up with something along the lines of

(M*) σ means (in L) what σ' means in L'

where 'σ' is replaced by a structural description of a sentence of the language and 'σ'' is replaced by a translation

of that sentence in the metalanguage.[48] Theorems of this form have the advantage that they do not refer to any abstract entities that fail to comply with the requirement of compositionality. At the same time they also point in the right direction for cases of oratio obliqua.

However, Davidson makes what he considers one more improvement on theorems of the form (M*). He replaces the nonextensional predicate 'means that' by a predicate that provides for every sentence 'σ' a matching sentence that in some way gives the meaning of 'σ' extensionally.[49] We then get Davidson's schema T or T-sentence of the form

(T): σ is T (in *L*) iff *p*,

where again 'σ' is replaced by a structural description of a sentence of the language and '*p*' is replaced by a translation of the sentence in the metalanguage. The meaning theory will just have to place enough restrictions on the predicate 'is T' to entail all sentences gotten from schema (T).

So the meaning theory can be put into the form of what appears to be an explicit definition of a predicate T that applies just to the true sentences of the language. In essence Davidson's semantic theory issues in truth theorems

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[48] See Davidson, "Truth and Meaning", 22. This is how I interpret his move from "σ means *m*" to "σ means that *p*", where '*p*' is replaced by a sentence.

[49] This matching sentence is either 'σ' itself, if the object language is contained in the metalanguage, or a translation of 'σ' if the object language is not contained in the metalanguage.

or T-sentences of a biconditional nature. As such Davidson--based on Tarski's Convention T--has determined that the correct meaning theory for a natural language has to be a compositional truth theory. According to Davidson a compositional truth theory for a natural language *L* shows how the meanings of sentences depend on the meanings of words, if the theory contains a definition of truth-in-*L*.

Since a meaning theory's task ultimately is to account for understanding, Davidson believes that Tarski's convention T offers a way to get a correct meaning theory that no longer faces the opaque context problem because it does not appeal to references or abstract meanings such as propositions. In addition the compositional truth theory relates the truth conditions of a sentence to the words of the sentence that recur in other sentences where they can be assigned identical roles.

Based on the above process of trial and error Davidson claims that it is not possible to generate a compositional semantics that would issue in appropriate meaning theorems of the form 'σ means (in *L*) that *p*', where '*p*' is replaced by a translation of the sentence in the metalanguage, for every sentence of *L*. However, he claims a compositional semantics can result in theorems of the form 'σ is true (in *L*) iff *p*', where '*p*' is replaced by a translation of the sentence in the metalanguage. However, he offers no compelling argument--beyond his general doubt concerning the usefulness of meanings

as abstract entities--why this is the case. All he argues is that meaning theorems fail to relate the meaning of the sentence to the meanings of the words.

Presumably, his argument is that M-sentences fail to reveal the logical structure of natural language sentences as distinct from their surface structure and this as we saw lead to problems in *oratio obliqua*. T-sentences do reveal the logical form of all sentences and as such a truth theory can for any sentence of the language issue in a theorem that shows how the words contribute to the truth conditions of the sentence, without assigning meanings or references to each word. M-sentences in revealing only surface structure fail to reveal the semantic character of the whole as dependent on the composition of the subsentential expressions. Since one of his requirements for a correct meaning theory is that it has to be a compositional theory with a recursive structure that can generate a truth theorem for every possible sentence of the object language a compositional meaning theory does not qualify.

2.2.3

However, problems arise in Davidson's use of Tarski's convention T as well. The main problem is that Tarski, in defining convention T, was offering an explicit definition for a formal language of a predicate T whose application in the formal language would coincide with the application of the truth predicate in a particular natural language. Tarski

thus defined T by stipulation as an absolute predicate to be applied absolutely to sentences of a particular formal language. Given that truth is a relational predicate 'true in *L*', when defining T, Tarski was patently not defining the notion of truth for natural languages directly.[50]

Clearly, Davidson's own compositional truth theory is not a definition of truth either even though he characterizes it as a definition of *truth-in-L*. Instead, he uses the notion of truth as a primitive in the theory's axioms which generate truth theorems for each sentence of the language. The theorems generated also make use of the notion of truth as a primitive. Davidson in offering convention T (which states certain satisfaction conditions) is thus formulating a truth theory, not a truth definition.

Since Tarski proved that the notion of truth can be explicitly defined only in a metalanguage which is of a higher order then the object language for which it is defined--something which is never the case for natural languages--Davidson's truth theory does not define truth in the object language, i.e., it does not really define *truth-in-L* at all. Rather, it cranks out truth theorems for each sentence of the language, theorems which give a finite characterization of the extension of the predicate true as it applies to the natural language.

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[50] This is not to suggest that Tarski was not concerned with providing a definition for the notion of truth. On the contrary, he was concerned with providing a definition of truth that would be both materially adequate and formally correct.

§2.3 THE TRUTH THEORY AND LANGUAGE UNDERSTANDING

2.3.1

Beyond Davidson's requirement that a correct meaning theory has to be a compositional theory that generates a truth theorem for every sentence of the language there is also his by now well-known requirement that a correct meaning theory has to be a theory that satisfies the Davidsonian criterion of explaining language understanding. But Davidson's criterion on a correct meaning theory is subject to the following criticisms.

First of all, it is questionable whether this is an adequate criterion to be placed on a meaning theory, such that the theory satisfying it would indeed constitute a correct meaning theory. In other words, it is not clear that this criterion can be appropriately motivated as a necessary criterion to be imposed on correct meaning theories.

Secondly, even if Davidson's criterion is adequate and appropriate, it is not obvious that a compositional truth theory that serves as a meaning theory really satisfies the criterion and thus can be considered a correct meaning theory. This second criticism targets the extensionalist and biconditional nature of the truth theorems that Davidson's truth theory cranks out. In other words, the issue here is whether a simple biconditional can offer sufficient conditions for language understanding.

2.3.2

With respect to the first criticism, whether Davidson's criterion is appropriate, we should consider what motivates the criterion that a correct meaning theory should account for language understanding. We found that Davidson argues that the main business of a meaning theory is to offer a constructive account of sentence meaning which at the same time constitutes a finite recursive explanation of the speaker's ability to understand infinitely many sentences of the language. According to Davidson his compositional truth theory which gives the necessary and sufficient conditions for the truth of every possible sentence of a language first of all explains the semantic role of each significant expression in any of the possible sentences in which it occurs and in doing so also explains language understanding. This is the case because as he claims

> To know the semantic concept of truth for a language is to know what it is for a sentence—any sentence—to be true, and this amounts, in one good sense we can give to the phrase, to understanding the language.[51]

Unfortunately Davidson's approach here presents two drawbacks. The first is the extremely vague association T-sentences offer between words and concepts. By issuing in T-sentences for each sentence of the language the truth theory indeed provides some association of words with concepts. And

[51] Davidson, "Truth and Meaning", 24.

moreover Davidson is careful to point out that the axioms of the theory do not purport to explain the concepts that words stand for. As such the theory does not actually offer any insight into what the association between the words and concepts is. In other words, the association--to the extent that the theory is successful in establishing it--is so vague as to become almost pointless. This leads us to the second drawback.

The second drawback is Davidson's evasive approach when it comes to making cognitive claims about language understanding. Davidson claims his theory is able to issue in T-sentences for every possible sentence of the language based on a finite set of axioms. However, although the theory is a finite recursive function that issues in T-sentences for any sentence, it never really succeeds in offering a constructive account of how the meaning of a sentence is determined by the meanings of its subsentential components and their structural arrangement in the sentence. This makes the theory merely descriptive rather than explanatory. And as such it does not manage to offer an explanation of understanding either.

In essence then, Davidson's strong point ultimately is not his criterion but rather his insistence on the need for natural languages to be compositionally determined. However, there are other motivations, other than explaining language understanding, for claiming that natural languages have compositional semantics. And this possibility unfortunately un-

dermines Davidson's motivation for the criterion.[52] Of course it also represents a challenge for CV theorists.

Regardless of these drawbacks, Davidson's account is at least partially true to his own criterion, as long as one agrees with his interpretation of what constitutes language understanding. The fact of the matter to Davidsonians is that a speaker does not need to know the axioms of the truth theory at all to understand her language. What they do claim is that if one were to define the correct meaning, then a speaker's knowledge of the theory, i.e. its axioms, and her knowledge that the theory, its axioms and the theorems it issues in, are correct would allow her to understand her language. But this claim does not entail that the correct meaning theory is required for language understanding.

And this is indeed the difference between CV as I have characterized it, and Davidson's view, as far as the role of a compositional semantics in explanations of language understanding is concerned. But if the theory is to live up to either Davidson's or CV's stipulation that it account for language understanding it should include a specification of the meanings of the propositions expressed in the theorems that those axioms yield, and understanding should include knowledge of those meanings.

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[52] This is especially significant since compositionality also can be motivated by other means.

2.3.3

As to the second criticism, Davidson has not clearly shown that his truth theory completely satisfies his own criterion. His criterion requires that the theory explain language understanding and he claims that the only way this can be achieved is by a compositional truth theory with a recursive structure that can generate a truth theorem or T-sentence for every possible sentence of the object language.

And it is precisely in this respect that his correct meaning theory falls short. His compositional truth theory does nothing more than cranks out truth theorems that are of the biconditional form 'σ is T iff p'. But a biconditional does not offer any necessary and sufficient conditions for language understanding. This is evident in the fact that the biconditional structure allows for the following pairing

"snow is white" is true iff grass is green.

The correct truth theory can crank out infinitely many theorems of this nature. The difficulty with these theorems that simply pair truths with truths is that they are highly uninformative and as such do not seem to live up to the requirement that they account for language understanding. In particular, the problem in this case is that Davidson's theory actually does not offer a detailed account of the semantic contribution of the subsentential components of a sentence to the meaning or truth of the whole sentence.

This is because he explicitly states that there is no theory that can successfully attribute meanings to subsentential components and hence that to the extent to which the expressions contribute to the meaning of the whole sentence all we have to go by is their role in all possible sentences. Unfortunately this entails that the explanation of understanding by means of a compositional semantics in the form of a truth theory does not really provide us with the required constructive account of language, we need something else. But if offering a constructive account of meaning is part and parcel of a recursive explanation of language understanding and the proposed theory does not explain understanding because it does not offer a constructive account of meaning then perhaps the criterion is unjustified or has not been satisfied. The truth theorems that the theory cranks out supposedly tell how expressions contribute to the truth conditions of a sentence, but they do not assign either meanings or references to these subsentential expressions.

Davidson, who is obviously aware of the theorems that may result from his truth theory offers the following rebuttal to the criticism that targets the biconditional nature of these theorems. He acknowledges that his theory results in theorems like '"snow is white" is true iff grass is green' but claims that such theorems are just part of the overall picture of language understanding. Although by themselves they might not be sufficient to account for understanding, he

argues that as part of the result of the compositional truth theory's recursive principles they are seen as contributing to the satisfaction of the criterion.

Still, it is uncontroversial to say that a speaker's knowledge that '"snow is white" is true iff grass is green' is certainly not *sufficient* to account for her understanding of an utterance of "snow is white". But if the correct meaning theory for a language is a compositional truth theory that cranks out theorems that do not offer sufficient conditions to account for language understanding then it does not satisfy the criterion on a correct truth theory of explaining understanding. The problem is compounded by the fact that the cranked-out theorems are not even necessary in explaining understanding. This becomes clear when one realizes that the theory can crank out indefinitely many theorems of the above nature (pairing truths with truths and falsehoods with falsehoods) suggesting the theory is overproductive and hence inefficient. This entails that Davidson's truth theory does not actually meet his criterion for a correct meaning theory.

Typically, CV theorists--just as Davidson does--claim that a compositional semantics is needed for a language because it is the only finite account of how speakers can understand a potentially infinite number of sentences. In their case however, even if it is not expressed in so many words, the underlying assumption is about a speaker's competence. Since CV theorists also require that the theory offer a con-

structive account of how the meaning of a sentence is derived from the meanings of its subsentential components and their structural arrangement in the sentence, they also assume that the correct meaning theory ought to be a compositional semantics.

Davidson never intended his truth theory to play a role in the cognitive explanation of the process of language understanding, even though his criterion stipulates that the theory ought to be such that knowledge of it and knowledge of the fact that it is the correct meaning theory put a speaker in the position to understand her language. Hence his account does not explain the derivational process that leads to understanding. The truth theory merely affords the speaker knowledge of the truth of the axioms that generate truth theorems, without her having to know the nature or content of these axioms.

Given both the promise Davidson's account presents and the obstacles it nonetheless faces, CV theorists try to build on his work by reassessing his criterion in light of a stronger cognitive commitment to the role of semantics in language understanding.

Chapter 3: A NEO-DAVIDSONIAN APPROACH

§3.1 SEMANTIC COMPETENCE: KNOWLEDGE OF MEANING

3.1.1

Larson and Segal (L&S) in their recently advanced semantic theory exhibit all the qualities of true CV theorists, embracing both Chomskyan cognitivism and the Davidsonian program.[53] From a methodological point of view their theory fits in the Chomskyan cognitivist tradition of interpreting linguistic theory as a theory of largely unconscious knowledge of grammar that underlies knowledge of language. At the same time, from a formal point of view, it fits in the Davidsonian tradition of interpreting semantics extensionally and of requiring that a correct meaning theory satisfy Davidson's criterion.

Of course, since L&S's account is a particular manifestation of CV, it is subject to the same criticisms. And although they have tried to rectify some of these criticisms, I ultimately argue they fail to offer a defensible version of CV that overcomes earlier shortcomings.

L&S are Chomskyans insofar as their concern with semantic competence is concerned. And they are theorists in the Davidsonian tradition, insofar as their formulations of the aim and the nature of theories of meaning is concerned.

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[53] Richard Larson & Gabriel Segal, *Knowledge of Meaning: An Introduction to Semantic Theory*. (Cambridge: MIT Press, 1995).

As such L&S make two claims that parallel CV's main assumptions:

> (1) The claim that speakers have tacit knowledge of a semantics, based on the criterion that this knowledge is needed to explain language understanding. Call this the *knowledge claim* and call the criterion the *cognitive criterion*.
>
> (2) The claim that a recursive interpretive truth theory á la Tarski serving as a meaning theory will satisfy this criterion. Call this the *semantic claim*.

The knowledge claim expresses their cognitivist alliance with Chomsky. Chomskyan cognitivism first of all characterizes a theory of linguistics as a theory of knowledge of language. Similarly, L&S characterize a theory of semantics as a theory of knowledge of meaning. Secondly, Chomsky's knowledge of language involves knowledge of a grammar; similarly, in L&S's case knowledge of meaning involves knowledge of an interpretive truth theory. Thirdly, just as knowledge of grammar is presumed to be tacit, knowledge of a truth theory is presumed tacit.

3.1.2

For L&S then a speaker's semantic competence, which they define as her ability to make semantic judgements, and which I have defined as the ability in principle of the speaker to understand any sentence of her language, is dependent on her

knowledge of meaning. Semantics as such is not just the study of linguistic meaning but more specifically they claim semantics is

> a theory of the knowledge that underlies our ability to make semantic judgements.[54]

For any particular language the semantic judgments made by a speaker reflect her understanding of semantic facts. These semantic facts are about properties of expressions, about the relations of these expressions to the world and their relations to speakers.[55] Although these facts offer information about the content of semantic knowledge, according to L&S content is not the primary concern of semantics.

Instead, L&S claim the object of inquiry of semantics is a particular part of linguistic knowledge, to wit knowledge of meaning. Other facts about meaning might aid the discussion, but they are not ultimately at issue. It is our ability to judge them that constitutes semantics, not the contents of the expressions being judged. In other words, L&S reject the claim that semantics is purely the study of abstract linguistic entities and properties.[56]

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[54] Larson & Segal, *Knowledge of Meaning*, 10.

[55] The various semantic properties of expressions would include things such as synonymy and ambiguity. The relations of expression to the world are captured by the semantic concepts of reference and truth and the relations to speakers are captured by the propositional attitudes those expressions are the subject of.

[56] Thus we can anticipate the problems they will face with Soamesians.

This is why L&S claim semantics is the theory of *knowledge of meaning*, where knowledge of meaning should be interpreted to refer to what a speaker knows about meaning, not the particular mental state the speaker is in when she has that knowledge.[57] Echoing Chomsky they claim that knowledge of meaning is tacit, which means it is knowledge of a body of largely unconscious rules and principles that assign meanings to various inputs. Just as our capacity to make linguistic judgements or our linguistic competence, follows from our knowing our language,[58] our capacity to make semantic judgements or our semantic competence is dependent on our knowledge of meaning. In other words, we need knowledge of meaning to explain semantic competence.

3.1.3

In general, the knowledge claim requires an account of the meaning theory knowledge of which is supposedly needed for a speaker's semantic competence. And this is where L&S express their Davidsonian preference. They claim that on investigating this knowledge one finds it is knowledge of a

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[57] I am assuming here that L&S are making this distinction based on the type/token distinction. Based on that distinction knowledge of meaning is a mental state type whereas knowing the meaning of a particular sentence is a mental state token. Only if interpreted in this way does L&S's distinction stay true to what Chomsky intended when he talked about knowledge of grammar and claimed that knowing a grammar is a cognitive state.

[58] Those of us that do not have knowledge of a particular natural language, say English, are not able to make judgments about English expressions or their relations to the world and to speakers.

correct compositional semantics, which according to them would be an interpretive truth theory.

Beyond this extensionalist preference, L&S also espouse Davidson's criterion that a theory is a correct meaning theory for a language if knowledge of it--or the facts it states--put a speaker in the position to understand and interpret utterances of the language. Hence they claim an interpretive truth theory is the correct meaning theory because it accounts for our ability to understand our language.

However, although both Davidson and L&S are concerned with the fact that a correct meaning theory ought to account for language understanding, there is a significant difference in their respective criteria. This difference lies in the importance they place on the cognitive role the compositional semantics play in explaining a speaker's understanding of her language. By adopting Chomsky's cognitive methodology, L&S actually change the Davidsonian criterion for a correct meaning theory into more of a cognitive functional criterion of truth theories. Hence my dubbing it the *cognitive criterion* (as opposed to the Davidsonian criterion).

For L&S, as for Davidson, the correct meaning theory contains a function that maps natural language sentences onto their meanings, which in both their cases entails that it maps natural language sentences onto their truth conditions. But furthermore, on L&S's interpretation this function is internally represented, which means that the mapping from natural language expressions to their meanings is effected by

this function at the cognitive level. As such, L&S's interpretive truth theory is that theory which plays a functional role in explaining the cognitive mechanisms that underlie competence. L&S thus offer an explicit cognitive account of their truth theory. Davidson on the other hand, although equally concerned with the correct meaning theory's ability to explain understanding, never intended to provide an explicit explanation of the cognitive systems or mechanisms underlying understanding.

§3.2 LARSON & SEGAL'S CRITERION

3.2.1

It is in this cognitive context that L&S propose their *T hypothesis* which is their empirical hypothesis about language understanding. According to the T hypothesis a speaker's ability to understand a sentence of her language is based on a particular kind of knowledge of meaning, to wit knowledge of a certain deductive system of rules and principles that will yield certain semantic theorems. This deductive system turns out to be their interpretive truth theory and it will yield interpretive T-sentences for each sentence of the language. In other words, the interpretive truth theory issues for each sentence of the language in theorems of Davidsonian form

(T) σ is true iff p.

where 'σ' is replaced by a structural description of a sentence of the language and 'p' is replaced by a translation of that sentence in the metalanguage. Then according to the T hypothesis

> A speaker's knowledge of meaning for a language *L* is knowledge of a deductive system (i.e., a system of axioms and production rules) proving theorems of the form of (T) that are interpretive for sentences of *L*.[59]

And it is this knowledge that underlies a speaker's ability to interpret or understand utterances of her language. Note though that the T hypothesis itself is based on the following assumptions:

> 1. Speakers are designed to acquire interpretive truth theories.
>
> 2. Speakers have to treat the theorems or T-sentences as interpretive.
>
> 3. The theory they in fact acquire has to be interpretive.[60]

Moreover, the interpretive truth theory is defined as a recursive function that pairs only those sentences of the lan-

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[59] See Larson & Segal, *Knowledge of Meaning*, 33.

[60] These assumptions which they take for granted clearly reveal L&S's cognitivist bias. Moreover they are essential to make their formulation of the speaker's psychology, as far as the language processing mechanism is concerned, cogent.

guage with their contents that would have been paired by "means that".

It should now be clear that beyond their introduction of the formal interpretive move L&S address the question of meaning from a decidedly cognitivist perspective. They turn the semantic theory into a theory about the psychological constitution of speakers, by claiming tacit knowledge of meaning is required for semantic competence. By making a move from a formulation of the nature of a meaning theory to a formulation of the nature of the psychology of meaning, i.e., of how meaning is represented and used in the mind, L&S intend to show *how* a correct meaning theory can answer to Davidson's criterion of explaining language understanding. This places them squarely within the tradition of CV; they subscribe to the view that knowledge of semantics is required to explain semantic competence.

3.2.2

To recap then, we find that in essence L&S wind up offering a cognitive reinterpretation of Davidson's criterion and proceed to use this cognitive criterion to justify their T hypothesis. In other words, L&S claim--just as Davidson does--that a correct meaning theory ought to account for language understanding but then give this criterion a cognitive twist by claiming that the correct meaning theory is an internally represented theory. This allows them to then propose the T hypothesis which entails that language understanding is

the result of tacit knowledge of this theory. Thus, they claim the pairing of natural language sentences to psychosemantic representations is accomplished by a tacit internal truth theory that makes possible the derivation of interpretive T-sentences. L&S realize that based on the above account of the nature and role of semantics there still remain two questions they must answer if their theory is to be successful.

First, there is the question whether a truth theory has the same extension as a meaning theory. This is referred to as the *extension question*.

To address the extension question L&S have to show that their interpretive truth theory will indeed pair only those sentences and contents that are paired by 'means that'. This means the interpretive truth theory has to be sufficiently productive to offer a T-sentence for each sentence of the language, while at the same time not being overproductive thereby resulting in uninterpretive T-sentences. In other words, the theory should not yield any uninterpretive results like '"Shortbread is buttery" is true iff shortbread is buttery and 2+2=4'. To avoid such results the production rules for the interpretive truth theory should produce only interpretive consequences (which means certain logical rules of inference have to be restricted).

The second question is referred to as the *information question* and basically targets the extensionalist nature of

their interpretive truth theory.[61] The issue--beyond making the appropriate pairing of sentences and contents--is how appropriate a truth theory which only relates utterances truth-conditionally to the world is in actually accounting for all the other information that a semantic theory ought to account for.

L&S claim that because meaning in general contributes content and informativeness to language, knowledge of meaning is crucial to one's understanding a language. Since they furthermore claim that knowledge of meaning is knowledge of an interpretive truth theory, in their case this means the interpretive truth theory has to account for both the content and informativeness of language. Thus in response to the information question L&S have to show whether and how a truth theory can give as much information as a meaning theory. Although this is a problem for any extensionalist account L&S's interpretive truth theory should take care of the challenge if it is to be successful.

3.2.3

L&S use their T hypothesis and their interpretive truth theory in an account of a speaker's functional internal structure. They are convinced that with this account they

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[61] See Larson & Segal, *Knowledge of Meaning*, 34. Thus they ask whether an interpretive truth theory is sufficient to account for both the internal and external significance of language. Here the external significance lies in the fact that meaning is that which is responsible for the informativeness of a language and the internal significance lies in the fact that the meaning of a sentence is that which gives the content of propositional acts.

have appropriately answered the information and extension questions. In order to evaluate this we need to clarify--based on L&S's account--the language processing a speaker supposedly goes through when presented with an utterance of her language. Consider the following scenario.

The formulation of cognitive language processing goes something like this. A speaker *x* receives an auditory input of a sentence σ of her language that is presumably phonologically or syntactically represented. This representation serves as input to a subdoxastic 'box' in her mind in which the interpretive truth theory is internally and subdoxastically represented.[62] In this mental box use is made of the truth theory to turn the phonologically or syntactically represented input into an intermediate output that is a Mentalese translation of an interpretive T-sentence that says that 'σ is true in *L* iff p'. The appropriate interpretive T-sentence is selected from all the other T-sentences via a canonical procedure and is the only one that will be given as output.

In the next step of the cognitive process the Mentalese T-sentence serves as input to another mechanism through which the interpretive T-sentence is rewritten into a meaning sen-

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[62] I owe the notion of the subdoxastic 'box' to Stephen Schiffer. Stephen Schiffer, "Truth and the Theory of Content", in *Meaning and Understanding*, eds. H. Parret and J. Bouveresse, (New York: de Gruyter, 1981). The box serves as a metaphor for that step in the process of language understanding where the sentence being translated is represented. The notion of a subdoxastic box is that 'box' in which subdoxastic states are represented; this is analogous to the notion of the belief box, which is the box in which belief states are represented.

tence of the form '*σ means that p*', which subsequently appears in the speaker's belief box and is hence how the speaker arrives at her knowledge of the meaning of σ. In other words, she believes that '*σ means that p*'.

§3.3 DISSECTING THE INTERPRETIVE TRUTH THEORY

3.3.1

L&S's account has some merit in terms of improving on Davidson, but they face several problems nonetheless. According to L&S the above (somewhat simplified) formulation of speaker psychology shows both how knowledge of semantics is required for semantic competence and how the correct theory to perform the job takes the form of an interpretive truth theory. In their account then, the functional structure of speaker psychology carries the burden of not only showing how an interpretive truth theory, can serve as a meaning theory, but furthermore of showing how this interpretive truth theory satisfies the cognitive criterion of explaining understanding as well given the cognitive role it plays in language processing.

And unfortunately they fail to offer a convincing argument in both cases. In other words, not only do they fail to show that an interpretive truth theory can serve as a correct meaning theory, they also fail to prove that the theory satisfies their cognitive criterion.

One of the objections L&S have to address is the general Soamesian objection to the assumption that knowledge of a

truth theory is required to explain competence, regardless of how this knowledge is psychologically realized. Soames considers what knowledge of meaning would entail in order to then deny that it plays a role in semantic competence.[63] Specifically he argues that knowledge of a T-sentence generated by a truth theory is not sufficient for language understanding. Moreover in general he contends that even if a linguistically competent speaker has semantic knowledge, this does not entail her competence derives from her knowledge; in fact it is likely that knowledge derives from competence. I will refer to the Soamesian category of challenges as the *sufficiency challenge*.

This Soamesian objection is based on the well-known problem with Davidsonian extensionalist semantics, namely their failure to provide intensional content and thus their failure to provide the information needed for understanding the meaning of a sentence. For any sentence of the language a truth theory merely offers its truth conditions. However, even if the interpretive truth theory were to manage to offer sufficient intensional information, it is questionable whether this information actually plays a role in the cognitive process of language understanding. In other words, even if the theory offers sufficient conditions we still have to address whether knowledge of it is necessary for understanding.

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[63] Soames, "Semantics and Semantic Competence", 185-207.

This then brings us to the more important and more serious challenge that L&S face. Their description of language processing as it stands leads to the observation that any internally represented translation manual might do the work their truth theory is doing. In essence this means that they undermine their own characterization of the interpretive truth theory's role in mapping natural language expressions onto their meanings. If the observation about the translation manual is true it entails that the interpretive truth theory might not even be necessary in the process of understanding. Therefore, the challenge that the possibility of a translational account poses could be called the *necessity challenge*.

3.3.2

Let us consider Soames's objection, i.e., the sufficiency challenge, first. Clearly, the Soamesian challenge is essentially the challenge that the information question poses. In other words, it asks whether knowledge of a truth theory--if it is to be the key to explaining competence--would indeed offer sufficient conditions, i.e., sufficient intensional information, for language understanding to take place. But the Soamesian challenge indirectly targets the extension problem as well. If semantics specifies the principles by which sentences represent the world, then one of the conditions that must be satisfied is that the truth theory is neither over- nor under-productive in cranking out truth the-

orems that offer the truth conditions of those sentences.[64] If the theory is overproductive then it will not generate only those theorems that are interpretive, but will lead to uninterpretive results as well.

Soames offers the following argument in support of his position that knowledge of truth conditions is not sufficient for understanding a language. He claims someone might know that

> 'Firenze é una bella città' is true in Italian iff Florence is a beautiful city,

and yet fail to believe that

> 'Firenze é una bella città' means in Italian that Florence is a beautiful city,

and instead believe erroneously that

> 'Firenze é una bella città' means in Italian that Florence is a beautiful city and arithmetic is incomplete.[65]

In other words, true beliefs about truth conditions are compatible with false beliefs about meaning. And this is due to the lack of intensional content that a truth theory by itself has to offer a speaker of the language. This means one

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[64] There are two ways in which a semantic theory can characterize truth conditions. One is the Davidsonian way; the other relativizes truth with respect to a world *w*. Either method results in cranking out statements in the form of instances of T-sentences that give the truth conditions of natural language expressions.

[65] See Soames, "Semantics and Semantic Competence", 187-188

can always construct truth theories whose truth theorems are of such a form that they correctly give the truth conditions for a sentence but fail to give a basis for interpretation of that sentence, and of course without interpretation we cannot speak of language understanding. So knowledge of truth conditions does not offer *sufficient* conditions to explain semantic competence.

Of course Davidson's response to this would be that these theorems are just small parts that contribute to the overall picture of language understanding. However this answer is highly unsatisfactory.

Soames's example clearly raises both the information question and the extension question. Thus, it poses two challenges for CV. One is how knowledge of truth suffices for language understanding and the other is how the theory can avoid resulting in theorems that are uninformative or even false when it comes to understanding. The Firenze-example leads Soames to conclude that a speaker's knowledge of the truth conditions of a particular sentence does not suffice for language understanding because a speaker even when she has this knowledge cannot avoid the possibility of forming uninterpretive or erroneous beliefs about the meaning of the sentence.

Of course this conclusion, which is perfectly reasonable so far, poses a threat only to those CV theorists who endorse a Davidsonian extensionalist semantics without placing any qualifications on the nature of the truth theory. But L&S do

not fall into this category of CV theorists. In fact, they agree that truth conditions do not suffice; they are aware of the lack of interpretive content knowledge of a truth theory provides. Hence their precautionary measure to avoid Soames's criticism with the introduction of the *interpretive* truth theory, their modified version of standard extensionalist semantics which supposedly does offer sufficient conditions for semantic competence.

However, the interpretive truth theory's ability to indeed provide intensional content and to do it in a way that is neither over- nor under-productive is dependent on some supporting suppositions L&S make. The first of these suppositions is that speakers are so constituted as to take any truth theory they learn as interpretive. The second supposition is that the theory a speaker in fact acquires is indeed interpretive.

And although the interpretive qualification on the truth theory does address the extension question (provided the two other suppositions are met), I argue that it does not succeed in addressing the information question, because the interpretive truth theory does not guarantee that knowledge of its truth theorems suffices for understanding. I explain this below.

L&S assume that semantics is the study of knowledge of meaning, that a semantic theory is a theory of this knowledge and that it has to be if the theory is to account for lan-

guage understanding. This is what makes them both Chomskyan and Davidsonian. But then we found that they espouse an even stronger criterion than Davidson, namely, that the compositional semantics is needed to explain competence. Thus L&S don't just believe that a correct meaning theory would account for the phenomenon of language understanding, but that (knowledge of) it is required for language understanding. They then used the latter claim to support their view that an interpretive truth theory serve as the correct semantics and that tacit knowledge of this theory enables language understanding.

So far then they do not commit the same error that Davidson committed. But here is the problem. For them the significance of the theory lies in its cognitive role because the theory's recursive principles and axioms are psychologically represented and play a role in the mental processes of language understanding. And then they insure this role by claiming it is part of any speaker's psychological make-up to treat any truth theory they acquire as interpretive and that in fact the theory they acquire is indeed interpretive. This in turn lead to their particular interpretation of language processing.

But although they claim to have addressed the sufficiency challenge (both in the form of the information and extension questions) with this interpretive truth theory, what they have in actuality proposed is that knowledge of the truth conditions of a sentence does not have to be sufficient

for understanding. Thus they fail to realize that based on their very account speakers are said to go through a causal processing mechanism by which they arrive at the meaning of the sentences instead of arriving at those meanings through a derivational process. As such it really does not make any difference whether the truth theory is interpretive or not because on their own account the actual interpretive step of the process happens non-deductively and causally. Thus even if the theory has any role to play in the process, by itself it is not sufficient to lead to understanding. This situation leads right into the next significant problem that L&S face which goes beyond the information question's concern with the *sufficiency* of truth theories in explanations of language understanding.

3.3.3

This next problem is whether knowledge of meaning in general is even *necessary* for language understanding. This *necessity challenge* forms an integral part of Soames's overall critique of CV. It is also the favorite subject of many other critics of CV. The reason that L&S even face a necessity challenge lies in the fact that they espouse a much stronger criterion than Davidson, namely that the compositional semantics is *needed* to explain semantic competence.

And this assumption is the next target of Soames' argument. Soames argues that knowledge of truth conditions is not necessary for language understanding either. According to him

the problem is this. Knowledge of truth conditions presupposes possession of a metalinguistic concept of truth. This entails that one needs to have such a concept in order to understand a sentence (having the concept here signifying having an understanding of the concept of truth). In other words, if knowledge of truth conditions is indeed necessary for language understanding then this means that no one can learn a language without first having such a concept.

Clearly though, says Soames, the case of children indicates that this is not so; they can understand sentences without understanding 'true' and thus without having any concept of truth. But although young children have no previous concept of truth they are perfectly capable of learning and understanding new sentences. The case of children thus undermines CV's position which leads Soames to conclude that knowledge of what is expressed by schema T is not necessary for semantic competence. Thus, even if the CV theorist were able to offer sufficient conditions--which they didn't--knowledge of truth conditions does not even offer *necessary* conditions for a speaker's capacity to understand utterances of the language.

However, the argument Soames offers here is not convincing and as such, I argue it does not pose a real problem for L&S. The problem with Soames's argument here simply lies in the fact that he has transposed his bias about knowledge of a semantics to knowledge of the metalinguistic concept of truth. This move is ineffective insofar that any CV theorist

who is willing to espouse the view that there is such a thing as tacit knowledge of a compositional semantics will have no difficulty accepting that this tacit knowledge entails a further commitment on their part to a speaker's tacit knowledge of an abstract concept of truth. In other words, in essence Soames has not really offered a genuine argument against knowledge of truth here at all. Instead he has merely succeeded in reiterating his basic position on any psychological alliances CV theorists have.

As such Soames's necessity challenge as presented above does not as yet pose a threat to those CV theorists that reject extensionalist semantics. For these theorists it is an open question at this point in the discussion whether knowledge of a more full-fledged meaning theory suffices or is even required for competence.

Soames claims that semantics would not be a plausible and effective candidate for being an internal mechanism that is causally responsible for competence, because the explanation of competence should not presuppose a psychological mechanism that requires intelligence to follow. Instead, the process by which a competent speaker calculates the semantic content of a sentence has to be a purely mechanically effective procedure.[66]

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[66] Soames claims positing an internally represented semantic theory as such a routine begs the question, as far as psychological inquiry is concerned. In fact, though, what would make an account of semantic competence question begging is the assumption that the structure of the psychological processes is isomorphic to its structure.

In conclusion we can summarize L&S's account as follows. According to L&S semantics is the study of knowledge of meaning; a semantic theory is a theory of knowledge of meaning and it has to be such if it is to account for language understanding. In this context knowledge of meaning is understood as knowledge of an interpretive truth theory and this theory is used in the ascription of meaning. The ascription of meaning happens through internal cognitive processes that are causally responsible for the speaker's semantic competence. Thus, they don't just believe that the correct meaning theory would account for the phenomenon of language understanding, but they believe that in fact it is required to explain language understanding.

But L&S's interpretation of semantics as the study of knowledge of meaning distorts the Davidsonian program and fails to satisfy his and their own criterion of explaining language understanding. It also calls into question their Chomskyan assumption that as competent speakers we require a mentally represented compositional semantics to account for our understanding. In other words, L&S's extensionalism puts their cognitivism on shaky ground.

Critics believe it is highly implausible, and possibly incorrect, to assume the speaker's process of language understanding is so complex a procedure. They claim positing such complexity has no other psychological significance, for the following reasons. Not only is there no evidence that inter-

pretation happens via a truth theory or any other semantic theory, but there isn't enough linguistic or psychosemantic evidence to warrant the belief that truth theories serve any better as devices to accomplish the task. Hence, critics claim that non-truth-theoretic devices such as translation manuals might accomplish the task just as well.

Clearly, the derivation of T-sentences is a complicated procedure. This fact does not necessarily affect the plausibility of whether truth theories can serve as meaning theories. It does have repercussions for any attempts at defining the role of truth theories in psychological processing of language.

Chapter 4: TRANSLATION MANUALS OR SEMANTICS

§4.1 THE ROLE OF TRANSLATION MANUALS

4.1.1

The ineffectiveness of Soames's argument against the necessity challenge notwithstanding, the challenge itself remains a valid and pertinent one for all CV theorists, especially when one considers L&S's characterization of the cognitive role of the interpretive truth theory in language understanding. Consider again the description of language processing that can be ascribed to speakers according to their theory.

Briefly stated the speaker starts off receiving auditory input of a sentence σ which gets internally represented. This sentence then serves as an input sentence into her subdoxastic box where the internally represented interpretive truth theory generates a Mentalese translation of a T-sentence for the sentence. The latter in turn is rewritten into a Mentalese meaning ascription for the input sentence σ. Subsequently, this is turned into an English meaning ascription of σ that is ultimately represented in her belief box and is thus what provides her knowledge of the meaning of σ.

Notice that according to this description of language processing the actual ascription of meanings to the Mentalese T-sentences, i.e., the ascription that leads to the speaker's understanding of the input sentence, occurs at a juncture in the processing sequence without the help of the internally

represented interpretive truth theory. The interpretive truth theory plays a role in an earlier step of the process, namely in the assignment of a Mentalese T-sentence to the initial input sentence. The ascription of meanings on the other hand occurs subsequently by means of a purely non-deductive causal mechanism. But these very meaning ascriptions are what ultimately serve as inputs to the speaker's belief box and which as such give her knowledge of the meaning of the initial inputs. This means that the speaker in fact attains genuine understanding through a non-deductive mechanism and not through the internally represented interpretive truth theory.

The problem with this definition of the role of the interpretive truth theory is that it transforms the theory into a purely translational device which does not offer a true semantic account of understanding but merely a non-derivational functional account. In other words, their illustration of the functional structure of language processing does not succeed in showing that knowledge of meaning is required to explain semantic competence. The reason for their account's failure lies in the in fact that all they have shown is that knowledge of meaning is applied when the speaker is going through a translation process.[67]

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[67] Of course there is another problem which should be kept in mind regardless of whether the truth theory winds up functioning as a mere translation device and that is the following. If speakers turn out not to be so functionally structured, this would entail that L&S couldn't claim knowledge of meaning is required to explain semantic competence. I will return to this second problem shortly and expand the discussion.

But if the interpretive truth theory indeed only performs a translational task any translation mechanism could perform this task. Thus suppose we have a finitely axiomatized translation manual that is internally represented and that pairs English sentences with Mentalese sentences that are in fact translations of the former. This manual itself would contain nothing semantical and hence does not generate any semantic theorems. With a manual like this the language processing mechanism would go as follows: The speaker receives an auditory input of a sentence σ into her subdoxastic language processor that generates a Mentalese translation of σ. Then the next mechanism in the process assigns a Mentalese meaning ascription to σ. Subsequently, this is turned into an English meaning ascription of σ that is ultimately represented in her belief box and is thus what provides her knowledge of the meaning of σ.[68]

This account of language processing illustrates how an internally represented translation mechanism might perform the job of ascribing Mentalese translations and subsequently meanings to natural language sentences. Consequently, this translational account also shows how the role L&S define for their truth theory completely undermines its semantic significance in explanations of understanding. Worse, their account eliminates the need for their truth theory altogether, because the semantic theory does not get to perform a semantic

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[68] This modified account is essentially what Schiffer offers in his Harvey example. Schiffer, *Remnants of Meaning*, 192-209.

or interpretive task. Unfortunately, if this is correct it entails that there is no reason to assume that any semantic knowledge comes into play in the process of language understanding, i.e., there is no reason to assume an internally represented compositional semantics is required at all in explaining semantic competence.[69]

The upshot of all this is that L&S fail to address the necessity challenge satisfactorily--despite their stipulation that the truth theory be interpretive--because of the account they give of that theory's role in language processing. And indeed, just a slight modification to their account along the above lines illustrates how they fail to establish the necessity of the theory to language understanding.

According to some critics the translation account challenges another somewhat controversial assumption L&S make. Their account of the process that maps natural language expressions onto psychosemantic representations presupposes that speakers have a language of thought. In other words, they and other CV theorists believe that the psychosemantic representations are Mentalese translations of natural language sentences and that these representations are themselves sentence-like. However, the assumption that we have a language of thought is no longer a major point of contention

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[69] And this is of course what Schiffer's counterexample of Harvey is supposed to illustrate as well. I will discuss Harvey in detail in a later chapter.

even for critics of CV. As such it is not an issue that I take up in this discussion.

4.1.2

The possibility of a translational account however also indicates another way in which L&S's account fails. On their account a speaker's process of understanding involves not just knowledge of an interpretive truth theory but a causal non-deductive mechanism as well. In other words, the theory is only part of the process. This means that their account of the process is not faithful to their own T-hypothesis, because according to the latter a speaker's language understanding is based on her knowledge of meaning, and thus on her knowledge of an interpretive truth theory. Moreover, given that the task the interpretive truth theory performs could be performed by a translation device, the theory does not perform the actual interpretive deductive task. Instead, the interpretive work in language processing is performed by a non-deductive causal mechanism rather then by the truth theory itself. The non-deductive causal mechanism guarantees interpretation because it assigns meaning ascriptions to the previously generated Mentalese T-sentences.

Thus, although the derivation of T-sentences themselves by means of the interpretive truth theory is a recursive process that assigns Mentalese T-sentences to the input sentence, the actual semantic values or truth conditions that are assigned to the sentence only become meaningful to the

speaker once they have been through the non-recursive, non-deductive, causal device. This makes the role of a semantic theory in acquiring knowledge of meaning, i.e., in understanding, insignificant.[70] Instead of it, we can give a translation story together with a computational story to explain competence.

The T-hypothesis then raises 2 major problems. First of all, there is the standing challenge that the interpretive truth theory does not provide sufficient semantic information. Secondly, the theory is ineffectual in--and hence unnecessary for--performing the processing task that leads to understanding because the latter requires an additional causal mechanism.[71] As such it does not meet L&S's cognitive criterion.

¶4.2 SEMANTICS AND PSYCHOLOGY

4.2.1

On the above critical speculation, i.e., where a translational account could replace L&S's account, meaning ultimately gets established by way of both a translation device

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[70] Moreover, even if the theory were to be effective there would be no way of finding out or knowing that it is and hence no way of establishing the meaning of a sentence.

[71] The first Soamesian objection, that a compositional semantics is not internally represented, is problematic for CV theorists only if the latter means positing that the structures of the compositional semantics and psychological processes are isomorphic. I address this issue later in this chapter. Apparently, this was Katz's view at one point, that psychological structures were isomorphic with the rules of grammar. Currently, Katz, like Soames, claims that semantics and psychology should be treated independently. Moreover I argue that it is clear that this much CV theorists are ready to defend themselves against.

followed by a causal non-deductive mechanism. Since the translation device does not perform any genuinely interpretive work, interpretation must happen during the causal procedure, where meanings are ascribed to the interpretive T-sentences. Thus we need to take a look at what this causal process of interpreting consists in.

This means that the main issue in this debate of language understanding comes down to whether knowledge of a semantic theory is in any way "used" in these processes. More in particular this means that it is not necessary for the plausibility of CV's position that a compositional semantics explain semantic competence all by itself. What is necessary of course is that compositional semantics play a role in the process, and that said role be an interpretive role. In essence then if CV is to survive, CV theorists have to show that their hypothesis about a meaning-ascribing theory playing a necessary role in explaining a speaker's competence is defensible.

However before proceeding, a few preliminaries about semantics and psychology need to be cleared up. There is another aspect to Soames's challenge to CV.

4.2.2

Soamesians claim CV theorists equivocate between a theory of semantics and a theory of semantic competence and they are concerned with the cognitive consequences of this equivo-

cation.[72] But more importantly, to Soamesians this equivocation actually entails that CV theorists are conflating the two. They claim that CV theorists operate under a flawed assumption about the role formal theories and principles of language play in our cognitive life, and insist on steering clear of constructing semantic theories as theories of competence. The way to do this is to heed the disciplinary boundaries between semantics and psychology and to deny any substantive link between them, because the program of reducing the semantic to the psychological is unsuccessful and moreover erroneous. In other words, the formal rules of a semantic theory are not psychologically real.

To Soames a correct *compositional semantics* is simply a theory about the contents of sentences of a natural language. A compositional semantics thus focuses on the fact that sentences contain information that represents the world; it also allows us to explain the representational character of language.[73] Characterized as such the theory says nothing about whether knowledge of meaning is necessary and/or sufficient for semantic competence. It is just an abstract system of rules and representations.

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[72] Ultimately, this first challenge turns merely on a verbal debate.

[73] Of course, Soames needs to unpack his notion of 'encoding information', since it is unclear what it is supposed to entail exactly. In fact, talk of encoding information is not really appropriate because technically speaking we are also concerned with the semantic content of uninformative sentences. We are simply concerned with matching sentences with their contents, with the propositions they express.

Semantic competence theories on the other hand focus on the fact that languages are things that people understand. From a philosophical perspective this means offering a conceptual analysis of what it means to understand a natural language sentence. From an empirical point of view it means identifying the cognitive structures and processes causally responsible for linguistic understanding. Neither of these is essentially semantic in the Soamesian sense.

Some skeptics argue that the reductive move rests on the mistaken belief that semantics is a level of linguistic description, like syntax, and thus that therefore knowledge of meaning is required for language understanding. Fodor addresses this concern, claiming that

> [s]yntax is about what's in your head, but semantics is about how your head is connected to the world. Syntax is part of the story about mental representations of sentences, but semantics isn't.[74]

Fodor's observation leads us right to the crux of the argument for CV. If Fodor is correct this would entail that language understanding does not require knowledge of meaning but only requires knowledge of grammar. Of course, Soamesians skeptics have a problem even with the level of disciplinary crossing-over that Fodor is engaged in.

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[74] Jerry Fodor, "Review of Stephen Schiffer's *Remnants of Meaning*", in *A Theory of Content and Other Essays*, (Cambridge: MIT Press, 1992), 187.

However, I argue that Soamesians get trapped in their obsession with disciplinary boundaries. Recall that CV theorists assume

> (I) Knowing or understanding the meaning of a sentence is based on one's—perhaps tacit—knowledge of the meanings of its words and knowledge of its syntax. This entails this knowledge is required to explain semantic competence.
>
> (II) There is no way to make (I) precise without appeal to a compositional semantics.

Soames takes for granted that those who assume (I) also necessarily assume that a compositional semantics is a theory of semantic competence.[75] However, although Soames might be justified in taking this for granted in L&S's case, he misdiagnoses the consequences of this alleged conflation for claims about knowledge. He claims it leads to the belief that a semantic theory is a psychologically real mechanism, a consequence I dispute. Ironically, then, in alleging that CV conflates linguistics with psychology, Soames conflates the consequences of assuming (I) with those of assuming semantics is psychologically real.

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[75] This is particularly the case in Soames's earlier critique of the Chomskyan turn in semantics in his "Semantics and Psychology".

4.2.3

The stock Soamesian objections to CV theorists like L&S, target the following aspects which Soamesians deem to be essential to CV.

(i) the conflation of a compositional semantics with a theory of semantic competence

(ii) the claim that the recursive rules of a compositional semantics are mentally represented and thus psychologically real

(iii) the claim that the psychological reality of semantic rules ultimately reduces to having tacit knowledge of a compositional semantics.[76]

Basically, (i) through (iii) exhibit different levels of commitment to the psychological significance of semantics. Now, note that these Soamesian stock objections are themselves informed by a debate about the disciplinary boundaries between semantics or grammar on the one hand and the psychology of competent speakers on the other hand.

George points out we need to differentiate the following objects of theoretical pursuit: (1) a grammar; (2) a psy-

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[76] The objections as presented here, are based on Soames's objections to the claims of generative grammarians that follow Chomsky's cognitive rationalist theories of grammar.

chogrammar; (3) an algorithm.[77] In other words, for our purposes we have to distinguish:

(1') a *domain*, in our case a compositional semantics;

(2') *knowledge* of said domain, i.e., what we have been referring to as knowledge of meaning

(3') the *algorithms* that make use of the knowledge of said domain.

A compositional semantics (as a domain) is an abstract object, a formal system of rules and principles that generate representations. This domain or compositional semantics taken by itself is not a description of language processing; it consists mainly of informational contents in the form of the axioms of the compositional semantics. But the domain with its system of rules can be the object of a speaker's knowledge. This state of knowing of a compositional semantics is a mental state which entails the compositional semantics is internally represented.

Typically the implication in attributing this knowledge to a speaker is that the knowledge is *tacit*. In other words, (2') is the mental state of knowing the domain (1'). This

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[77] Alexander George, "How not to Become Confused about Linguistics", in *Reflections on Chomsky*, ed. Alexander George, (Cambridge: Basil Blackwell, 1989), 90-110. George's discussion is aimed specifically at linguists but the relevance of this differentiation to our discussion of semantics is obvious. George actually distinguishes five categories: (1) grammar; (2) psychogrammar; (3) physiogrammar; (4) algorithm; (5) physioalgorithm. At this point I do not see the relevance of the physiogrammar or the physioalgorithm to this discussion, hence I have opted to leave them out for simplicity's sake.

mental state of knowledge turns out to be a *subdoxastic* state because the knowledge is tacit.[78] Moreover, this mental state is an informational state whose informational contents are the contents of the domain (which in our case entails they are the contents of the axioms of the compositional semantics). To sum up then, (2') characterizes which features are those in virtue of which the speaker knows her language.

Finally (3'), the algorithms, are abstract objects as well. Yet they are fundamentally distinct from the abstract rules of the compositional semantics. First of all the algorithms are not known by the speaker, i.e., they do not serve as the object of a speaker's knowledge. Secondly, they are not rules for generating theorems, but they are rules for the steps that psychological processing mechanisms follow in using a language. These rules tap into the speaker's knowledge of meaning. Thus, by operating according to these rules or algorithms the psychological mechanisms mediate between a speaker's knowledge of meaning and the speaker's understanding or use of her language.[79]

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[78] Davies, following Chomsky here, refers to this state of tacit knowing as a state of cognizing. Speakers then are said to cognize the axioms of a compositional semantics, whereas they can typically be said to both cognize and know the theorems of the theory.

[79] According to George there is no need to refer to the meaning theory itself in causal explanations of understanding. The knowledge of meaning, to paraphrase it in Georgian terms, is the psychogrammar of the speaker which is not to be confused with the grammar proper. However, George's claim notwithstanding, in the case of CV as I have thus far characterized it, there is indeed a concern with the meaning theory itself. This because the CV theorists make a claim in principle and not just a causal/empirical claim about knowledge of meaning.

Distinguishing these domains offers some insight into whether knowledge of a compositional semantics is part of language processing. Of course CV theorists should offer a description of what role knowledge plays in the process of language understanding. This they can achieve by specifying the compositional semantics that is tacitly known, and by specifying what the relationship is between this knowledge and the mechanisms ruled by certain algorithms. So much for the distinctions per sé.

¶4.3 SOAMES'S MISINTERPRETATION

4.3.1

George's distinctions, although clear enough, often get blurred. This leads to several erroneous steps of argumentation. Returning to Soames, we find the following. One erroneous step is made from talk about the domain (1') to talk about knowledge of that domain (2'). This first erroneous step is indeed the concern Soames raised in his first stock objection to CV when claiming CV's conflation of semantics and semantic competence. However, as I already indicated the concern with the conflation of a domain with knowledge of said domain is merely metatheoretical, and as such it is inconsequential to CV.

The next step of argumentation that is cause for some trouble is the fact that when we are discussing knowledge of a domain the assumption is that this kind of knowledge entails there is a mental representation of the domain in the

speaker's mind. In the case of CV this translates into the assumption that knowledge of a compositional semantics entails this compositional semantics is internally represented in the speaker. This assumption in and of itself however need not be a problem as long as one keeps in mind that claiming a domain is internally represented by no means entails any commitment yet about the nature of these mental representations, i.e., about how the domain of knowledge is represented in the speaker's mind.

Again note that one of Soames's objections to CV is based on this line of argument. Clearly, the way Soames constructs his general argument against CV is mainly to refute claim (ii), i.e., the claim that semantic rules are psychologically real. In essence Soames's argument here relies on the assumption that knowledge of a compositional semantics entails this semantics is mentally represented. But moreover Soames also assumes that this mental representation of a compositional semantic entails the psychological reality of that semantics. Thus Soames automatically assumes that acknowledging a mental representation entails a commitment to psychological reality.

What complicates matters is that Soames has a particular interpretation of psychological reality. According to him the psychological reality of a semantics consists either in its functioning as the psychologically real structure of language processing mechanisms, or in the isomorphism of mental processes with the rules and principles of the semantics. This

then leads us to a third step of argumentation that is made from assuming that knowledge of a domain (2') plays a role in the causal explanation of a psychological process to the claim that the domain itself (1') plays such a causal role. This inference, although understandable, is not correct. But this very inference is clearly what is at issue for Soames.

In other words, Soames operates under the assumptions that (a) accepting the claim that the compositional semantics is mentally represented entails that it is psychologically real; (b) this psychological reality in turn entails either the identity or isomorphism of the semantics and the speaker's psychological processes, i.e., her psychological structures and mechanisms. This is what Soames reads into claim (ii).

Based on this characterization of knowledge of meaning Soames can object to CV that the rules and principles of a compositional semantics are not psychologically real, and hence are not causally responsible for semantic competence.[80] This would indeed pose a problem for CV if they were to espouse (ii). However Soames is wrong in attributing (ii) to CV theorists; they do not rely on identity or isomorphism to support their position. The problem is that Soames automatically attributes (i) and (ii) to those he interprets to be saying something like (iii) (the claim that speakers have tacit knowledge of a compositional semantics). Thus he takes

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[80] The reason is that such abstract rules and principles do not specify the cognitive structures and processes of speakers.

any commitment to (iii) to imply a prior commitment to (ii) and (i).

But although (iii) is a claim CV theorists espouse this does not necessarily entail their commitment to either (i) or (ii).[81] Nor does CV have to commit to such strong claims to support their position, because neither is essential to CV.[82]

The only way that the domain, i.e., the compositional semantics, enters into the explanation of semantic competence is via knowledge of the domain. In other words, in the case of CV it would be the subdoxastic mental state of knowledge of meaning which would be causally effective in the process of understanding and which would thus have to be referred to in a causal explanation of that understanding. The object of knowledge itself on the other hand would not enjoy such causal efficacy.

The upshot of all this is that when CV theorists claim the recursive formal principles of a compositional semantics are mentally represented they simply mean that tacit knowledge of these principles plays a role in language understanding. But this claim is neutral on the kind of role semantic representations play in the cognitive processes of language

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[81] In other words, the claim that tacit knowledge of meaning is required for semantic competence does not entail that the rules and principles of the theories are the actual psychological mechanisms of these processes or that the rules of the truth theories are isomorphic to these mechanisms.

[82] In fact, no respectable CV theorist believes that semantic rules are identical or isomorphic to a speaker's psychology.

understanding. Of course this means that the onus is on CV to specify an acceptable account of this role.[83]

4.3.2

Soamesians claim: a) semantic competence does not arise from knowledge of the theorems as characterized by a semantic theory, and b) semantic theories do not state that which a speaker knows in virtue of which she is able to understand the language. In other words, neither the axioms of a compositional semantics nor the theorems generated by it have anything to do with language understanding.

But George's distinctions clearly indicate that the specific claims Soamesians are intent on refuting are not necessarily claims CV theorists make and thus that CV does not need the appeal to identity or isomorphism to defend itself. With respect to some of these claims Soamesians have merely constructed themselves a straw man. They claim that if semantic theories would turn out to have any psychological import it would only be insofar as they could be considered to be supervenient on psychological truths.[84] Since Soames obviously

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[83] If L&S, and other CV theorists, want to sustain their view that tacit knowledge of a semantic theory plays a role in the processes of language understanding, they might have to specify the nature of this role. George suggests that even that is not necessary, that the relation can remain unspecified. In any event, the objections Soames raises can be addressed (and in fact dissipated) prior to taking on this challenge.

[84] Soames maintains that even if truth theories and theories of competence turn out to be closely connected, truth theories do not play a causal role in competence. He contends there is no reason to expect semantic theories and psychology are related and entertains the idea that semantic competence explains knowledge of meaning, rather than the other way around. But he has no more empirical evidence to back this

rejects (i) and (ii) he rejects arguments in favor of (iii) as well. But since (iii) entails neither (i) nor (ii), Soames cannot rely on his argument against (ii) to refute (iii). And we already established that his argument against (i) amounts to no more than a metatheoretical dispute. This means that whether CV is considered to be conflating theories depends largely on one's metatheoretical alliances, which are not of essence to this debate.

This means that the real challenge for CV is not the one posed by sticklers for disciplinary boundaries, but the one that offers an alternative explanation of language understanding, which purports to show that tacit knowledge of a compositional semantics is not required for semantic competence. This was the intent behind the earlier translation story which combined with some computational story supposedly offers an explanation of language understanding in which semantics never plays a role. I revisit this story (to wit, the one offered by Schiffer) later in the discussion.

4.3.3

Meanwhile, although L&S's account remains problematic, CV theorists in general do deserve a more charitable reading of what knowledge of meaning entails as far as the psychology of competent speakers is concerned. Clearly, they are immune to Soames's first two objections of conflation and psycholog-

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claim up than CV theorists have to back up theirs. Thus his contention is largely speculative--a fact that he himself is aware of--and hence does not necessarily pose a real threat to CV theorists.

ical reality. CV's formulation of the role knowledge of meaning plays in language understanding can then be read as follows.

Linguistic processing mechanisms involved in language understanding follow algorithms that do not have the form of a semantic theory but that tap into a speaker's tacit knowledge of the theory when computing the meanings of input sentences.[85] In other words, the algorithms avail themselves of the informational content of a semantic theory. This is a more tenable position, and indeed the one I think it is reasonable to attribute to CV theorists.

The output of the algorithm is often confused with the semantic representation that a compositional semantics would assign to an input sentence. The algorithm seems to compute the same function or theorem as does the theory and hence is easily taken for the theory. But algorithms can tap into extensionally equivalent sets of axioms in order to compute one and the same function or theorem. This makes it difficult to make explicit claims about a speaker's psychological mechanisms making use of one rather than an extensionally equivalent set of axioms. CV theorists speculate about the possibility that the set of axioms would be those of a compositional semantics rather than another theory.

Consider the following. Assume a speaker *x* has tacit knowledge of an interpretive truth theory or other composi-

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[85] The notion of algorithms tapping into knowledge ultimately requires elaboration. Unfortunately some CV theorists, like Peacocke, are hesitant to offer such elaboration.

tional semantics. When the speaker receives an auditory input of a sentence σ which is phonologically or syntactically represented, this representation of σ serves as input to the subdoxastic "box" in which a compositional semantics is internally represented.[86] This compositional semantics issues in theorems of the form 'σ is true in *L* iff *p*' or 'σ means in *L* that *p*'. The idea here is that the theory yields a pairing of object-language and metalanguage sentences by the relation 'is true iff' that is equivalent to the pairing yielded by the relation 'means that'.

Once represented in this subdoxastic box, the representation of the sentence σ is then subjected to psychological processing mechanisms that follow certain algorithms in order to crank out a Mentalese translation of the T-sentence or M-sentence for σ. And supposedly the tacit knowledge of the compositional semantics is used by the algorithms to turn this representation of σ into the intermediate output that is this Mentalese translation of an interpretive meaning theorem.

The meaning theorem in turn serves as input to another causal mechanism through which it is rewritten into a meaning sentence. This meaning sentence appears in *x*'s belief box and is hence how *x* arrives at her knowledge of the meaning of σ.

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[86] Remember that the subdoxastic box contains subdoxastic states and a subdoxastic state is an information-bearing state that is not a belief in that it is not available to consciousness. It is an unconscious information-bearing states.

This last step then provides the speaker with knowledge of the meaning of the original input sentence σ.[87]

The claim that algorithms tap into a speaker's tacit knowledge of meaning could mislead one into thinking the compositional semantics is used in the language processing mechanisms. If that were the case Soames would have a point. But by simply qualifying the notion of 'used' his point fails. Strictly speaking, the semantic theory itself is not used in the processing mechanisms; rather, knowledge of it is used by the algorithms followed in cranking out the meaning of the input. Thus the algorithms avail themselves of the subdoxastically represented informational content of the theory.

This now leaves CV to address the undesirable fact that extensionalist theories turn out to function merely like translation manuals in explanations of language understanding, and thus that any translation manual could perform the task of the theory.[88] In addition it entails that L&S's account presupposes a speaker's mastery of an unspecified metalanguage from which she derives her understanding of the object language. This because a translation manual explains a

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[87] This last step seems rather mysterious. It is in part because of this mystery that I think there is more hope for the propositionalist CV program, because it will not rely on a stage of processing during which a T-sentence somehow gets transformed into a meaning sentence.

[88] CV needs to offer a characterization of the compositional semantics speakers have tacit knowledge of. My hunch is that propositionalist CV theorists have a better chance at defending their position that their extensionalist colleagues. As I noted elsewhere, the confines of this work do not allow me to address this issue of propositions adequately.

speaker's understanding of her object language only via this speaker's (prior) understanding of some meta-language into which the object language is being translated. However, the translation manual never offers an account of this latter understanding. Nor does the translation manual offer an explanation of understanding based on the speaker's knowing what is expressed by the truth theorems, independent of any language that is being translated into. And as such the theory defeats its own purpose.[89]

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[89] In certain cases, like those where the metalanguage is an extension of the object-language, this translational device leads to a circular account of language understanding.

Chapter 5: THE PROPOSITIONALIST THEORY

§5.1 COMPOSITIONAL MEANING THEORIES & PROPOSITIONS

5.1.1

So far we have seen that extensionalist truth theories are criticized for not providing sufficient conditions for adequate interpretation, and L&S's interpretive truth theory fares no better. The *sufficiency* challenge that Soamesians posed for CV needs no more elaboration and the Soamesian argument against the *necessity* of knowledge of meanings in language understanding is not convincing. At the same time it is also clear now that some of the arguments against CV are based on certain erroneous steps of argumentation about the relationship between semantics and psychology. In many ways then this leaves the translational account of language understanding as the main challenge CV needs to overcome, given that it does pose a significant challenge to the claim that a truth theory is necessary in explanations of understanding.

The perennial problems with extensionalist semantics notwithstanding, in light of our findings about objections to CV and the charitable reading of CV's psychological claims, it is worth considering the potential virtues of a propositionalist semantics. In other words, it is worth considering whether on a propositionalist account of compositional semantics this semantic theory could be shown to be at least necessary--and perhaps even sufficient--to account for language

understanding. If so propositionalism might offer a stronger case for CV.[90]

Thus, in essence the question before us now is whether CV can offer a hypothetical argument for the necessity of a *compositional meaning theory*--as opposed to a compositional truth theory--in explanations of language understanding. To do this consider again the main motivation for and problems with CV. The general motivation is that natural languages need a compositional semantics to explain language understanding. Thus CV theorists presume that

> [C] It would not be possible to account for a speaker's semantic competence, i.e., her ability to understand the meanings of utterances of indefinitely many novel sentences of a language, without assuming that that language had a compositional semantics.[91]

And the reason CV theorists assume [C] is that a competent speaker, as a finite creature, must have a *finitely* based ability to understand any of a potentially *infinite* number of sentences of her language, based on her knowledge of the semantic primitives and on knowledge of syntax. The composi-

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[90] Soames, of course, contends that even knowledge of a compositional meaning theory is neither necessary nor sufficient for semantic competence. If this is correct, propositionalism would not offer a way to resolve the issues. If it is not correct, the CV theorist might have overcome the most difficult aspects she encountered in assuming (I). Still, if Soames is correct some CV theorists might appeal to empirical motivations for assuming knowledge of meaning plays a role in semantic competence.

[91] As I indicated in chapter 1 this characterization of [C] is based on Schiffer's hypothesis [U], in his *Remnants of Meaning*.

tional semantics would constitute such a finite theory that could explain language understanding on a finite basis. But for CV theorists the issue is not just [C], but the fact that with [C] they also claim that competent speakers have knowledge, albeit tacit knowledge, of a compositional semantics.

In order to maintain the position that knowledge of a compositional semantics is needed to explain language understanding, CV needs an alternative to extensionalist semantics. Thus propositionalist CV theorists, instead of claiming the correct compositional semantics is a compositional truth theory, propose that the correct compositional semantics cannot be extensional and as such ought to be a compositional meaning theory. Whether the propositionalist approach works depends in part on how one characterizes the theorems that the compositional meaning theory would issue in. Once these semantic theorems have been defined we can address whether knowledge of them is necessary (and/or sufficient) for semantic competence.

But more importantly, additional motivation for a propositionalist CV theory might come from considerations of the various levels of psychological explanation that come into play in explanations of different human cognitive faculties. In particular, it could be argued that there is a particular level of psychological explanation where the compositional meaning theory has the kind of explanatory relevance that necessitates its role in explaining language understanding on the whole. I discuss this possibility in a later chapter.

This latter case basically entails that cognitive analyses, which offer (empirical) motivation for the claim that semantic competence involves tacit knowledge of a compositional semantics, may offer a viable contribution in defense of CV's hypothesis.

5.1.2

Now, for the propositionalist the correct theory of meaning for a particular language would be of course a compositional semantics that offers a detailed specification of the meanings of all semantic primitives and of the recursive syntactic operations of the language that together yield a specification of the meaning of every complex expression or sentence of the language. This specification will be in the form of a meaning theorem that will be generated for each sentence of the language. A compositional truth theory clearly does not offer such a specification and hence does not qualify as a correct theory. This suggests we need a compositional meaning theory.

We found that

> (CMT) A compositional meaning theory for a language *L* is a finitely axiomatized theory of *L* which assigns meanings to all the primitive expressions of *L* and specifies compositional rules which show how these meanings deter-

mine the meanings of the indefinitely many complex expressions of *L*.[92]

Propositionalist CV theorists moreover claim that this compositional meaning theory will play a role in explaining the speaker's understanding of her language. In order for the theory to do this it must issue in instances of the desired theorems, i.e., theorems that specify the meanings of the sentences in question. According to the propositionalist the theorems that the compositional meaning theory ought to issue in should be of the form of schema [M]

[M] σ means p (in *L*),

for each sentence of *L* where 'σ' is replaced by a structural description of a sentence of *L*, i.e., 'σ' is a name or description of an *L*-sentence, and '*p*' is replaced by a that-clause referring to a *proposition* in the metalanguage. In other words, '*p*' is a variable whose substitution instances are referential complex singular terms referring to the meaning of that sentence.

Armed with this compositional meaning theory we would find that when a competent speaker hears an utterance of the sentence 'shortbread is buttery', the compositional meaning theory--that she has tacit knowledge of--would issue in the following theorem

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[92] For a discussion of the differences between compositional meaning theories and compositional truth theories see chapter 1.

[M] 'Shortbread is buttery' means that shortbread is buttery.

In this instance 'that shortbread is buttery' refers to the proposition that shortbread is buttery. Of course, the difficulty with this formulation is that its success comes down to how one can define propositions. And we are already familiar with one of the problems Davidson raised against a compositional semantics that is supposed to issue in M-theorems, which was that '*p*' as a complex singular term would be a Fregean proposition and thus turn out to be an abstract entity. However, given the problems with Davidson's own account we cannot as yet rule out propositions. Thus we need a coherent way to flesh out what propositions are.

5.1.3

The roots of the propositionalist approach lie in Frege's theory of meaning. According to Frege meaning cannot be conceived of in terms of reference alone for various reasons. For Fregeans:

1. The *reference* of a proper name is the object it designates.

2. The *sense* of a proper name is that wherein the mode of presentation of its referent is contained.

3. A proper name (a word or primitive expression) expresses its *sense* and designates its *reference*.

When this Fregean analysis in applied to entire declarative sentences, we find that a sentence expresses a thought, where a Fregean thought is what we now refer to as a proposition.[93] Then, for any declarative sentence

4. The thought of a sentence is considered its sense;

5. The truth value of a sentence constitutes its reference.[94]

As such the truth value of a sentence must remain unchanged when a subsentential component is replaced by an expression having the same reference. Moreover, on this analysis all true sentences have the same reference, as do all false sentences. Thus in the reference of a sentence all specifics are obliterated.

If meaning is constituted only by reference then based on (5) when applied to whole sentences the referential theory of meaning would entail that if

John believes that grass is green.

we would have to analyze this sentence as simply meaning

John -- belief relation -- the true

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[93] A Fregean thought therefore is not an idea, it does not just belong to the content of one person's consciousness since it can be recognized by many, i.e., it is not private; it does not need a bearer to the content of who's consciousness it belongs since then there would be no science common to many because what I consider true does not concern others.

[94] Thus ordinary declarative sentences denote their truth value.

which would lead to the unacceptable result that John believes everything that is true, because the reference of the sentence is its truth value and thus one could substitute the reference salva veritate. If in addition to this it were to be the case that

John believes that Astroturf is real grass

then this would entail that John also believes everything that is false, and thus John would believe everything. Thus propositional attitude sentences, pose a problem for referential theories of meaning.[95]

This is why Frege conceives of meaning in terms of both sense (or intension) and reference (or extension), with the sense of a sentence or word determining its reference, which in the case of a sentence is its truth value. Thus to know the meaning of a sentence we require the sense of a sentence, i.e., we require the proposition it expresses. This in turn will then determine its reference, which means that it will determine both the necessary and sufficient conditions under which the sentence would be true. Frege's reasons for introducing both these semantic notions into the notion of meaning is to resolve certain problems we come across in referential theories of meaning, where the distinction between sense and reference is not observed.

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[95] We already found that Davidson has expressed similar concerns about the viability of referential theories of meaning. In essence he pointed out that although these theories might have their merit in treating singular terms they are not successful in determining sentence meaning.

The first problem with referential theories of meaning is that the notion of reference cannot capture the difference in the cognitive value of certain identity statements when we substitute co-referring expressions.[96] Such substitutions can turn an informative identity statement into a trivial one. Secondly, referential theories of meaning cannot account for the meaningfulness of sentences that contain vacuous names or expressions and negative existentials. But Frege claims that one can grasp the sense of a name or definite description even if one is not assured of a reference for this name, by postulating a level of sense that is distinct from reference.

Thirdly, there is the specific problem Frege perceives in the application of referential theories of meaning to whole (declarative) sentences. This is the problem of opaque contexts, like indirect discourse or propositional attitude contexts, which contain embedded sentences. Of course, the opaque context problem is what led Davidson to reject referential theories of meaning as well, deciding instead to promote his extensionalist compositional truth theory. However, according to Frege, the failure of referential theories of meaning lies in their failure to recognize the thought of a sentence and thus the thought expressed by an embedded clause. In other words, the way one interprets meaning has significant consequences for the preservation of composition-

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[96] Consider the following identity statements: I) a = a and II) a = b. We would be unable to account for the difference in cognitive value of I) and II), if the difference between the names did not correspond to a difference in the mode of presentation of that which is designated.

ality of meaning, as opposed to compositionality of truth, in opaque contexts.

In both indirect discourse and propositional attitude contexts the embedded sentences or that-clauses--instead of having their customary reference--have indirect reference. Since the indirect reference of an expression is its customary sense, this entails that the subordinate that-clause has for its indirect reference a proposition. More simply stated, the reference of a that-clause is a proposition. Then, the truth value of the whole sentence does not depend on the truth value of the embedded sentence. Furthermore, it explains how we can substitute synonymous embedded sentences or expressions and preserve compositionality (the fact that the meaning of the whole sentence is made up of the meanings of its parts) even if the substitution changes the truth-value of the entire sentence containing the embedded clause.[97] Back to CV.

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[97] Consider this example from Schiffer:

(a) Lois believes that Superman can fly.

(b) Lois believes that Clark Kent can fly.

Clearly (a) is true and (b) is false, even though the embedded sentences taken on their own are both true because they have the same reference. If we did not have a realm of senses here distinct from reference that allowed us to construe the referent of the embedded clause as its customary sense, we would not be able to preserve compositionality of meaning (not of truth) in opaque contexts.

§5.2 KNOWLEDGE OF MEANING

5.2.1

For CV theorists a correct theory of meaning is a theory of understanding. And in order for the theory to satisfy the criterion of explaining understanding it ought to offer a theoretical representation of the speaker's competence to use the language. In other words, it ought to explain what one must know in order to know whatever meaning was expressed by a sentence of the natural language.

Armed with the Fregean analysis of meaning, propositionalist CV theorists can now use the theory to explain a speaker's language understanding. This means they have to specify the knowledge the speaker has, including the object of knowledge, i.e., the meaning theorem, and they have to specify the way in which this knowledge is derived, i.e., the semantic axioms. In other words, they have to specify what kind of mental state constitutes having such knowledge, in addition to what kind of mental state generates this state of knowledge.

In specifying all of these the challenges they face include the following. First, skeptics can argue that a speaker can have knowledge of the proposition expressed by a sentence without understanding the meaning of that sentence. This would mean that knowledge of meaning does not guarantee language understanding, insofar that it is not sufficient for understanding. But this predicament is not necessarily unacceptable to a CV theorist. Secondly, skeptics can argue that

the propositions referred to in the theorems are not compositionally determined. But natural languages will only require compositional meaning theories if propositions are compositionally determined. And only then might a compositional meaning theory be needed to explain language understanding. Thus if propositions are not compositionally determined then CV is out the window. Finally, CV theorists have to show that an account of understanding that appeals to a compositional meaning theory cannot be replaced by a translational account.

At first glance we see that propositionalist CV theorists in order to meet the challenges mentioned need to offer an account of a compositional meaning theory that issues in the kinds of theorems that offer the necessary conditions for language understanding. It is likely these theorems will address the sufficiency conditions for knowledge of meaning as well, although the latter is less urgent.

Dummett claims

> [A] theory of meaning is a theory of understanding; that is, what a theory of meaning has to give an account of is what it is someone knows when he knows the language, that is when he knows the meanings of the expressions and sentences of the language.[98]

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[98] Michael Dummett, "What is a Theory of Meaning", in *Mind and Language*, ed. Samuel Guttenplan (Oxford: Clarendon Press, 1975), 99.

Thus the theory should issue in theorems that ascribe meanings (non-extensionally of course) to sentences and these theorems should (partially) account for the speaker's understanding of these meanings. A necessary and sufficient condition for a speaker to understand an utterance of σ, is that the speaker knows the meaning--and thus in this case the proposition--expressed in the corresponding meaning theorem or M-sentence and knows that this M-sentence is true. In other words, like L&S and Davidson, Dummett is essentially claiming that a speaker must understand the content and know that the meaning theorems that ascribe this content are always correct ones. It is therefore that folks like Dummett, Davidson, and most Soamesian skeptics reject theories that issue in theorems of the form

[M] σ means p.

The latter do nothing other than crank out direct ascriptions of meaning without giving an adequate account of language understanding.[99] The problem is that such a theory only offers knowledge of the meaning of the sentence but does not offer knowledge of the correctness of an M-sentence. Thus the ascription of meaning by itself cannot account for a speaker's

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[99] Note that M as characterized so far ignores ambiguity, indexicality and nonindicative sentences. To account for ambiguity, indexicality, and non-indicative sentences, Soames adds to M the following two qualifications: (i) an unambiguous conjunction expresses a single conjunctive proposition and not also the propositions that each of the conjuncts express; (ii) we don't identify the meaning of a sentence with indexicals with any of the different propositions it may be used to express. Soames, "Semantics and Semantic Competence", 190.

language understanding. At the same time a speaker's understanding of the meaning of the sentence σ

Surfing the Net is most unimaginative

cannot consist solely in knowledge that the M-sentence

[M] "Surfing the Net is most unimaginative" means that surfing the Net is most unimaginative

is true or correct. In this case we need a propositional account of knowledge of meaning where the semantic theory issues in the kinds of theorems that refer to the proposition expressed by σ. Soames proposes a semantic theory should issue in theorems of the form schema K

[K] σ expresses the proposition p relative to context c

for each sentence of *L*. Here 'σ' is replaced by a structural description of a sentence of the language, 'p' is replaced by a that-clause or expression that refers to the proposition expressed by that sentence and 'c' is the context of utterance.[100] Then the correct semantic theory is one which both satisfies the requirement of issuing in instances of schema K, or K-sentences, while at the same time satisfying the requirement that it explain competence. If knowledge of K-sentences is to explain semantic competence we need to charac-

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[100] Here 'express' should be taken to be a three-place predicate relating sentences, propositions and contexts. Also, the necessary qualifications to account for indexicality, ambiguity and non-indicative sentences have to be accommodated into the account.

terize what propositions are and how they are assigned to their corresponding sentences. They cannot be construed as possible worlds that are assigned such that they are true in a world, because on this approach necessarily equivalent propositions are identified. The problem is with the truth supporting conditions; no matter what they are it is impossible to identify the proposition expressed by a sentence with the set of circumstances in which it is true.[101]

5.2.2

The first step toward fleshing out what propositions are is by assuming that meaning determines truth which means propositions are semantically prior to truth conditions. The second step is to assume propositions are both structured and compositionally determined which means that they contain both the structures and the semantic contents of subsentential components of the sentences whose contents they express.

We can then get a recursive assignment of propositions to sentences, where the meaning of an expression is a function from contexts to a propositional component; similarly the meaning of a sentence is a compositional function from a context of utterance to a structured proposition. If this is correct, then it is clearly the knowledge of the proposition

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[101] Again, consider Soames's Florence example. The proposition that Florence is a beautiful city will be identified with the proposition that Florence is a beautiful city and arithmetic is incomplete. Thus any speaker who believes or knows that the sentence σ expresses the one believes or knows that it expresses the other. Soames, "Semantics and Semantic Competence", 191.

expressed by a sentence σ rather than knowledge of σ's truth conditions that is fundamental to understanding σ.

There are two potential problems with this proposal. First, it might turn out that there is no semantic theory that issues in K-sentences.[102] This would mean that even if knowledge of meaning amounted to knowledge of theorems like Soames's K-sentences, without a semantics that issues in such theorems, semantic competence could not be the result of knowing K-sentences.[103] But secondly and more importantly, Soames argues that even if one were to make all necessary adjustments to a meaning theory to guarantee the semantic theorems it cranks out are K-sentences, this does not entail a necessary connection between knowledge of this meaning theory and the speaker's understanding of her language. Because it is possible to know that which is expressed by a K-sentence without actually understanding the object language sentence in question. Soames offers the following illustration of this problem.

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[102] For a more detailed account of this problem refer to the source. In gross outlines, at first glance it seems that once we account for indexicality and ambiguity, the propositions no longer turn out to be complex referential singular terms but instead turn into definite descriptions. This is in conflict with schema K's requirement; we wind up with a meaning theory that yields instances of theorems that are 'complicated definite descriptions' of propositions. But semantic competence is not the result of knowing complicated definite descriptions which give us knowledge of the propositions expressed by sentences.

[103] According to Soames the only way to accommodate this problem is by means of Kaplan's 'dthat' operator which can be prefixed to any definite description thereby turning the latter into a referential singular term which has as its semantic content the reference of the definite description.

Suppose we label the proposition *p* that mathematics is reducible to logic 'logicism' and suppose σ is the sentence that expresses this proposition, then (a) and (b)

(a) σexpresses logicism

(b) σexpresses the proposition that mathematics is reducible to logic

say one and the same thing. This would entail that if a speaker knows that (a), she would know that (b). The problem is that it is possible for a speaker to know that (a), i.e., that σ expresses logicism, without her actually understanding σ.[104] Thus a student may know that σ expresses the logicist proposition that mathematics is reducible to logic without understanding the sentence σ, perhaps because σ contains unfamiliar terminology. In other words, one can know what is expressed by a theorem that is an instance of schema K without understanding the actual object-language sentence and thus without being semantically competent. Thus, according to Soames if the best compositional semantics we can come up with is one that issues in K-sentences, it fails to provide an argument for CV. This would entail that knowledge of semantic theorems that are propositionally rather than truth-

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[104] Based on this example Soames concludes "…one can know that which is expressed by an instance: 'S' expresses the proposition that P (relative to C) of schema K without understanding the object language sentence that replaces 'S'. It would seem, therefore, that knowledge of semantic theorems is not necessary and sufficient for semantic competence, even under the most favorable assumptions". Soames, "Semantics and Semantic Competence", 196-197.

conditionally defined is still not necessary nor sufficient for semantic competence.

5.2.3

Soames's observation, though, leaves something to be desired. His most damaging claim against CV is that knowing the accompanying K-sentence for σ does not necessarily entail an understanding of σ, i.e., that a speaker could have one without the other. This claim cannot be borne out unless he gives us his interpretation of what constitutes understanding. Thus, the onus is on him to at least indicate what is required in order for a speaker to understand an utterance of a natural language sentence. In other words, what are the conditions that he would consider appropriate to attribute understanding to a speaker.

Soames is convinced that his example shows that knowledge of meaning theorems is neither sufficient nor necessary for understanding. But again I will argue that Soames has a better argument against sufficiency than he does against necessity. If knowledge of meaning theorems is not sufficient for understanding this simply means that in order to understand a sentence something in addition to knowing the meaning theorem for a sentence is required. And we shall see that it is likely this additional thing has to do with the derivation of the meaning theorem. At the same time this additional thing will also indicate the necessity of knowledge of meaning.

And I maintain throughout this discussion that it is the necessity of knowledge of meaning that ultimately matters to CV. When it comes to arguing against the necessity of this knowledge we find that Soames's argument benefits from the particular example chosen. Soames in his example in effect replaces the proposition in (b) with a definite description of that proposition in (a). In this case then the incomprehension at what the sentence means in (a) does not reflect a lack in language understanding but merely a lack in background information on the topic.[105] As it stands, in Soames's example the student has only been offered a definite description of the sentence, without knowing what it is a definite description of.

But if we follow Fregean propositionalism the definite description will have a sense and a reference. Then when the student acquires knowledge of (a) without understanding σ it is because she knows the reference of 'logicism' but does not know its sense.

§5.3 CV'S STANDING COMMITMENTS

5.3.1

However at this point, before considering any propositionalist proposals and their potential benefits for CV, it is imperative to reconsider what exactly CV's position binds

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[105] Soames here relies on a Davidsonian substitution salva veritate argument against intensional meaning theories. Recall his example of John believes a fortnight is a fortnight and John believes a fortnight is fourteen days.

them to. First of all, I propose that in effect CV theorists, as such, are committed to at least the following four propositions. Being Chomskyan cognitivists, the minimal commitments CV theorists must make are:

> A) Knowledge of a semantic theory is part of a speaker's psychological states, i.e., the theory is mentally represented.
>
> B) This knowledge, which is tacit, plays a role in the mental structures and processes that pair sentences with their meanings.
>
> C) Tacit knowledge of meaning is needed to explain language understanding.[106]

Qua Davidsonians they (must) hold:

> D) Tacit knowledge of meaning is knowledge of a structure-reflecting theory of meaning, i.e., of a compositional semantics.

These four propositions constitute the minimal requirements for any view to be considered CV-esque. I also propose that these minimally required propositions are what CV theorists are at most committed to, provided a cohesive and correct compositional semantics can be offered.

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[106] Note that C) is not entailed by B) but nonetheless is considered to be the case by CV theorists. I return to this issue in the last chapter.

Secondly, with these four commitments comes a speculative commitment on CV 's part that a speaker's tacit knowledge of a subdoxastically represented compositional semantics is tapped into during the process of interpretation. Thus the theory plays a role in generating a meaning theorem from the axioms of the theory for any natural language sentence that a speaker is presented with.

Based on these commitments I argue that on an algorithmic interpretation of the mechanisms of language processing it is clear that the algorithms in question do the actual psychological work and that hence the semantic theory itself is not a psychological meaning-producing mechanism. This however does not preclude the possibility that the compositional semantics play a role in meaning ascription insofar that the algorithms make use of the knowledge of the compositional semantics. It might even be the case that in the event the mechanisms are translational they are still informed by the semantic theory through the algorithms they follow, i.e. those algorithms might still tap into the knowledge of the compositional semantics.[107]

CV's commitments to A) through D) clearly underscore the strengths and weaknesses I pointed out earlier in Soamesian and some other objections. They will also help establish whether there remain conceptual reasons for defending CV's

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[107] Of course the notion of tapping into the knowledge needs serious unpacking, a task which to date no CV theorist that I can think of has successfully achieved.

position, to the extent that the arguments against CV turn out unsatisfactory.[108]

5.3.2

In light of the above indicated commitments and the possibility that cognitive accounts of understanding provide support for CV we should also consider the following. Although there is consensus among various skeptics like Schiffer, Soames and Fodor that natural languages do not need a compositional semantics to explain semantic competence, there remains a debate over whether natural languages require a compositional semantics to account for some of their other features. The division is between those, like Fodor and Soames, who insist natural languages do require compositional semantics and those persistent skeptics, like Schiffer, who deny this.[109] Two arguments are offered in favor of compositional semantics.

The first is that a compositional semantics is needed to explain the natural language features of *productivity* and *systematicity*.[110] It is commonly assumed that natural lan-

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[108] All through this we should keep in mind that Schiffer in offering his objection was chiefly motivated by the philosophical inquiry of what might suffice in (or qualify as) an explanation of competence.

[109] Katz's position on this issue would probably be on the side of Fodor and Soames, insofar as he claims that the 'creativity' of language is strictly rule governed.

[110] The reason productivity and systematicity can be considered independently from competence is that the former are features of natural languages; semantic competence on the other hand is a feature of speakers of those languages.

guages are both productive and systematic. A natural language is productive given that in principle an infinite number of distinct novel sentences can be constructed in it, each of which has meaning. This is possible because the language in essence is a recursive system that can churn out infinitely many sentences, based on certain axioms. A natural language is systematic in that the meaning of a sentence is determined by features of its syntax and words, and in these features consistently playing the same meaning-determining role in every sentence in which they occur.

The second argument is that one needs it to identify the objects of belief. Again here it is uncontroversial to assume that beliefs are relational predicates, in particular two-place relational predicates of the form '*x* believes *y*'.[111] As a relational predicate a belief relates a believer *x* to an object of belief *y*. Thus if one buys the relational theory of belief one has to provide an account of what may serve as the substitution instances for the objectual variables *x* and *y*. Since the substitution instances for *x* are believers, the real challenge is to offer an account what it is a belief relates a believer to, in other words, the real challenge is to offer an account of the objects of belief that serve as substitution instances for the objectual variable *y*. If a language needs a compositional semantics in order to specify

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[111] Note that according to the relational theory of beliefs one can also construe beliefs as three-place predicates, in which case there is another variable the substitution instances of which present the object of belief to the believer *under a certain mode of presentation*.

what that-clauses refer to, i.e., what the objects of belief are, it brings the discussion right back to propositions and to whether they are compositionally determined.

Although in general this debate does not directly concern CV this second argument does bear on CV for the following reasons. First of all, we realize that language understanding entails that the speaker in question stands in a belief relation to a certain semantic theorem. In other words as she goes through the process of interpretation, various theorems appear in her belief-box until finally there appears in her belief-box a semantic theorem that realizes in her the belief that σ means p. Thus, in essence language understanding constitutes the belief that σ means p.

This latter argument entails that if a compositional semantics is needed to specify the objects of belief, and language understanding entails standing in the belief relation to such an object of belief, then the compositional semantics might be needed for language understanding. Regardless then of whether one is in pursuit of identifying the objects of propositional attitudes or whether one is in pursuit of explaining language understanding either way (a) one needs to show that propositions are compositionally determined and (b) one needs to show that they are mentally represented in a person's belief-box.

For CV the latter means that propositions play a certain role in speaker psychology. If CV theorists can convincingly argue that the objects of belief, i.e., the mental represen-

tations in the belief-box, must be compositionally determined propositions they could be one step closer to being able to defend their position that knowledge of meaning is needed in explanations of understanding.

In both pursuits one of the major difficulties faced is whether one can establish a connection between semantic content of the belief-box on the one hand and psychological processing on the other hand. In particular, CV needs to consider the mental representation of the meaning of a sentence in the speaker's belief-box when she understands the meaning of the sentence and we need to consider how, i.e., through what process, this representation gets there.

5.3.3

To recap then CV at this stage of the game has to address the following issues. For one they have to present an argument in favor of the compositional determination of propositions. Secondly, they have to show that these compositionally determined propositions are significant to a speaker's ability to understand a language insofar that knowledge of a meaning theory that generates theorems containing such propositions plays a role in the cognitive process of language understanding.

This requires that we revisit the distinction between hypothetical accounts of semantic competence and cognitive accounts of what a speaker goes through when she understands an utterance of a sentence. Then, the claim that knowledge of

meaning is necessary *in principle* for a speaker's semantic competence might find support from cognitive interpretations of the role of knowledge of meaning in language understanding.

In turn, when we consider language understanding from a cognitive perspective we realize that when discussing knowledge of meaning we have to distinguish between knowledge of the axioms and knowledge of the theorems of a compositional meaning theory. Focusing exclusively on the theorems generated by the theory may indeed lead one to conclude that knowledge of meaning theorems is not necessary for language understanding, although I have already shown some of the arguments for that position to be unsuccessful. But moreover even if those arguments had some merit, this does not at all entail that a speaker's tacit knowledge of the axioms of the compositional semantics do not play a role in explanations of language understanding. If this is the case, CV will have to redefine itself accordingly. Some initial speculation on the nature of the cognitive processes involved in language understanding, then, is not unwarranted.

Chapter 6: PSYCHOLOGICAL EXPLANATION AND KNOWLEDGE OF MEANING

¶6.1 COGNITIVE PROCESSES

6.1.1

Language understanding, considered from a cognitive-scientific perspective is an information processing or computational ability. Current accounts aimed at explaining human cognitive competencies that involve such computational processes typically distinguish various levels of explanation. If a complete explanation of the information processing in question is desired, an explanation needs to be offered at each of these levels. Thus, in explaining language understanding too we will want to acknowledge these levels of explanation. Typically three levels are distinguished, respectively describing what is being done, how it is done, and the physical set-up needed to get it done. These would be the explanatory levels introduced by Marr which I consider shortly.[112]

The main concern in the psychological explanation of competencies like language understanding is how computational states are supposed to implement intentional states, i.e.,

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[112] See David Marr, *Vision* (New York: W. H. Freeman & Company, 1982). In Marr's case, the exposition of these levels of explanation relates specifically to vision. However the exposition seems to lend itself well to attempts at explaining various other human cognitive competencies. From hence arose the idea to apply these levels of psychological explanation to explanations of language understanding, where the latter process is to be understood as an information processing (computational) task.

how intentional states or content-bearing states like states of tacit knowledge play a causal role in the computational processes that explain understanding. This concern arises because mental states are intentional while mental processes are computational. Intentional states are commonly construed as information states; they carry informational content.[113] The mechanisms that avail themselves of this informational content are computational.

Now depending on how the intentional content is interpreted conflict arises when we try to explain how computational processes are related to intentional states. This because, whereas information states are external, computational processes are defined in relation to other processes and not in relation to anything external.[114]

6.1.2

Peacocke claims the current accounts of explanation in computational psychology (based on Marr) overlook one level of explanation, which, according to him, is that level at which the vital explanatory force of semantic theories in full-fledged explanations of language understanding is to be found. Hence Peacocke introduces a fourth level to Marr's

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[113] In turn informational content is presumably atomistic, which means that the content of a mental state is causally connected to a particular object out there and not to any other thoughts. Contrast this with conceptual role theories, where the conceptual role of a mental state is metaphysically constituted by its role in an entire system of belief.

[114] By referring to intentional states as external I mean simply that they are mental states that relate us to the world.

three levels of explanation. His main concern is whether a uniform explanation could be given to a competent speaker's understanding an utterance containing 'armadillo' as saying something about an armadillo. He believes such a uniform explanation can be given, but only when we introduce this new level of explanation into the picture. If his view is correct, then he is making steps toward motivating CV. Before saying more about it, consider what Marr's levels are about.

Marr's three largely independent levels of explanation are: level 1, stating which function is computed and why; level 2, specifying the algorithm that computes the function and how it is done; level 3, describing the realization of the algorithm in hardware. Peacocke introduces his new level, level 1.5, between levels 1 and 2, claiming that level 1.5 states the information on which the algorithm in question draws. Thus, level 1.5 is an independent level that explains what kind of knowledge the algorithms tap into. So we have then:

> level 1: the computational level which states which function is computed and why;
>
> level 1.5: the informational level which states the information on which an algorithm draws.
>
> level 2: the algorithmic level which states which algorithm computes the function and;

> level 3: the physical realization level which states how the algorithm is realized in the hardware.[115]

Applied to language understanding these various levels of psychological explanation can be reconstructed as follows.

Level 1 explanations offer a functional characterization of the inferential mapping from phonological input information onto semantic output. In other words, level 1 defines the function that is being computed. In our case the function being computed is the semantic theorem or M-sentence that characterizes the meaning of an utterance or sentence σ of the language (something along the lines of 'σ means p' or 'σ is true iff p'). Secondly, level 1 defines the methodological logic informing which function gets computed, in other words, it defines why this particular function is being computed. Thus level 1 by defining the function actually characterizes the constraints on the cognitive task that is being carried out. In the case of CV this methodological logic would be specified by compositional semantics.

Level 2 explanations characterize the mental representations and algorithmic rules that are associated with the function defined in level 1 and that allow this function to be computed. In other words, in our case level 2 reveals which algorithms accomplish the transformation of the phonological input information into semantic output. The algo-

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[115] Christopher Peacocke, "Explanation In Computational Psychology: Language, Perception And Level 1.5", in *Mind & Language*, vol. 1, no. 2 (summer 1986): 101-123.

rithms are thus rules that direct the task of computing the function defined at level 1, in our case the task of computing the M-sentence, by operating on the representations in question, in our case the Mentalese representations of the phonological input. Level 2 thus explains how we compute the semantic function, how the computation is effected.

Level 3 explanations sort of speak for themselves. They aim to describe how the representations and algorithms in question are in fact physically realized. They offer a description of the physical arrangement of 'components' and a mechanical description of the process. From hereon any discussion about level 3 will be limited, since there is no way that I could say anything substantive about it, nor is it my intention to discuss actual empirical data.

Finally, in what follows, I discuss what Peacocke thinks level 1.5 entails and why, according to him, it cannot be subsumed under either level 1 or 2. I address whether he succeeds in defending the need for level 1.5, by both analyzing the underlying problem that level 1.5 is supposed to address and by figuring out whether level 1.5 helps make the case for CV. However before addressing these a brief digression is in order.

§6.2 STRUCTURED UNDERSTANDING

6.2.1

Peacocke's main concern is motivating a new level of explanation which then enables him to argue that semantic theo-

ries play a role in explanations of language understanding. This concern with explaining understanding places him within CV. But there is one difference. Peacocke considers both how so-called structured understanders and unstructured understanders understand their natural language, and then arrives at the conclusion that a compositional semantics is necessary in explanations of structured understanding. However, he is not automatically committed to the claim that all language understanding is structured. The latter lack of commitment does not however pose a problem for CV.

In any event, before considering Peacocke's argument for level 1.5 explanations we need to clarify the distinction between structured understanding and unstructured understanding. A structured understander would be a speaker whose knowledge of the meaning of a sentence is the result of knowing the meaning of the sentence's subsentential components and their structural arrangement in the sentence. Then the appropriate semantic theory for a structured understander would be a meaning (or other semantic) theory that issues in meaning theorems that respectively assign to any sentence of her language a meaning based on the meanings of its subsentential components.[116] In other words, a speaker's understanding of her language is structured when she can understand infinitely many sentences on a finite basis. To CV this means

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[116] Or in the case of a truth theory the latter would issue in truth theorems that assign a set of truth conditions to any sentence based on the references and satisfaction conditions of its subsentential components.

that a speaker's understanding is structured when the language is compositionally determined.

An unstructured understander on the other hand would be a speaker for whom the appropriate semantic theory would simply list the meanings or truth conditions of each sentence of her language independently. To CV this means that a speaker's understanding is unstructured when the language is not compositionally determined. In other words, in unstructured understanding the semantic theory that specifies the meaning of sentences contains information of a noncompositional nature. Thus, in the case of unstructured understanding the semantic theory would be non-derivational, whereas in the case of structured understanding the theory would be derivational.

Peacocke argues for the need of a compositional semantics in explaining structured understanding, but as I already pointed out he does not commit to understanding necessarily being structured to begin with. Hence it is unclear how essential level 1.5 is given his concession that one can explain understanding of the unstructured kind exclusive of level 1.5. Consequently, if level 1.5 is simply intended to account for differences in structured versus unstructured understanding without committing to which type is required for speakers, the necessity of a compositional semantics has not been established. Thus understanding could turn out to be unstructured which would obviously render a compositional semantics irrelevant to explaining understanding.

Fortunately, the common presumption is that language understanding is structured and this presumption motivates CV's view on language understanding. Moreover we found several reasons (productivity and systematicity) for assuming the semantics of natural languages are structured, i.e., compositional. Without the assumption that understanding is structured there would be no explaining a speaker's understanding of infinite languages. And indeed it is a fact that even most critics of CV assume understanding is structured in one way or another. However, the issue for the critics is whether any semantic content comes into the picture when explaining structured understanding. Thus some skeptics like Fodor and Schiffer claim that a *compositional syntax* would provide the requisite structure to the process of understanding, but that a *compositional semantics* is never needed in explaining understanding.

In addition to this, note also that Peacocke offers several other arguments in support of level 1.5 explanations in different information processing tasks. The primary argument (for our purposes) was by way of the structured understander. But he claims the need for level 1.5 explanations is supported by other information processing tasks as well.[117] Thus,

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[117] A different illustration can be given in the context of the perception of nonlinguistic objects and properties, in other words, level 1.5 is supported not just by language. There is an illustration of size (p) and depth (d) perception given retinal size (r) and the informational content drawn on by algorithms to compute functions that all seem to show a certain kind of regularity of output insofar as the values calculated all seem to conform to a particular equation, to wit p = d x r. The likelihood again is that there is a common element in the explanation of instances of the regularity, namely a system with the

he offers arguments for level 1.5 independently of compositional semantics. By doing that, in turn, level 1.5 provides strong reasons for assuming language understanding is structured, and thus for assuming compositional semantics play a role in the process. Moreover, Evans also offers a compelling argument for the need of knowledge of meaning, i.e., of a compositional semantics, in explanations of understanding.

6.2.2

Peacocke now claims that if we want to explain a structured understander's semantic processing we cannot do it just based on Marr's three levels. This, because one of the features of structured understanding is that there is a common informational component in the explanation of all sentences that have a particular expression in common. To Peacocke, the fact that explanations of unstructured understanding do not include explanations at level 1.5 proves that level 1.5 does not merely redescribe the phenomena to be explained, but offers genuine additional information.

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informational content that all values are related by the formula p = d x r, although there might be an explanation that appeals to no such common element.

The third illustration of kind perception involves 3D model description that describes/explains how one can perceive a man as a man in almost any orientation. This ability is based on one's perceptual system creating an object-centered coordinate system which matches the perceived object with a shape (that is, a 3D model description) found in the catalogue of shape-kinds. Explanations of perception which mention 3D model description operate at level 1.5, because they go beyond level 1 given that they draw on information related to the object. Moreover, although it might seem that 3D model descriptions operate at level 2 sometimes, the algorithms at level 2 may vary even if what is explained by the 3D model description remains the same; this suggests that the varying algorithms draw on information at level 1.5 that remains the same.

Level 1.5 will explain the possible uniformity exhibited in a speaker's understanding of sentences with a particular expression in them by stating the informational content that enables the computation at level 2 to take place. According to Peacocke an explanation of this uniformity cannot be subsumed under level 1 nor level 2.

At level 1 we cannot capture common informational components, because level 1 specifies the function from whole sentences of a language to their meanings. Thus there is no way to distinguish between a function that is compositionally determined and one that is not and hence no way of establishing whether the understanding taking place is structured or not. The description of the function being computed at level 1 is such that the same function might be computed by drawing on different bodies of information, i.e., different potential semantic theories (which might or might not be compositional).

Nor can the common informational component be accounted for at level 2 since there are several potential algorithms that might draw on this particular information.[118] Hence Peacocke's introduction of an intermediary level of explanation at a level above that of the algorithm but at a level below that of the function calculated. By offering a coarser description than a fully algorithmic description, the information specified at level 1.5 leaves open the possibility

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[118] For more discussion on this latter point, please refer to the source, Peacocke "Explanation In Computational Psychology".

that different but equivalent algorithms draw on this very information.

In essence then the problem that level 1.5 is supposed to address is that of somehow bridging the transition from level 1 to level 2. Although this motivation behind level 1.5 seems perfectly defensible, it is not clear that it necessitates positing a new level of explanation. However this is not to say that psychological explanation should not include a characterization of informational content. Remember that level 1 is supposed to include a characterization of the methodological logic that informs the function being calculated. In the case of CV this methodological logic would be specified by the axioms of a compositional semantics.

At the same time we found that level 2 characterizes both the mental representations of the phonological input and the algorithms that work on those representations. Thus so far level 2 does not specify which semantic or informational representations might play a role in the transformation of the mental representation of the phonological input into semantic output. In other words, level 2 so far does not, but certainly could, specify how the algorithms manage to accomplish the transition mentioned. And then the answer would be that they accomplish the task by tapping into mental representations of a different nature, to wit, mental representations of an informational nature such as the axioms of a compositional semantics.

Thus it is possible that what Peacocke describes as level 1.5 could be subsumed under either level 1 or level 2 explanations but not without either one of these being expanded to include the information just indicated. Thus no matter which one of these actually is the case, the important thing is that by having introduced level 1.5 Peacocke has drawn attention to the fact that there must be a mental information state involved in the process that leads to language understanding that is causally influential in the operations of the algorithms.

This in turn means that we can now account for the common informational component through specifying the information on which the algorithms involved in language processing draw. The algorithms that compute the meanings of sentences containing a particular subsentential expression have access to information about the semantic properties of that expression when calculating the meaning of any sentence in which this expression occurs. This mental state is an information-carrying state whose informational content the algorithms draw on to establish the contents of input sentences. According to Peacocke, in order to identify the informational contents of states at level 1.5, explanations at this level must be by "content-using theories", i.e., theories that assert that the representations they mention have meaning.

6.2.3

I take it as undisputed that language understanding is an information processing ability. Now, when we apply Peacocke's claims to language understanding specifically we find that the information-carrying state that plays a role in level 1.5 explanations simply is the mental state--and consequently the explaining state--of knowing a compositional semantics, thus entailing the compositional semantics is internally represented. In other words, for CV Peacocke's explanation of structured understanding translates into a speaker having knowledge of a compositional semantics for a language *L* that specifies the content of any sentence of *L* based on specifying the semantic properties of its subsentential components and their structural arrangement in the sentence. This semantic content is what the algorithms tap into when calculating the content of the sentence in the input state that needs explaining. Thus at level 1.5 the correct compositional semantics explains structured understanding while remaining the same across different individuals who may use different algorithms to compute their functions. Simply stated, the algorithms make use of the speaker's knowledge of a compositional semantics.[119]

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[119] Of itself, level 1.5 does not necessarily commit one to claims about whether this knowledge is tacit and thus whether the information-carrying state is a sub-doxastic state or not. Peacocke in fact hesitates to commit to the nature of this knowledge. Unfortunately this hesitance does not help his argument.

Now, ideally a full-fledged computational account of language understanding should include explanations at all levels. Of course, given that CV is primarily a philosophical view it is understood that what CV needs to offer is a hypothetical account of language understanding. As such whatever insight CV may gain from cognitive accounts will come mainly through level 1 and level 2 explanations. Level 3 however lies clearly beyond the purview of any philosophical investigation. This has certain implications for CV.

But before considering these, note that just because there is a requirement that full-fledged psychological explanations of information processing include all levels of explanation, this requirement is not to suggest that there exists a necessary correspondence between levels of explanation and levels of language understanding. All it means is that the levels of explanation were clearly conceived of to address different steps in information-processing tasks. And what motivates the particular distinctions drawn in explanatory levels is their application to different aspects of information processing.[120]

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[120] Thus Peacocke, reiterating Marr's view on this issue, claims that the truths stated at each of these levels "have their own distinctive kind of facts to explain". Peacocke, "Explanation In Computational Psychology", 107.

§6.3 THE ROLE OF TACIT KNOWLEDGE

6.3.1

In light of our reassessment of CV's commitments and Peacocke's argument for level 1.5 explanation we can now revisit CV. In particular we want to now pay attention to the axioms and theorems of a semantic theory and to which one of these may be most important to our debate. In other words, we can now look into whether knowledge of meaning entails knowledge of meaning theorems or whether it entails tacit knowledge of axioms.

Evans argues in support of CV's conceptual claims about tacit knowledge playing a role in semantic competence. In particular, he points out that behavioral and social findings strongly support the idea that language understanding is structured and hence that the tacit knowledge involved in language understanding is structured. His position on knowledge of meaning however, is somewhat unusual. Evans is not convinced that those theorists who are committed to compositional semantics, i.e., those who are engaged in constructing structure-reflecting theories of meaning, need to be committed to the idea that in offering a correct meaning theory they are automatically providing explanations of language understanding. In other words, Evans is not a Davidsonian.

Evans does not believe that tacit knowledge of a compositional semantics can be used all by itself to explain semantic competence. Yet he is certainly not denying that knowledge of meaning plays a role in language understanding.

Although at first this might suggest he is not a strict CV theorist in fact he embraces some of the claims that I argue CV is really committed to. As he states

> [n]ow it is implicit in what has gone before that the notion of tacit knowledge of a structure-reflecting theory of meaning, explained as I have explained it, cannot be used to explain the capacity to understand new sentences.[121]

Instead it indicates the *form* that an explanation of semantic competence would take on. The main idea here is that tacit knowledge of a compositional semantics offers a *description* of the capacity to understand but not an *explanation*. And this is essentially what most critics of CV perceive to be the problem with CV. Hence people like Soames make claims about there existing no isomorphism or identity between semantics and psychology. At the same time this is also the main point that Davidson was making, namely that the correct meaning theory could account for language understanding but not that it would explain the process.

But as I already argued CV does not claim there is isomorphism between semantics and psychology and moreover all CV needs to claim is that tacit knowledge plays some kind of role in explaining semantic competence, even if that role at

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[121] Evans, "Semantic Theory and Tacit Knowledge", 339.

this point remains somewhat unspecified. And this indeed is in line with Evan's own position as stated below.[122]

Evans does indeed believe that tacit knowledge of a compositional semantics is indispensable in one way of explaining a speaker's semantic competence. A genuine way to explain a speaker's understanding of a novel sentence is in reference to her exposure to the subsentential expressions of this new sentence in previous sentences where the meaning of said expressions was made self-evident. In other words, the tacit knowledge of a compositional nature is indispensable in explaining the regularity a speaker exhibits in handling old and new expressions; it forms part of the explanatory sequence. And explaining this regularity or uniformity is of course a major issue in language understanding. So far so good.

In order then to clarify this regularity Evans attributes tacit knowledge of a compositional semantics to a speaker whose language processing seems to exhibit such regularity. And to Evans attributing tacit knowledge of a semantic theory to a speaker of a language is nothing other than ascribing to her a set of dispositions to react to expressions of the language. There is one disposition corresponding to each of the expressions of the language. More specifically, the state of tacitly knowing the theory figures in a

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[122] Perhaps Chomsky's distinction between explanations and descriptions could clarify this.

causal explanation of each time the speaker has a particular disposition.

But this is where the trouble starts. Folks like Schiffer will now claim that the speaker's disposition to react to a certain input expression of the language in a certain way supervenes on that speaker's physical reaction when presented with that same input expression.

Evans sees the story about dispositions as offering adequate justification for the structure-reflecting requirement placed on semantic theories. Various related empirical reasons for preferring a structure-reflecting semantic theory can be adduced as well.[123] Moreover, note that this structure-reflecting requirement is already motivated by a finite language. This would mean that CV's appeal to a compositional semantics in explaining language understanding does not necessarily entail the additional assumption about explaining a speaker's competence of infinite languages specifically. In other words, the issue is explaining the understanding of any sentence of any language whether finite or infinite.

6.3.2

Based on Evans's exposition and the minimal claims CV is committed to, it should be clear that the issue for CV in mo-

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[123] Examples of these would be patterns of language acquisition, patterns of competence loss and the identification of what the perceived sentence structure is (presumably evidence shows sentences are perceived as structured). None of these however carry the weight that the need to explain language understanding does. If anything, they could be subsumed under the general category of language processing.

tivating a compositional semantics is not whether the compositional semantics has

> the power... to serve up anything which could rightly be considered an explanation of the infinitary character of competence [124]

but rather whether a compositional semantics plays some indispensable role in explaining this competence.

So far, Evans has motivated the need for compositional semantics in explanations of competence empirically rather then philosophically. This means Schiffer's objection against CV's hypothetical argument still stands. The issues CV theorists have to settle, then, are the following:

> a) whether one can offer a hypothetical account of semantic competence which undermines CV's philosophical motivation for a compositional semantics;
>
> b) whether, if a) this threatens their view when empirical motivation can be offered;
>
> c) whether said alternative account offers an adequate explanation of language understanding to begin with.

Skeptics of course contend that semantic theories do not provide any information which the algorithms that compute a

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[124] Crispin Wright, "Rule-following, Objectivity and the Theory of Meaning", in *Wittgenstein: to Follow a Rule*, eds. S. Holtzman and C. Leich (London: Routledge & Keegan Paul, 1981), 110.

semantic function utilize. But just as much as skeptics deny this, Peacocke is positive the computations that the algorithms perform are responsible for the speaker's competence, even though the semantic theory itself is not, and these algorithms after all tap into the knowledge that the speaker has of the compositional semantics.

However, according to the skeptics, the algorithms themselves are not responsible for the speaker's competence either. For the algorithms to play a causal role they would have to produce input/output pairs that would correspond to the input/output pairs of the semantic function they are computing, that is, their outputs would have to correspond to the semantic contents the semantic theory assigns to expressions of the language. And this, Soames claims, is not what in fact happens. The outputs of the computational processes a speaker goes through do not match the semantic contents a semantic theory might assign to expressions, as is evidenced by the fact that the theory in some cases assigns the same semantic content to expressions without the speaker's being aware of this. If the outputs of algorithmic computations corresponded to the semantic values assigned to these expressions by a compositional semantics, then there would be no explaining why in some well-known cases (such as substitutivity in propositional attitude constructions) speakers under-

stand expressions with the same semantic content differently.[125]

In light of this, remember we already came across the argument that it is just as likely that there are certain translation algorithms which compute a function that assigns to natural language sentences representations of their contents, rather then there being algorithms that compute a function that assigns semantic contents directly to natural language sentences.[126] Typically these are assumed to be Mentalese representations, which in turn have naturalistic contents that match the semantic contents of the sentences they are representations of.

On this account, a speaker's understanding of a sentence σ of her natural language consists in the algorithms translating an input sentence σ into a (Mentalese) representation whose naturalistic content matches the semantic content of σ. Soames surprisingly enough seems willing to entertain this hypothesis, although I am not sure how he sees it as solving Mates's puzzle of substitutivity in propositional attitude constructions. Thus he seems willing to entertain that algo-

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[125] In other words, as Soames claims, the fact that sentences in which one expression is substituted for another (extensionally?) equivalent expression may be understood differently by the same speaker would be inexplicable if understanding the sentence consisted in or were to be based on the algorithmic computation producing outputs corresponding to the semantic contents. But we already found that in propositional attitude cases the problem of substitutivity can be explained by a Fregean meaning theory.

[126] Clearly, this could be computed by a totally trivial algorithm that just computes for each sentence a copy of it. In order to avoid this, the representations would have to be of a certain privileged sort.

rithms (in the case of translation) produce outputs that match semantic contents. This suggests that he is at least willing to accept a part of CV's contentions.

However, where Soames differs, thus finding motivation for his rejection of CV even if he accepts this scenario of translation, is in the following. If we follow Peacocke, then we want to have a sense of what it means to say these algorithms use the informational content provided by a semantic theory. And then we would have to say something to the effect that some of the naturalistic contents are identical to the contents of the axioms of the semantic theory. And then Soames would proceed to argue how in fact we have no reason to believe that the algorithms ever involve semantic axioms nor that they compute semantic theorems by means of them. But of course he has no foolproof argument to deny this either.

It is likely, says Soames that semantic structure and psychological structure are related. It is possible, he concedes, that the semantic structure of a correct semantic theory specifies the psychological structure of processing mechanisms, but according to him at this point we have no grounds for supposing it does. If it did it would entail that knowledge of a semantic theory would be causally implicated in the computational process, at least insofar as semantic structure is concerned. Thus we would have reason to attribute structured understanding to a speaker.

We also need to distinguish between semantic content and semantic structure. The claim that the semantic structure of

a correct meaning theory specifies the structure of the computational algorithms is a less strong claim then the one that the informational contents of a correct meaning theory specify the contents of computational states.

Chapter 7: UNDERSTANDING WITHOUT COMPOSITIONAL SEMANTICS

§7.1 A COUNTEREXAMPLE

7.1.1

Schiffer offers a counterexample that illustrates how we could account for a hypothetical speaker's semantic competence without appeal to a compositional semantics. Roughly, the counterexample shows a speaker's competence can be explained through the use of a translational device rather than a compositional semantics. And although we have come across the translational account before it is time to reassess its significance in light of the previous discussion and because beyond offering the translational account Schiffer also offers a theory to back it up.

Consider Harvey. Just like other competent speakers Harvey can understand utterances of indefinitely many novel sentences of his natural language. According to CV, Harvey's ability to understand would be explained by appealing to a compositional semantics that offers a procedure for determining the meaning of a sentence based on both the meanings and the structural arrangement of its subsentential components. But in Harvey's case a compositional semantics never comes into the picture when he interprets utterances of his fellow speakers. Harvey's case is intended to offer independent motivation against CV's claims about language understanding by

> [giving] some reason for supposing that our ability to comprehend utterances in a public language does not presuppose a compositional semantics for that language.[127]

Schiffer does this by providing a sketch of what happens when Harvey understands a sentence of his natural language. This sketch is not intended as an empirical explanation, for Schiffer is not in the business of undermining any empirical claims CV might make. What he is in the business of is undermining the philosophical motivation CV has for making the a priori claim that a compositional semantics is needed in explanations of a speaker's semantic competence. Thus he intends to discredit CV's hypothesis that the only way to explain understanding is by appeal to a compositional semantics. The sketch then offers a hypothetical explanation of Harvey's semantic competence in which a compositional semantics need not be presupposed. If the account is correct, CV turns out to be an untenable philosophical position, because the reason it adduces in support of compositional semantics for natural languages remains unsubstantiated.

Harvey's case does not imply that there are no compositional semantics for natural languages. Rather, the issue is that although--like any other speaker--Harvey's understanding is the result of his going through a series of belief states which compute the meaning of an uttered sentence, he does not

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[127] Schiffer, *Remnants of Meaning*, 183. Schiffer introduces Harvey in his general argument against compositional semantics. But the counterexample directly targets CV's claim that compositional semantics are needed to explain semantic competence.

require a compositional semantics. And all that happens through Harvey's series of belief states is a process of translations.

7.1.2

Harvey is an information processor who thinks in a language of thought we call Mentalese. Like other speakers he is endowed with certain belief-forming mechanisms which determine when a sentence of Mentalese occurs in his so-called belief box.

Now, consider how the beliefs of a speaker are realized. Roughly, sentences of Mentalese in virtue of being tokened in a speaker's belief box realize her beliefs. More in particular we found that for CV believing that *p* is being in a certain computational relation to an M-sentence or T-sentence of Mentalese, which is then translated into a natural language sentence. In the case of language understanding this means that for any utterance of the speaker's natural language an M-sentence appears in the speaker's belief box that realizes her belief that σ means *p* and thus she believes *p*. Thus the meaning theorem and then the proposition (that-clause) respectively serve as the objects of belief.

Now, assume there is a speaker, Madeleine, who just like Harvey and any other speaker is an information processor. Madeleine's natural language is English. Now suppose Arthur utters σ "Xena is a warrior princess". Madeleine receives an auditory input of σ, i.e., she hears Arthur's ut-

terance "Xena is a warrior princess". Her language processing mechanisms kick in instantly. According to the propositionalist CV theorist the process goes as follows.

First the phonologically represented sentence serves as input to a subdoxastic 'box' in Madeleine's mind in which a compositional meaning theory is internally and subdoxastically represented. In this box use is made of the theory to generate for the phonologically represented input an intermediate output that is a Mentalese translation of a meaning sentence or M-sentence that says that

'σ expresses the proposition p' or

'"Xena is a warrior princess" expresses the proposition that Xena is a warrior princess'.

In the next step of the cognitive process the Mentalese M-sentence serves as input to another mechanism that ascribes natural language meanings to the Mentalese M-sentences. In other words, at this point this M-sentence is rewritten into an English meaning sentence of the form 'σ expresses the proposition *p*', which subsequently appears in the speaker's belief box and is hence how the speaker arrives at her knowledge of the meaning of σ. In other words, she believes that 'σ expresses the proposition *p*' and thus she believes *p*. Thus, when Madeleine understands an utterance of a sentence she is in a certain computational relation, the belief relation, to a Mentalese token of the accompanying meaning theorem of that

sentence. This token ultimately realizes her particular belief.

This account suggests that the compositional meaning theory did play a role in the ascription of meaning, because on this account the actual meaning is generated in the first processing step, which is not merely translational. In other words, Madeleine arrives at the belief that Xena is a warrior princess by means of a process that relies on a compositional meaning theory's generation of an M-sentence for the original input sentence.

Similarly, when Harvey understands an utterance of a sentence he is in a certain computational relation to a Mentalese token of a sentence that realizes his particular belief. But we can explain Harvey's language understanding as follows. When Harvey has an auditory perception of an utterance by Jean of the sentence 'tofu is tasteless', he knows that Jean said that tofu is tasteless, that is, he knows that 'tofu is tasteless' means or says that tofu is tasteless, and he knows the uttered sentence is true just in case tofu is tasteless. Thus Harvey goes from an auditory input of 'tofu is tasteless' to:

(a) his belief that Jean uttered 'tofu is tasteless', to

(b) his belief that Jean said that tofu is tasteless, and finally to

(c) his belief that Jean's utterance is true iff tofu is tasteless.

In more general terms, for any speaker *x* of Harvey's natural language, any Mentalese structural description (referring to a speaker's utterance) σ and any internally represented Mentalese sentence *u* that translates *p*, Harvey moves from

(a) his belief that *x* uttered σ, to

(b) his belief that *x* said that *p*, and finally to

(c) his belief that *x*'s utterance is true iff *p*.

For Schiffer, as for any propositionalist CV theorist, the crucial step here is from (a) to (b) because it leads from the auditory perception of σ (the phonologically represented sentence that serves as input and that is translated into the Mentalese structural description), to an understanding of the meaning *p* of that auditory perception.

Since extensionalists don't buy the claim that from the meaning of a sentence one can infer its truth conditions, they view the step from (a) to (c) as crucial. Thus they reverse the order of (b) and (c) because to them the significant non-inferential link would be from an auditory perception of the utterance of σ to the belief that σ is true iff *p* and thence on to the belief that σ means that *p*. Thus they think that in the process of understanding the phonologically represented sentence serves as input to a subdoxastic 'box' in which a compositional truth theory generates an intermediate output that is a Mentalese translation of a T-sentence that says that

'σ is true in L iff p'

This Mentalese T-sentence would serve as input to another mechanism that ascribes a meaning to it, i.e., the T-sentence is rewritten into an M-sentence. The latter is then translated into a natural language meaning ascription which subsequently appears in the speaker's belief box. This is how the speaker arrives at her knowledge of the meaning of σ.

7.1.3

It is the crucial step from (a) to (b) that Schiffer contends does not require a compositional semantics.[128] Moreover, no substantive explanation of Harvey's, or for that matter any other speakers' understanding has been offered yet which proves otherwise. Thus an alternative account like Harvey's is not out of line.

According to Schiffer this step can be explained by way of simply stipulating a recursive function f that maps English utterance tokens onto Mentalese translations of the propositions expressed in those tokens, without referring to any semantic features of the latter. In other words, f itself is a translation device by means of which Harvey computes the meanings of utterance tokens of English.

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[128] For ease of exposition in this discussion of Harvey's language processing I may at times leave out the move from (b) to (c) as this move is ultimately secondary for Schiffer and for anyone with propositionalist proclivities.

Harvey's understanding here is thus explained by simply stipulating there is a translation algorithm from utterances of natural language expressions to Mentalese representations for these expressions. Harvey is simply computing *f* when processing language. And *f* functions at the representational or algorithmic level. The Mentalese representations are then processed into his beliefs about what was said in the utterances. This happens by means of Harvey's belief-forming mechanisms which determine when a Mentalese sentence is tokened in his belief box based on the *conceptual roles* they assign to these sentences. A conceptual role of a Mentalese sentence is

> the complex counterfactual property that details the way in which the occurrence of that sentence in B is determined by sensory stimulation and other sentences in B.[129]

Then the computational process Harvey goes through can be explained by stipulating the conceptual roles that expressions of Mentalese have. In particular, we can explain his transition from (a) to (b) by stipulating the conceptual roles of (the Mentalese counterparts of) 'said that' and 'true'. The conceptual role of 'said that' is such that every time 'Jean uttered "σ"' is in Harvey's belief box then ceteris paribus

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[129] Schiffer, *Remnants of Meaning*, 194. "B" here refers to Harvey's belief box.

so will be 'Jean said that *p*'.[130] In turn, the stipulation of the conceptual role of 'true' is such that every time 'Jean said that u' is in Harvey's belief box then so will be 'what Jean said is true iff *p*'. The conceptual roles function as algorithms that produce new tokens of different types of beliefs.

Harvey's procedure for understanding natural language expressions then simply takes the form of a translation from natural language expressions to their Mentalese counterparts together with a computational process that operates at the conceptual-role level. Although the translation function must involve a syntactic component so that 'John loves Mary' in English does not come out in Mentalese 'Mary loves John', it is by no means clear that this function requires a semantic component as well. Thus, its operation might run simply from syntactic descriptions of English expressions as input to syntactic descriptions of Mentalese expressions as intermediate output. The latter in turn would then be subject to processing algorithms in the form of conceptual roles.

And, according to Schiffer, the conceptual role algorithms for 'said that' and 'true' in and of themselves do not presuppose a compositional semantics for Harvey's natural language either. The algorithmic process insures that each sentence of Harvey's natural language is correlated with one

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[130] Here the ceteris paribus clause is specified by the concurrence of these two beliefs unless there are already defeating sentences, that realize defeating beliefs, tokened in Harvey's belief box.

sentence in Mentalese and the only semantic aspect of this operation is the preservation of semantic properties.

The fact that in Harvey's case no compositional semantics enters the picture is underscored by considering cases where a non-speaker goes through the same sequence of beliefs without ever achieving understanding. For, it is possible that someone who neither speaks nor understands English could still correctly come to believe that when Jean uttered 'tofu is tasteless', she in fact said that tofu is tasteless, and consequently that what Jean said is true just in case tofu is tasteless, without ever knowing the meaning of 'tofu is tasteless'. This would be the case in the event this non-speaker was told for that specific utterance what was said in it. In other words, there are instances where the transition from (a) to (b) can happen without the person understanding the meaning of σ, which means it happens without a compositional semantics for English. Thus for Harvey, who has the unlimited capacity to move through these transitions for any sentence of the language, a compositional semantics is not required either.

§7.2 THE OBJECTS OF BELIEF

7.2.1

Harvey's case does not establish whether Mentalese has a compositional semantics. Even if Mentalese, and thus natural languages as well, were to have a compositional semantics ac-

cording to Schiffer there is still no argument that takes you from this fact to the fact that a compositional semantics is needed to explain the speaker's understanding of her natural language. In other words, and this is Schiffer's concern, there is no philosophical motivation for the need of a compositional semantics in explanations of semantic competence.

And yet, there is no questioning the fact that the Mentalese expressions tokened in Harvey's belief box do have semantic content, regardless of whether competence requires knowledge of meaning or not. In other words, if the tokening of the sentence σ in Harvey's belief box realizes in him the belief that tofu is tasteless then it is fair to say that σ means in Mentalese that tofu is tasteless, which means that Mentalese representations must have semantic properties. The same would go for subsentential components of σ that are the Mentalese counterparts of expressions of the natural language sentence. This is so because: (a) Mentalese expressions when tokened in Harvey's belief box realize particular beliefs Harvey has; (b) a belief by virtue of being an intentional state has intentional content and (c) intentional content either derives from semantic content or vice versa. In fact there is controversy over whether the semantic properties of Mentalese tokens determine the intentional properties of the beliefs they realize, or whether instead, they inherit these semantic features from the intentional features of beliefs. I will return to this controversy shortly.

7.2.2

The main problem then with Schiffer's analysis so far is that it is not clear what exactly the immediate objects of belief are. In other words, it is not clear what role the Mentalese tokens of sentences play in realizing Harvey's beliefs.

Given that in the case of language understanding the initial representation in the speaker's belief box is a Mentalese translation of a meaning theorem and subsequently a Mentalese translation *u* of *p* that leads to the speaker's belief about the meaning of the sentence certain concerns arise. For one, it seems the only way one can then discover whether the Mentalese translation *u* of an English proposition *p* is indeed the object of belief is by mapping the formulas of Mentalese onto the contents of English that-clauses. But this assumes one already has an understanding of English. In other words, if we know what role the Mentalese translation *u* of *p* plays then we can establish empirically that when *u* is in Madeleine's belief-box a certain English sentence about Madeleine is true, namely that Madeleine believes *p*.

Thus the problem with this story is that it is not clear how the mapping of Mentalese to English is effected. In other words, it does not reveal what makes it the case that when *u* is in Madeleine's belief box she believes *p*, nor does it reveal what would have to be the case for this to be true (other then that certain empirical data would obtain). If one were to claim that it depends on some relation between

Mentalese and English this would be plainly circular. If an English sentence *p* such as 'Xena is a warrior princess' has its semantical properties in virtue of its relation to a Mentalese representation *u* of *p* in a speaker's belief box then it cannot also be that what makes it the case that *u* is the immediate object of belief, to wit the belief that Xena is a warrior princess, is that *u* is the formula that translates the English sentence 'Xena is a warrior princess'. Thus as Fodor states

> [y]ou can't both derive the semantical properties of English sentences from those of their Mentalese translations and derive the semantical properties of Mentalese sentences from those of their English translations. At least, I don't think you can.[131]

Moreover it is highly unlikely that it is just a brute fact that a certain Mentalese formula means that Xena is a warrior princess and not that habaneros are hot. But then we need a story about why the symbols in Mentalese mean what they do. Here we find Schiffer and Fodor diverging. Schiffer tries to provide the required story with his compositional supervenience theory.

Fodor on the other hand believes that Mentalese, in being a productive language, does indeed have both a compositionally determined syntax and a compositionally determined semantics. However, Mentalese is used as a medium of computa-

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[131] Fodor, "Review of Stephen Schiffer's *Remnants of Meaning*", 189.

tion, and since computational processes are exhaustively syntactic, they don't require access to its semantics. Thus Fodor agrees that language understanding--which is the result of a computational process--is achieved through exhaustively syntactic operations.

Fodor claims we don't need a compositional semantics to explain language understanding because, as we already saw, we can offer a computational story together with a translation device to explain understanding natural language sentences with translating them into Mentalese, without generating a regress.

7.2.3

The above divergence between Fodor and Schiffer illustrates that the correct semantic theory one ultimately comes up with depends on whether one takes beliefs to derive their content from the Mentalese expressions that serve as their objects or vise versa. Thus it turns on which is prior in the causal chain of understanding. The difficulty here is establishing the relationship between intentional and semantic content.

On the Fodorian proposal the propositional attitude states derive their contents from the semantic contents of the Mentalese expressions that are their objects. This would require a compositional semantics. Since there are infinitely many propositional attitudes deriving their content from in-

finitely many Mentalese expressions we need to figure out why this language gets to be so productive. This productivity cannot be accounted for only by assuming Mentalese has a compositional syntax. We need an explanation of how each syntactically distinct formula has its distinct truth condition or semantic value, beyond the fact that it has a distinct syntactic form. And these facts about the meanings of Mentalese formulas clearly cannot be parasitic on English semantic facts. Thus we have no idea how Mentalese could be semantically productive unless it had a compositional semantics.

On the other proposal--which Schiffer would espouse--however, Mentalese expressions derive their semantic content from the intentional properties of the propositional attitude states of the speaker. In other words, the semantic contents supervene on the psychological states with their intentional contents. In this case explaining productivity basically comes down to explaining the multiplicity of intentional properties propositional attitudes have.

This second proposal is the one that relies on the notion of supervenience, which can be characterized as follows. If the formal compositional principles of a semantic theory are supervenient on the psychology of speakers it merely means that they could have some psychological significance but are not essential to explaining language understanding. Because supervenience entails that the semantic contents of expressions are not causally implicated in language under-

standing but that instead they are determined by the role they play in the speaker's mental life.

Supervenience does not even guarantee that a compositional semantics is mentally represented. All supervenience entails is that the semantic theory specifying the logical properties of a natural language in some sense constrain a psychological theory of the speakers of that language. But the logical properties and relations of sentences of the language are determined by the psycho- or physiological properties of its speakers.

Thus even if a linguistically competent speaker understands a sentence this does not mean that her competence derives from her associating an a priori-ly known identifying proposition with the sentence; her only epistemic connection to a certain proposition would be mediated through the sentence that expresses it. In other words, the direction of explanation would be not from beliefs to competence but from competence to beliefs. This entails that one understands and accepts the sentence first and only then forms a belief about what proposition it expresses. We do not grasp the propositions sentences express prior to understanding the sentences themselves.

§7.3. HARVEY'S UNDERSTANDING & SUPERVENIENCE

7.3.1

Harvey's process of understanding offers a positive account of semantic competence in which compositional semantics

play no role. The merits of this hypothetical account lie in its revelation that one can give a combination of a computational story about beliefs that employs conceptual role algorithms and a translation story about content to explain language understanding. Thus we have been given no reason so far to doubt the idea that the translation required is an exhaustively syntactic operation.

Schiffer intends Harvey only as a sketch of the process of language understanding. And to the extent that Harvey is a sketch (of language understanding) there is no problem; rather there might be a problem as to whether what a sketch can offer is sufficient or whether the sketch underdescribes the process at the level of the algorithms involved in the process and to the extent to which it characterizes the process as leading to understanding. Thus Harvey's case might need a more positive description. Of course as far as Schiffer is concerned a more positive description of the process at this point is nothing more than a logical possibility. I intend to argue that it is also a logical necessity.

Schiffer starts to fill in the details of the Harvey sketch by considering the metaphysical consequences of his position. Since he insists that a compositional semantics is not needed for explaining language understanding (nor for explaining the productivity & systematicity of languages of thought)[132], he looks instead at the *physical* properties that

[132] From here on in the text I will only refer to productivity for ease.

the *semantic* properties of belief states supervene on. In other words, he proceeds to offer a level 3 explanation of language understanding. In this context he offers his compositional supervenience theory.

7.3.2

To understand the compositional supervenience theory we must first define what a compositional syntax for a language is. A compositional syntax for a language *L* is a finitely statable set of rules that generates all sentences of *L* from finite sets of words and primitive structures of *L*. Furthermore a language here is understood to be a function that maps utterance types (or types of sounds or marks) onto propositions, i.e., it maps sentences onto their meanings. Then a compositional supervenience theory for a language *L* (say Mentalese)[133] and a speaker x does the following:

> For some compositional syntax S of *L* which is realized in x, the supervenience theory assigns to each word and primitive structure of S a physical property and, on the basis of this, assigns to each sentence σ of *L* a physical property Φ such that (1) σ's having Φ is logically equivalent to the parts and structure of σ having the physical properties the theory assigns to them and (2)

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[133] The argument is cast in terms of a speaker's language of thought, as opposed to her spoken language. The language of thought case provides a relief from the entanglements of explaining the speaker/thinker's competence: her ability to understand is not at issue here. Thus one can focus on productivity.

> it is metaphysically sufficient for x's believing $L(\sigma)$ that σ both has Φ and is tokened in x's belief box.[134]

Such a compositional supervenience theory issues for each sentence of Mentalese in theorems of the form

> σ has Φ

where σ is replaced by a structural description of a sentence of Mentalese and Φ is a physical property such that σ's both having Φ and being tokened in x's belief box is metaphysically sufficient for x believing $L(\sigma)$.[135]

A compositional supervenience theory is not itself a compositional semantics nor does it encompass one. Instead, it offers a non-semantical recursive assignment of properties to the words and primitive structures of the language that generate the content-determining properties for sentences of the language. The supervenience theory differs from a compositional semantics because it does not issue in theorems that specify the meanings of sentences. Rather, it issues in theorems that specify the physical properties of those sentences, physical properties on which the meanings in the speaker's head supervene. Thus it does not offer a formal explanation of a speaker's productive use of her language but instead of-

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[134] Schiffer, "A Paradox of Meaning", 297.

[135] The relation between L and the compositional supervenience theory is such that if a speaker *x* thinks in L then there is a correct compositional supervenience theory for L with respect to *x*. The theory features in an account of what Schiffer calls the language-of-thought relation which establishes what relation must obtain between a speaker/thinker and a language L for her to think in L.

fers a metaphysical entailment of her productive language use.[136]

This means we can fill out the explanation of Harvey's language understanding as follows. When Harvey receives an auditory input of a natural language sentence *s*, with a structural description *d*, that says that *p*, *s* is first translated into its Mentalese equivalent σ, and *d* is translated into its Mentalese equivalent δ. Now, when Harvey believes that *p*, he stands in a certain computational relation to a token of the neural sentence σ that realizes his belief that *p*, because σ has certain physical properties which are compositionally determined and on which the semantic contents supervene.

Then each of the stages of belief Harvey goes through in his process of understanding are all computational relations to different neural state tokens.[137] And these tokens each have a different set of physical properties on which their semantic properties supervene. Meanwhile, the transition from one neural state token, i.e., one stage of belief, to the next is explained by the conceptual roles of 'said that' and 'true'. Thus the conceptual roles somehow guarantee the shift from one neural state with its particular content-determining

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[136] The supervenience secures that there is no metaphysically possible world in which the compositional supervenience theory is true and L is not *x*'s language of thought; it also secures that there is no world in which *x*'s use of L is not productive and systematic.

[137] Of course we should assume here that the expression 'Jean uttered', 'Jean said that' and 'Jean's utterance is true iff' are also all represented in Mentalese. The only reason I have not represented them as such in any obvious way is for ease of exposition.

physical properties to the next neural state with new content-determining physical properties. How they do this is not clear.

7.3.3

According to Schiffer a compositional supervenience theory exhaustively explains the productivity of a language of thought by means of a compositional syntax. However, just because the compositional supervenience theory *can* and in fact *is necessary* in explaining the productivity of a speaker's language of thought and hence a compositional meaning theory is not needed to explain the latter. this fact does not settle

> whether it is possible for Mentalese to have a compositional supervenience theory without also having a compositional meaning theory. The answer is that *it all depends on the nature of the propositions to which our that-clauses refer.*[138]

In other words, in principle the compositional supervenience theory leaves open the question whether Mentalese or natural languages have a compositional semantics in addition to it, because the supervenience theory is neutral on the nature of propositions. If propositions turn out to be compositionally determined, then Mentalese will need a compositional seman-

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[138] Schiffer, "A Paradox of Meaning", 300.

tics.[139] In that case, the natural or public language might need one as well, unless a finitely-based device that maps natural language sentences onto their Mentalese translations is sufficient, which is of course what Schiffer claims.[140]

And yet, in either case this does not entail the semantics is necessary to explain the productivity of Mentalese or to explain semantic competence. Thus it would not automatically support CV's position. But at least Schiffer himself is open to the idea that Mentalese might have a compositional semantics even if a compositional supervenience theory can exhaustively account for its productivity. CV theorists would have to show that the compositional supervenience theory is not only inadequate for explaining productivity but that consequently it is inadequate for language understanding as well. Although Schiffer's argument for a compositional supervenience theory is impressive, I am not convinced by it. Yet, I have neither a quick nor an elaborate refutation to offer in response.

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[139] This is of course assuming that propositions are abstract mind- and language-independent entities; that they are the referents of that-clauses. In turn it assumes that that-clauses are referential singular terms, meaning that they behave syntactically as singular terms even though they are clearly not semantic primitives. This would entail that the reference of a that-clause is determined by its syntax and the references of its words and expressions.

[140] This would mean natural languages need a compositional semantics, if only indirectly. See Schiffer, "A Paradox of Meaning", 304.

7.3.4

The language processing Harvey goes through is supposed to undermine an *a priori* assertion CV makes. It calls into question the strictly philosophical motivations for espousing the hypothesis that natural languages need a compositional semantics to explain a speaker's semantic competence. Clearly, the minimal requirement for Harvey's success is that CV theorists are indeed making an a priori claim about compositional semantics and language understanding. Since CV theorists do make such a priori assertions, this so far validates the challenge Harvey poses.

However one thing to consider is whether the a priori claim CV makes is only a claim about the *how* of the process of understanding and not a claim about *what* is being understood or *what* this understanding entails. If the former is the case then Harvey is impeccable. But there is no reason to assume that CV's a priori claim is just about how the process of understanding is algorithmically affected.

The next requirement for Harvey's success is whether his case indeed explains understanding, i.e., whether it explains both the how and the what of understanding. If it does, we need to evaluate whether this fact indeed undermines the validity of CV's a priori claim or whether CV theorists can adduce other factors in support of the claims they make.[141] I

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[141] These other motivations may be empirical. L&S, amongst others, move beyond a priori assertions to consider empirical motivations in support of the CV position. In fact they go to the extreme of claiming that a semantic theory is an empirical study of a particular human cognitive competence, thus flying in the face of Soames.

argue, based on Marr's and Peacocke's levels of explanation, that Harvey does not present a foolproof objection to CV. Although philosophers are not expected to offer a full-fledged explanation of language understanding at all levels, the explanation offered should be sufficiently complete so that those matters left unexplained are not the ones where semantic content might have played a necessary explanatory role. In other words, we want to ensure that the process of understanding is not underdescribed.

This brings up the last requirement for Harvey's success and that is whether whatever Harvey has achieved through his process can be considered or characterized as understanding. According to Schiffer language understanding amounts to a speaker's general capacity to know what was said in any possible utterance by moving from a token in her belief box of a belief that x uttered σ to a token of the belief that x in uttering σ said p. But sometimes these belief tokens can occur in non-speakers, i.e., they can occur in people who in fact do not understand the sentence in question and who do not have the general capacity to know what was said in just any sentence of the language. Thus Harvey's language understanding is based on a process that leads through a sequence of beliefs to a mental state that does not always qualify as understanding. This suggests that either the process that leads to these belief states needs to be redefined such that when one goes through it one cannot fail to achieve understanding or we have to be offered a new interpretation of

what understanding entails. I will argue that the process that leads to understanding has to include a derivational step where the recursive principles of a compositional semantics play an essential role. Thus, a competent speaker's understanding has to be the result of certain semantic derivations and at the same time should entail that she can make inferences from her knowledge of what was said in a particular utterance.

On this interpretation of understanding Harvey's case would fail because whatever we attribute to him cannot be considered to be genuine understanding, i.e., whatever condition he satisfies is not a condition that qualifies as understanding. In the next chapter I will argue that Harvey's case might be convincing as far as it goes, but does not go far enough.

Chapter 8: THE COMMON VIEW REVISITED

§8.1 OUTLINE OF A REBUTTAL

8.1.1

First, a recap. Chomsky's innovative program in linguistics, especially his transformational generative grammar, inspired a similar program in semantics. What makes Chomsky's generative grammar distinctive is that it is offered not only as a theory of linguistic structures, but as a theory of linguistic competence as well. However, the generative grammar offers an account of syntax and thus, while it might have certain consequences for a semantic theory, it offers no account of semantics per sé; this results in an incomplete account of linguistic competence.[142]

In constructing a theory of semantics, CV philosophers closely follow the grammarians. Grammarians claim a speaker's linguistic competence is explained by her knowledge of the rules of grammar; CV theorists claim a speaker's semantic competence is explained by her knowledge of a theory of meaning. By following Chomsky's approach, CV theorists not only set up a theory of semantics along a parallel structure to his theory of linguistics, but also follow an analogous line of argument about speaker competence. As a result CV theorists, like generative grammarians are subject to the

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[142] Although Chomsky does offer philosophers of language a solution to Russell's problem—about the difference between the grammatical versus the logical structure of propositions—with his account of deep versus surface structure; thus the distinction can clearly be brought to bear on the resolution of certain semantical problems.

Soamesian accusation of conflating a semantic theory with a theory of semantic competence, i.e., a theory of language understanding, given that they are claiming that knowledge of the semantic theory explains the speaker's language understanding. However this last claim by no means entails the kind of erroneous conflation that Soames purports it does.

Chomsky's concern with knowledge of a theory, to wit knowledge of grammar, explaining linguistic competence informs and amplifies CV's main motivation for establishing a theory of meaning. As Davidsonians CV theorists already claim that the ultimate concern of philosophy of language, in particular of a correct meaning theory, is to account for a speaker's understanding of natural languages. And with this claim comes a commitment to the idea that the latter cannot be explained without assuming natural languages have compositional semantics. The concern with explaining semantic competence or language understanding thus emerged as a motivating force in trying to establish a semantic theory in the first place and CV theorists became convinced that such a theory had to be compositional. Chomsky's program thus offered the perfect groundwork for elaborating on Davidson's criterion.

Chomsky furthermore argued that there is nothing controversial in claiming that a speaker who has mastered a language has absorbed or internalized the informational content of the best theory that we devised.[143] This is the cognitive

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[143] This illustrates Chomsky's approach (one I would concur with) to the relation between empirical research and the theories we device to explain its findings. The idea is simple; we devise theories in order to

move that CV theorists embrace and which takes them beyond Davidson. Thus CV has its roots both in Chomskyan cognitivism and in the Davidsonian criterion that a correct meaning theory and understanding are intimately connected.

8.1.2

We found CV theorists rely on the following assumptions:

(I) Knowing the meaning of a sentence is based on one's—perhaps tacit—knowledge of the meanings of its words and knowledge of its syntax, i.e., this knowledge is required to explain semantic competence.

(II) There is no way to make (I) precise without appeal to a compositional semantics.

We also established what these assumptions commit CV to, namely:

A) Knowledge of a semantic theory is part of a speaker's psychological states, i.e., the theory is mentally represented.

B) This knowledge, which is tacit, plays a role in the mental structures and processes that pair sentences with their meanings.

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explain interesting evidence; we then hold up those theories against the empirical task of explaining other evidence. Along the same lines philosophical 'speculation' about what might suffice as an explanation of certain speakers' competencies will help inform what theories to devise.

C) Tacit knowledge of meaning is needed to explain a speaker's language understanding.

D) Tacit knowledge of meaning is knowledge of a structure-reflecting theory of meaning, i.e., of a compositional semantics.

Note that C) is not entailed by B). In other words, that knowledge of meaning plays a role in language understanding does not entail that the speaker's tacit knowledge of a compositional semantics is required to explain understanding. And indeed most critics contend that C) is not the case. However, C) is a claim that most CV theorists who assume (I) and (II) make and are indeed committed to. It is also the claim that gets them in the most trouble. Because if B) does not entail C) CV needs to offer an independent argument in support of C).

We then uncovered the various problems that extensionalist versions of CV in particular face and are now left with the question whether a propositionalist proposal can overcome these problems. More specifically, the question is whether a propositionalist version of CV can overcome the challenge that translational accounts of language understanding pose to the claim that a compositional semantics is needed to account for a speaker's language understanding.

This means that CV needs to overcome the challenge that Schiffer's counterexample of Harvey poses. According to the latter we can explain a speaker's language understanding by

means of a translational account combined with a computational account, neither of which ever includes a compositional semantics. What follows is a brief outline of what I try to argue.

8.1.3

In order for CV to stand any chance at all several things need to happen. Most of these pertain directly to Harvey. CV theorists will have to show that Harvey does not work as a counterexample. There are several ways to go about this.

The first approach is to claim that Harvey himself is not a successful counterexample because his case is underdescribed. In other words, the computational processes that lead to Harvey's understanding are underdescribed.[144] Based on accounts of psychological explanation we find that Harvey offers an account of understanding at level 2 because the operative translation function *f* operates at level 2, as do the stipulated conceptual role algorithms. CV theorists would have to argue that a level 1 explanation in addition to the level 2 explanation is a necessary component of explaining language understanding. This means that somehow they have to bring level 1 explanations to bear on Harvey. In other words, they have to claim that a specification of the function being computed at level 1 cannot be made without appeal to a compo-

[144] As I indicated it is the underdescription of the algorithms that led Peacocke to introduce his level 1.5 explanation (at least as far as I can tell).

sitional semantics and that furthermore a speaker's competence cannot be explained without reference to said function.

The second approach would be to argue that what Harvey achieves cannot be considered sufficient for understanding. Although he satisfies certain conditions, these conditions are not really leading to understanding once satisfied. Thus Harvey's satisfaction of these conditions is insufficient for his achieving understanding. This argument requires that CV do the following: (a) give a counterexample to indicate what would qualify as or satisfy conditions for understanding; (b) reconsider what it means to understand. A reconsideration of understanding will have to draw distinctions between a speaker's *knowledge* of the theorem σ means p and this speaker's *understanding* the meaning p of the sentence σ of which the theorem treats. This second approach will introduce the idea that understanding entails that the speaker goes through a process that includes a rationalizing component. Roughly, the rationalizing component would be that aspect that distinguishes those who understand the proposition expressed by a sentence from those who know which proposition the sentence expresses without really understanding the sentence.

Finally, an issue that will inform both these arguments is the distinction between the semantic theorems and semantic axioms of a compositional semantics and a consideration of which one of these it is that CV needs to claim a speaker has tacit knowledge of when she understands a sentence of her language. In other words, we have to clarify knowledge of

which of these, theorem or axiom, is supposed to be necessary in explanations of language understanding. In what follows I will look at these two arguments.

§8.2 UNDERDESCRIPTION

8.2.1

Harvey's case is underdescribed.[145] Recall that Harvey on receiving an auditory input of Jean's utterance 'tofu is tasteless' goes through the following mental states

(a) that Jean uttered 'tofu is tasteless'.

(b) that Jean said that tofu is tasteless,

(c) that Jean's utterance is true iff tofu is tasteless.

The crucial step here was from (a) to (b), a step that was explained by way of stipulating a recursive function or translation device *f* that maps English utterance tokens onto Mentalese translations of those utterance tokens. These Mentalese representations of the utterance tokens are processed by stipulated conceptual roles into Harvey's beliefs about what was said, i.e., they are mapped onto the propositions expressed in those tokens, without referring to semantic features of the latter. Here the conceptual roles of 'said that' and 'true' respectively guarantee that whenever there is a token in Harvey's belief-box of 'Jean uttered σ'

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[145] For ease of exposition I will assume throughout this discussion English is Harvey's natural language.

there will also be a belief token of 'Jean said that *p*', and a belief token of 'what Jean said is true iff *p*'.[146] These conceptual roles are algorithms that produce new tokens of different types of beliefs.

This explanation of Harvey's language understanding thus depends on the (basically) concurrent presence in Harvey's belief-box of several beliefs. And the stipulated conceptual role algorithms effect the transition from one belief to the next, i.e., from *uttered* σ to *said that p* without recourse to a compositional semantics.[147] As such, the explanation never actually states what the algorithms involved in the process of understanding are in the service of computing and furthermore does not address a level of processing where a semantics would ever come into the picture.

This means that both *f*, which is an exhaustively syntactic translation operation, and the conceptual roles with which it works in a computational system are all stipulations that operate at level 2. Thus the translation device *f* is not a function at either level 1 or level 1.5, nor was it intended to be that; instead *f* maps the mental representations (which are characterizations at level 2) onto the utterance tokens. Level 2 explanations contain no reference to seman-

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[146] These conceptual roles in being so minimally stipulated contain ceteris paribus clauses that are supposed to stand in for a fuller specification of the actual conceptual role. The ceteris paribus clauses can be filled out in terms of the absence of prior defeating beliefs.

[147] The concurrent beliefs are: one that a certain sentence *u* was uttered, one that a certain proposition *p* was said and one that what was said is true iff *p*.

tics, precisely because there is no detailed specification of what function is computed nor of the informational content or axioms the algorithms might tap into when computing the function. Level 2 just specifies the computational mechanisms.

This however does not bother Schiffer since he claims that language understanding simply is the capacity to go from what is heard to what is said which means that the only conditions that matter in the explanation of Harvey's understanding are: first, that there is a translation device *f* from English utterance tokens to knowing what was said in those utterances and second, that Harvey computes *f* to understand English. If these two conditions obtain and Harvey indeed understands English nothing else matters, because this provides an explanation of understanding.

In any event, we find then that Harvey's understanding is clearly explained at level 2, but not at level 1 or level 1.5. At this point however this observation about Harvey's case does not entail that Harvey is not successfully computing meanings. As far as Schiffer is concerned it just underscores his contention that various levels of explanation do not matter. Moreover, even Peacocke does not specifically claim level 1.5 explanations are required, but only that it is at this level that the explanatory relevance of a compositional semantics can be illustrated for cases of structured understanding.

8.2.2

Thus, if the charge of Harvey's being underdescribed is to undermine Harvey, CV theorists have to make the charge stick. This means they have to bring the need for level 1 explanations to bear on language understanding. Now, as it turns out, at level 2 one cannot distinguish between structured and unstructured understanding. As a consequence the first step toward bring level 1 to bear on language understanding is (a) to claim that language understanding is structured and subsequently (b) to argue that any hypothetical account of structured understanding requires a level 1 (or level 1.5) explanation.[148]

The first claim that language understanding is structured is not all that controversial. For one we already found that Evans offers a pretty convincing argument in favor of structured understanding. But beyond that it turns out that in fact Schiffer's explanation of Harvey's language processing relies on this process being structured.[149] This is not directly apparent but becomes clear once we realize that the computational story is ultimately filled out by the compositional supervenience theory which adds the structural backbone to the story. To recognize this consider this.

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[148] Peacocke suggests that given the lack of an explanation at level 1, the possibility has not been ruled out that Harvey is in fact a structured understander.

[149] In other words, even though Schiffer does not believe in compositional semantics does not mean that he does not believe in other types of compositional theories.

Suppose there is a finite (non-ambiguous, non-indexical) language English* and that Harvey is an English* speaker and Stella is not. Harvey is able to figure out the meaning of each sentence of English* on his own. As time passes by eventually Stella will have been told for most sentences of English* what is being said when one of them is uttered. Given that the language is finite Stella can in principle learn for any full sentence what was said in it, without ever knowing the meanings of its subsentential components. In the event she does this the difference between Harvey and Stella would lie in the fact that Stella has acquired unstructured understanding whereas Harvey is a structured understander.[150]

For the CV theorist this distinction specifically lies in Harvey's ability to infer what was said in any utterance of English* based on his knowledge of the meanings of the recurring subsentential components of the uttered sentence, an ability which in turn is based on his knowledge of a compositional semantics. According to Schiffer however, Harvey's ability is based on the conceptual roles and function *f*. The way these two work together is accounted for by the compositional supervenience theory which elaborates on the description of Harvey's understanding with an account of the relationship between a compositional syntax and the physical properties of Harvey's computational states. The compositional syntax in turn reveals the structure of the whole sen-

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[150] Unstructured understanding is severely limited and does not account for a speaker's ability to know what was said in just any sentence.

tence by identifying its subsentential components. As such the compositional syntax in fact guarantees that Harvey's understanding is explained as being structured. This is how the story of understanding unfolds if Schiffer has his way.

Schiffer's account by virtue of his having introduced the compositional syntax into the process of language understanding thus supports the claim that language understanding is structured. As such, arguing for structured understanding is not only plausible but is in fact underscored by skeptics. Obviously this is not to suggest that any skeptic has to concede to CV's claim. However, if even the skeptics support the idea that understanding is most likely structured this does offer CV the first favorable step in the right direction.

8.2.3

CV theorists have to argue that structured understanding requires a compositional semantics. This means they need to show that once we bring in a compositional syntax and thus introduce a structural basis to language processing that we also have to bring in a compositional semantics. In other words, they need to argue that if language processing is presumed to be structured that any full-fledged explanation of language understanding ought to include an explanation at level 1. Because it is only at that level where we can begin to distinguish structured from unstructured understanding. Consequently the only way in which the need for a compositional semantic can be illustrated is in a level 1 explana-

tion where we can identify the structural nature of understanding. In short, if language understanding is structured and structured understanding can be identified only at level 1 then language understanding would require a level 1 explanation.

On the presumption that the above is correct CV could then argue the following. If we need an explanation at level 1 to explain understanding then we need a specification of the function that is being computed at level 1. Specifying this function entails specifying the form of the theorems it generates for each sentence of the language. In other words, at level 1 we need to indicate which theorem is being computed. Although this specification of the form of the theorem does not entail that knowledge of the theorems generated is sufficient for language understanding, it does suggest that to be able to generate them one must have access to a subdoxastically represented theory. Because in order to be able to generate the theorems the speaker must have access to a (subdoxastically represented) set of rules and principles from which to generate them, which means she has access to a certain set of axioms. Then CV could argue that the speaker must have tacit knowledge of this set of rules and principles and of course then they could move on to argue that the subdoxastically represented theory is, i.e., that this tacit knowledge is of, a compositional semantics. Simultaneously they would have to argue that this tacit knowledge cannot consist solely of a compositional syntax.

More importantly, CV could then argue that it is not knowledge of the generated (meaning) theorems that matters most to their view but that it is the speaker's tacit knowledge of the generative rules and principles that matters. This knowledge of the rules and principles of a compositional semantics is prior to understanding and moreover necessary to a speaker's being able to subdoxastically analyze and consequently understand sentences of her language. At the same time CV can then argue that knowledge of semantic theorems forms part of understanding but is not prior to understanding. Instead knowledge of the theorems will be concurrent with and a necessary aspect of or corollary to understanding.

Indeed when we look at psychological explanation it is apparent that the issue is not that we have tacit knowledge of meaning theorems that we hook up with sentences we hear. The issue is that we have tacit knowledge of the semantic axioms that generate those theorems. Without a consideration of the generative rules or axioms of a theory, the issue about knowledge of meaning theorems would never arise. However, the skeptics in throwing out the need for knowledge of semantic theorems in explanations of language understanding of course also deem knowledge of semantic axioms unnecessary.

In short then we can say that there is support for CV's argument for the need of a level 1 explanation in explanations of language understanding. For one, we have established that the assumption that understanding is structured is the

most plausible one, and that even Schiffer relies on it in his counterexample.

The assumption that understanding is structured entails a further assumption that there is a system of rules and principles (that provide the structure) involved in the process of understanding. This means there is a set of axioms involved in the process of understanding. These axioms would play a role in understanding at the same point in the process as Schiffer's conceptual roles do, i.e., at the algorithmic level. In other words, there is either Schiffer's computational story about the conceptual roles which guarantee Harvey's concurrent beliefs about a sentence or there is CV's story about (semantic) axioms which guarantee the appropriate (semantic) theorem is generated for the sentence. According to the first, the conceptual role algorithms generate the output by means of a compositional syntax that reveals the structure of the whole sentence by identifying its subsentential components. According to CV the algorithms generate the output by means of the axioms of a compositional semantics that reveals the structure and meaning of the whole sentence by identifying its subsentential components and their meanings. Thus so far, it appears that either story is plausible.

Note that these algorithms operate according to a set of axioms (whether they be of a compositional syntax or a compositional semantics) from which it follows that there is also a set of theorems being generated from that set of axioms. And in this case what happens is that the theorems generated

are the very theorems that the function at level 1 maps input utterances onto; specifically it maps natural language utterance tokens onto Mentalese representations of these theorems. Moreover, it should now be clear that this mapping that is performed by the function at level 1 happens by means of the computational operations of algorithms at level 2 which generate the output theorems from the axioms of the theory.

At the same time we also found that when one offers an explanation á la Schiffer at level 2 only the question of which function is computed at level 1 never arises. And when we don't talk about the function this means first of all that we don't have to address the theorems this function would issue in. Thus secondly, it means we do not have to address the axioms that would generate the theorems either. This in turn means that we can avoid discussing whether a competent speaker might have (subdoxastic) knowledge of a set of axioms, which means we can avoid any talk of subdoxastically represented theories. But if we can indeed circumvent any discussion of the latter then we cannot claim that we have really explained what is going on at level 2. In other words, if we want to fully explain what happens at level 2 we have to bring level 1 into the discussion, because it allows us to clarify what occurs at level 2 and because it is here where we can separate structured from unstructured understanding.

8.2.4

So far we have offered reasons in support of CV based on taking a closer look at Harvey--who offers the main obstacle to CV's success--and possible problems with that account. We found: (1) the idea that understanding is structured, (2) the claim that if (1) is the case we need an explanation at level 1, and (3) the further claim that if (2) then we need a compositional semantics. Although these claims are not foolproof, it does appear that CV's position is plausible even if not incontestable. Fortunately, there are still more issues to tackle the outcome of which may favor CV. CV has not yet exhausted its resource of potential arguments.

We found that knowledge of what was said does not entail understanding. Hence a non-English speaker like Nicole can know what was said in a particular isolated utterances of an English sentence σ, if she has been specifically told that the speaker in uttering σ said that p, without understanding the meaning of this utterance.[151] Thus in certain isolated instances two people can be presented with the same English input token, go through the exact same mental processes or

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[151] In this respect Nicole is not unlike Soames's student who was told and hence knows what is said by logicism without really understanding what 'mathematics reduces to logic" means.
Soames also claimed that knowledge of what was said did not necessarily entail understanding, arguing that all a compositional semantics could issue in are theorems that offer knowledge of the proposition expressed (knowledge of what was said) and then arguing this knowledge does not lead to understanding. Thus according to Soames knowledge of the proposition expressed: (i) does not guarantee understanding, i.e., it is not sufficient for understanding; (ii) is not necessary for understanding; and (iii) ultimately understanding does not require a compositional semantics.

transitions from (a) to (b) to (c) and yet not both come to understand the meaning of the input sentence. This suggests the transitions happens without a compositional semantics for English. Thus supposedly even Harvey, who has the ability to go through these transitions for any possible sentence of the language, makes those transitions without a compositional semantics and thus he understands the language without needing a compositional semantics.

For Schiffer this means that the upshot about language understanding is that reaching a belief about (or knowledge of) what was said: (i) does not require a compositional semantics; (ii) does not guarantee understanding, i.e., is not sufficient for understanding; and yet (iii) is just about all that is necessary for understanding. Hence his claim that a compositional semantics *is not* and *need not* be a part of language understanding, a claim he obviously shares with many skeptics of CV.

Yet, cases like Nicole's also call into question the assumption that in attributing this very process to Harvey we can justifiably be said to have explained his process of language understanding, or to judge him to have achieved understanding. It is just as plausible that the example could lead to the conclusion that there is something lacking in the explanation of Harvey's process.[152] In other words, the fact that knowledge of what was said does not guarantee under-

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[152] Hence the explanation fails to indicate the difference between Harvey's and Nicole's mental states and processes.

standing might actually serve as a motivating factor for CV to claim that we need to redefine what understanding is. Knowledge of what was said in an utterance of s and understanding the meaning of s are clearly the consequence of processes the speaker (or non-speaker) goes through. Ideally, these processes can be clearly enough defined so that they cannot be identified with one another. In other words, there has to be a way to distinguish the process that leads to understanding from other processes and similarly there has to be a way to distinguish those who have the capacity to understand indefinitely many sentences of the language from those who exhibit occasional cases of knowledge of what was said in a particular sentence.

In relation to this if we consider the example of English* again we find the following. I think it is fair to assume that when Stella (the unstructured understander) is presented with any random selection of English* subsentential components, she would be unable to identify their meanings. However, Harvey when presented with the same selection would be able to pair each subsentential component with its meaning. Similarly, if Harvey and Stella were to be presented with a semantically vacuous but syntactically correct sentence of English* whose individual subsentential components have meaning neither one of them could be said to be able to make this sentence intelligible.[153] But presumably Harvey

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[153] I have in mind here something like Chomsky's "Colorless green ideas sleep furiously". This sentence is semantically vacuous in that we can

would be able to identify the reasons why it can't be made intelligible whereas Stella, who can only attain knowledge of what was said for whole utterances of English* that are semantically acceptable, will fail to recognize that certain syntactically correct arrangements make no sense. In other words, it seems that we would expect Harvey to have some systematic and rational means for distinguishing those sentences with semantic content from those without such content. The question of course is whether such an expectation is defensible or not.

This brings us to the second approach to undermine Harvey's case, to wit, the approach that relies on a redefinition of understanding. Such a redefinition would have to indicate that for understanding to occur more than just a computational story that includes the structure of a compositional syntax is required. And in fact folks like Lepore argue that understanding should at least entail that we know the conditions under which something is true. This means that for understanding to occur the computational story should include a compositional truth theory or compositional meaning theory that relates the generated theorem to the world. And as far as CV is concerned it would entail that there is a clear and distinct difference between the process Harvey goes through compared to the process his friends Nicole and Stella go through.

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never attribute a truth value to it, nor are we able to explain what it means.

§8.3 WHAT IT MEANS TO UNDERSTAND

8.3.1

To avoid the consequence of Schiffer's position and if they want to maintain their position CV theorists need to offer an account of the process of language understanding such that it can never be attributed to someone who does not understand the language. This means they need to take a closer look at what exactly understanding entails. And it is here that Lepore's concerns with understanding show a close affinity to CV's concerns.[154]

Lepore, in response to the skepticism Schiffer and Fodor express about the need of a compositional semantics in explaining language understanding, sets out to prove the following propositions:

> I. Understanding a natural language requires metalinguistic knowledge.
>
> II. This metalinguistic knowledge must be semantic, and so cannot be merely translational.[155]

Lepore argues that metalinguistic knowledge of semantic information plays a causal role in the process of understanding. He introduces his notion of a *rationalizing step* into this argument, claiming the role the semantic information plays takes the form of this rationalizing step. In effect

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[154] Ernest Lepore, "Conditions on Understanding Language", in ..1996.

[155] Lepore, "Conditions on Understanding Language", 49.

what Lepore intends to achieve with this claim is that genuine language understanding requires a (presumably tacit) rationalizing step or demonstrative inference on the part of a competent speaker. This step or inference rationalizes her beliefs about what was said in particular utterance tokens or about what the meaning of particular utterance tokens was. On a first approximation the rationalizing step can be characterized as follows.

First of all, it is a causal step in a competent speaker's process of understanding that justifies the belief this speaker forms about what was said in a particular utterance token. Thus as Lepore points out, for any competent speaker her

> belief that p (partly) rationalizes [her] belief that q only if the belief that p is (partly) causally responsible for the belief that q.[156]

Another way to characterize the rationalizing step then is to say that the step serves as a justifying belief. Thus in the above quotation the belief that p is the justifying belief for the belief that q. It is only once this justifying belief has been formed--a belief that goes beyond the speaker making her transition from utterance token to a mental representation in her belief box about what was said--that the speaker not only can be said to know the theorem in question but can be said to have understood the utterance token and thus to

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[156] Lepore, "Conditions on Understanding Language", 53.

understand the natural language in which the token was uttered.

Secondly, the rationalizing step occurs every time that a speaker makes use of her knowledge of a semantic theory to effect the process of understanding. Now given this fact and the fact that the rationalizing step is causal in nature it follows that the knowledge of a semantic theory attributed to the competent speaker plays a causal role in her computational processes that lead to understanding as well. In other words, this knowledge is a necessary aspect of a speaker's ability to justify her beliefs about what was said, which simply means that semantic knowledge is necessary in the process that leads to genuine language understanding. Moreover, the rationalizing step in being causal of course occurs before the speaker forms a belief about what was said and thus it means that her justifying belief is prior to her belief about what was said, instead of being after the fact.

Thirdly, the rationalizing step as characterized above distinguishes those who understand the language from those who might know what was said in a particular utterance but who cannot be said to understand the language. According to this distinction those who do not understand the language do not understand it simply because they cannot justify their beliefs about what was said. In other words, they might move through a set of transitions that takes them from utterance tokens to beliefs about what was said without being able to

rationalize their own transitions. On the other hand, as Lepore states

> if one understands a language, he must have reasons that rationalize his transitions

whether these reasons be

> conscious, unconscious, tacit, explicit, implicit, or any other sort.[157]

In short, if Lepore is correct, without the rationalizing step we cannot attribute understanding to a speaker.

Of course, for skeptics like Fodor and Schiffer understanding an utterance consists in a speaker's making a non-demonstrative inference from the utterance token to a mental representation of what the other speaker said in that utterance token. And thus the ability of a speaker to understand her language is exhaustively explained by her ability to map utterance tokens of natural language expressions onto representations in her language of thought without any metalinguistic knowledge and thus without any semantic knowledge.

Note that in essence Lepore is arguing for CV, because the notion of a rationalizing step neither entails nor does

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[157] Lepore, "Conditions on Understanding Language", 53. Similarly to Lepore, Dummett is concerned with defining understanding by characterizing what constitutes knowledge of meaning, as opposed to knowledge of what was said. He claims that a speaker's knowledge of meaning is not her mere awareness of a fact about an utterance token, but that it involves a particular process of derivation.

it require that a speaker's knowledge of meaning exhaustively explains understanding. There is no intention nor need to argue that the rationalizing step is sufficient for explaining understanding. And since CV theorists need not claim that knowledge of a compositional semantics by itself serves as a sufficient condition for explaining language understanding, but merely need to claim that such a semantic theory plays a necessary role in aspects of the computational process of understanding, the rationalizing step can be incorporated into their view. More importantly, it might turn out to be the factor that saves their view from all the critics, insofar that it may offer a compelling argument in favor of their position.

8.3.2

I characterized the rationalizing step as offering a means to distinguish understanding from other states of knowledge. But before considering this distinction there is another matter which, although not directly related to the concern of distinguishing knowledge from understanding, does shed some light on why CV's position is compelling. To illustrate this consider the following sample theorems.[158]

(1) "Gras is groen" means that grass is green.

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[158] This example is based on the example that Lepore discusses. He uses the same theorem types to illustrate various points. Although his main point there is to argue against skeptics who rely on a reliabilist argument to support their translational account of understanding, it does have further implications.

(2) "Gras is groen" in Dutch translates "grass is green" in English.

Lepore notes that to know theorem (1) is the case you do not need to understand English, but you cannot know theorem (2) is the case without also understanding English.[159] In other words, one cannot know what the translation theorem (2) states without already understanding the language into which the utterance in question is being translated, i.e., the language of the canonical representation or the metalanguage. However, in the case of the meaning theorem (1) the utterance in question is related to the proposition it expresses and as such the issue of the metalanguage does not even arise.

Although one might at first fail to see the relevance of this observation what makes it important to CV is this. It means that a semantic theory that specifies the meaning for a sentence, i.e., a theory that issues in semantic theorems rather than translation theorems, may characterize knowledge that is (partly) sufficient for understanding that sentence. In other words, the meaning theorems could (partly) contribute to the speaker's understanding of the sentence.[160]

This does not help establish whether CV's position is ultimately defensible, It does of course underscore the fact

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[159] Lepore also notes that to understand either theorems (1) or (2) the speaker must understand English.

[160] The fact remains that knowledge of theorem (1) is not sufficient for understanding, since one can know (1) without understanding, but we already know that this is not a real issue for CV theorists who are committed to the claim that this knowledge is necessary for understanding.

that when you understand theorem (1) and thus you understand the meaning of the sentence *s*, there is more to it then simply knowing the theorem.[161] But it does offer indirect support for CV as I argue below.

In contrast to a compositional semantics that issues in meaning theorems, a translation manual that issues in theorems that specify the translation of a sentence into another language does not characterize knowledge that could (partly) contribute to understanding unless one also understands the metalanguage. This means that the translation manual by itself does not even begin to contribute to understanding. This is indeed the problem that I indicated in L&S's account. We found that the knowledge they attribute to speakers is of a truth theorem, but that in essence the role they assign to this knowledge is such that a translation manual could perform the same task. A translation manual will either issue in translation theorems like theorem (2) or it will result in beliefs about what was said (as in Harvey's case). But here is the clincher.

The importance of the above example is that it shows CV has one advantage over translational accounts in that it does not have to appeal to reliabilism. According to reliabilism a speaker's belief about what was said when a sentence was uttered is justified iff the mental processes that produce this

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[161] This brings us back to Soames's objection that knowledge of the semantic theorem does not suffice for understanding. Thus skeptics who deny that knowledge of meaning--where the latter is understood as knowledge of a semantic theorem--guarantees understanding are actually on the right track.

belief are truth-inducing in the relevant set of counterfactuals or possible worlds. If one buys into a translational account of language understanding one has to also buy into some version of a reliabilist story. In other words, if one wants to be able to claim that understanding is a matter of reliably mapping natural language utterance tokens onto their Mentalese translations, one has to provide a story about what it is that guarantees the mapping indeed occurs reliably. Once again here we find that indeed L&S rely on the assumption that speakers are so constituted as to acquire an interpretive truth theory, on the assumption that these speakers treat the latter's theorems as interpretive, and on the assumption that the theory they in fact acquire is indeed interpretive. Thus they assume there is a reliable connection between the linguistic constitution of the speaker and their factual acquisition of a semantic theory.

Along the same lines even Schiffer's explanation of Harvey has to provide a means for guaranteeing that the appropriate sequence of beliefs appears in his belief box when he understands a sentence. Granted, Schiffer is not appealing to any knowledge of a translation theorem, but reliabilism might still be a problem for him given his appeal to the ceteris paribus clause which he introduces in his compositional supervenience theory and which ensures there is a reliable

relation between various conceptual roles of "said that" and "true".[162]

The sample theorems then show that CV is not relying on any claims that are any more complex or extreme than the claims that various translational accounts have to rely on. In other words, CV theorists are not incurring any debts that go beyond the debts that skeptics incur when it comes to explaining language understanding. And as I will try to argue, those complex claims that CV does make are not merely plausible but moreover are intended to offer genuine philosophical insight into the process of language understanding rather then resorting to physiological assumptions about the process.

8.3.3

Lepore's introduction of the rationalizing step, if successfully argued for, is paramount not only to his own argument but to CV as well. Remember that CV's second potential argument against Harvey is that Harvey cannot justifiably be said to have attained understanding. The only way CV theorists can argue this is if they find a way to more carefully define what understanding entails which means they have to indicate what it is that distinguishes those who understand a language from those who don't.

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[162] The ceteris paribus clause in essence plays the same role in Schiffer's account as that which Lepore refers to as reliabilism plays in other skeptical accounts of understanding. CV however does not have to appeal to reliabilism.

To put it more succinctly, CV needs to distinguish *understanding* a language from any other form of *knowledge* or *belief* a speaker may have about what was expressed in particular utterances. This means distinguishing a speaker's *knowledge of a level 1 theorem*--generated by level 2 operations--for a particular sentence of the language from a speaker's actual understanding of the language (and thus her understanding of the natural language sentence contained in the theorem). Or alternatively, it means distinguishing a speaker's *belief about what was said* in a particular utterance token from a speaker's understanding of the language. The first distinction will fuel CV's argument against all skeptics who attack CV on the basis knowledge of a semantic theorem is neither necessary nor sufficient for understanding; the second distinction will offer an argument against cases like Harvey's specifically.

The significance of the rationalizing step to CV lies in making these distinctions. The rationalizing step does not merely attribute knowledge of meaning (or semantic knowledge) to competent speakers but offers a more plausible argument that this knowledge plays a causal role in the process of understanding. According to this argument understanding includes not just a specification of a semantic fact, i.e., a semantic theorem, known by a speaker but moreover and perhaps more importantly, it specifies how a speaker obtained knowl-

edge of this semantic fact.[163] And this specification of how the knowledge of a semantic theorem was obtained reveals what distinguishes those speakers who actually understand utterance tokens of their language from those who do not.

Now, as we already saw in the characterization I gave of the rationalizing step the difference between those who understand and those who do not simply is that those who understand the language are a) justified in their belief about what was said in an utterance, or in their knowledge of a semantic theorem for an utterance and moreover b) can (or could in principle) offer reasons in support of their belief or in support of their knowledge. So, although it might be the case that a particular speaker's belief about what was said is correct and hence justified this does not mean that her belief was in fact rationalized, i.e., that the speaker has reasons for her belief. And someone who cannot offer justifying reasons does not understand the language. In other words, the process of understanding must include a rationalizing or demonstrative inference that justifies the particular belief or state of knowledge about the content of an utterance.

The problem with translational accounts is that the latter even with the addition of a reliabilist clause fail to identify those characteristics that distinguish those who un-

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[163] It should be clear here that most skeptics of CV assume that CV's claim about the need of a compositional semantics in explanations of language understanding is essentially a claim that knowledge of a semantic theorem or fact is required for understanding. It is the latter claim that they have problems with.

derstand from those who do not.[164] That is why Lepore argues that even if one wants to give a translational account where a reliable connection is made between utterance tokens and what was said in those tokens one still has to appeal to a rationalizing step, i.e., semantic knowledge, if one wants to explain understanding.

For example, if we want to explain how both Harvey and Nicole upon going through the same process do not both achieve understanding we would identify the feature which separates speakers like Harvey from non-speakers like Nicole. Since they are both equally justified in their beliefs about what was said in a particular English utterance token the difference must lie in their respective abilities to offer reasons for being justified in having this belief.[165]

Note then that Lepore's argument in support of the rationalizing step is not intended as an outright rejection of translational cognitive stories of language processing. Instead, he simply claims that these translational accounts are not enough to explain language understanding, because they do not include a rationalizing step. Moreover, the appeal to knowledge of a translation theorem entails that they

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[164] Remember that accounts like Schiffer's specifically do not distinguish between those who understand and those who do not.

[165] The rationalizing step might clarify another issue. We found that according to Schiffer in the case of beliefs about what was said understanding is not an issue because one does not understand one's own beliefs or thoughts; one simply has them. Nonetheless, Lepore's rationalizing step would still distinguish those beliefs about what was said which one can justify from those which one cannot justify. In other words, Schiffer's observation does not preclude the potential of separating merely justified beliefs from rationalized beliefs.

need a reliabilist story as well, which makes the account unnecessarily cumbersome. Similarly, Harvey's translation story also depends on reliabilism. Thus Harvey's processing does not suffice for explaining understanding either. As such, Lepore's support for CV is in line with mine because it underscores my objection that whatever Harvey has achieved does not qualify as understanding.

8.3.4

With respect to Harvey (and his beliefs about tofu) we find that although the translation story suggests that Harvey is perfectly justified in his belief (b) that Jean said that tofu is tasteless based on his belief (a) that Jean uttered 'tofu is tasteless', it does not explain how he justified his belief. Of course the story was never intended to do the latter. For Schiffer the translational account not only does not, but need not include any rationalization of a semantic nature. Nonetheless, if we were to ask Harvey why he believes that Jean said that tofu is tasteless we would expect him to be able to explain or rationalize his belief. In other words, we would expect him to have a prior belief to the belief that Jean said that tofu is tasteless which rationalizes this latter belief.[166]

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[166] The same would be the case with Harvey and Stella. If they were to occasionally be presented with a semantically vacuous but syntactically correct sentence of English*, we would expect Harvey (as an English* speaker) to have some systematic and rational means for distinguishing those sentences with semantic content from those without such content but we would not expect the same from Stella (as a non-speaker).

However, as far as the translational description of Harvey's cognitive processing goes, it appears that he himself does not know why his belief that Jean said that tofu is tasteless is justified. In fact, the translational account does not and cannot account for the reasons Harvey might offer that justify his belief, because the cognitive processes ascribed to him do not include any type of rationalizing step. Instead, the entire explanation is predicated on the notion of supervenience and on the reliable connection made by the conceptual role algorithms between the supervening properties, i.e., between the various states of belief Harvey moves through. This means Harvey is incapable of offering reasons for his belief, other then claiming that he is so constituted as to always reliably translate beliefs about what was uttered to beliefs about what was said whenever he hears any sentence of his language uttered.

But clearly, the reasons that Harvey can adduce to justify his belief cannot be simply that he knows that he is so constituted as to be justified in his belief. Relying on such knowledge is illegitimate in this case because it invokes the "KK principle", a principle according to which essentially one is justified in one's belief because one is justified in being justified about this belief and this is plainly circular.[167]

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[167] The main trouble with the KK principle is that it tends to lead to an infinite regress. And when it comes to explanations, we tend not to look favorably upon such regress. And indeed we found this to be a problem in L&S's account where they rely on the claim that a speaker knows that she is so constituted as to use an interpretive truth theory

This suggests to me that if a speaker, any speaker, cannot offer reasons for her belief about what was said in a particular utterance token, then we should withhold linguistic comprehension from that speaker. In effect, a speaker, who essentially does not know why she has a belief, is simply clueless about her own belief. And our assumption here of course is that cluelessness precludes understanding.[168]

One objection skeptics could raise here is that it is rather doubtful that children who clearly understand their language could offer reasons for their beliefs about what was said. Although I have no water tight argument against this objection I do think one way to address it is by making the following qualification on the above. We should withhold understanding from those who cannot in principle offer reasons for their beliefs about what was said. This means that a speaker who understands her language is able in principle to offer reasons for her beliefs about what was said in particular utterances. Presumably in most cases the rationalizing step occurs subdoxastically, which means that the speaker upon hearing an utterance is not consciously rationalizing her belief about what was said in that utterance.

As it stands Harvey's translational account is compatible with the speaker being considered clueless. This leads me to conclude that the translation story (even combined with the computational story) without any further qualifications

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to justify that her linguistic judgments about what was said are justified.

[168] This assumption to me is not contentious.

is inconsistent with having genuine understanding. As such Harvey's case is not only underdescribed but in fact does not allow us to attribute understanding to Harvey.

§8.4 IN CONCLUSION

8.4.1

Lepore seems to suggest that the translational account would benefit from the introduction of the rationalizing step. But in fact the rationalizing step is intended to undermine the translational account by attempting to establish that semantic knowledge is necessary for understanding. And although perhaps other accounts once they have incorporated a rationalizing step in their account would allow us to distinguish understanding from other states of belief, the value of incorporating the rationalizing step to CV is the following.

I believe that if the rationalizing step is incorporated into CV's account it will strengthen their argument that compositional semantics are necessary in explanations of understanding for two reasons. First, we saw that the rationalizing step allows for a re-definition of what understanding entails. And it is this new definition of understanding which reveals the need for a compositional semantics in explanations of understanding. In redefining understanding the rationalizing step also clarifies what it means to claim that a speaker has knowledge of meaning. It means the speaker has tacit knowledge of a compositional semantics that she uses

when interpreting sentences and it does not just refer to an isolated state of knowledge of a semantic theorem.

When the rationalizing step is incorporated into CV, CV theorists can argue that when a speaker understands a sentence of a language she not only knows what the semantic theorem (of the form "s means *p*" or "s expresses the proposition that *p*") that contains this sentence states, but she also can offer reasons for arriving at her knowledge of the semantic theorem. If knowledge of the theorem generated is partly necessary for understanding it means that (tacit) knowledge of the system of semantic axioms, or set of semantic rules and principles from which the semantic theorem is generated is a necessary aspect of understanding as well. And these very semantic axioms are what form a part of Lepore's rationalizing step. In other words, it is in virtue of the speaker's knowledge of the axioms of a semantic theory that she is able to tackle any potential utterance of her language and is able to generate a theorem knowledge of which forms part of her understanding. And this knowledge of a theorem would be rationalized by the speaker's knowledge of and use of the generative system of semantic axioms. At the same time, a consequence of a speaker's having acquired genuine understanding would be that she would be able in principle to subsequently draw analytic inferences from her knowledge of what was said.[169]

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[169] Thus, one way to check whether Soames's student has attained understanding is to check whether the student can draw analytic

8.4.2

I have tried to bring some clarity into the debate about language understanding and its relation to compositional semantics and to secondly argue in defense of the Common View (CV) that compositional semantics are necessary in explanations of language understanding. Although I believe I have indeed managed to shed some light on some of the issues at hand, I ultimately feel less certain about having done CV a service. Rather then offering a solid defense in favor of their position I have merely achieved to reopen the debate, by trying to cast doubt on the main challenges CV faces. At this point it is clear that I have not succeeded in offering a foolproof argument against the one standing challenge that Schiffer offers.

My original intention as I embarked on this project was to defend CV's position by offering arguments against all the objections raised to their position by the skeptical opposition. Some of the objections I indeed have shown to be either misguided or otherwise unsuccessful.[170] In the latter case part of my argument was that all CV needs to be committed to is that knowledge of a compositional semantics is necessary in explanations of understanding but that it is of no consequence to their view whether such knowledge is or is not suf-

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inferences from σ. If she can this suggests she understands the sentence and thus that she is semantically competent.

[170] The misguided objections are by now the familiar objections that Soames raised which were informed by his concern with disciplinary boundaries.

ficient for understanding. This more narrowly defined commitment showed that several of the objections raised to CV were targeting circumstantial aspects rather than foundational aspects of their view. Of course it also made apparent which were the most challenging objections CV had to try and overcome.

Of these objections, the counter-example of Harvey has consistently proven to be difficult to tackle. In order to be able to address this counterexample as thoroughly as possible I have tried to shed light on the issues it raises by discussing it in light of our findings on propositionalism and psychological explanation. We found that a propositionalist version of CV avoids most of the problems its extensionalist counterparts face, thus allowing us to focus on what really matters in the debate. We also found that even Schiffer acknowledges that there remains at this point the possibility that propositions are compositionally determined. If this turns out to be the case it would at least follow that the latter would form part of the supervenience machinery that he sets up. This of course is no guarantee that it is necessary in explanations of understanding. However, it did at least warrant a look into the propositionalist angle on CV's claims. In other words, given that propositionalism at this point still appears to be a genuine and plausible possibility, CV was worth another run for its money.

As to the debate we realized that the issue that matters to CV is whether knowledge of meaning plays a necessary role

in explanations of language understanding and what such knowledge entails. The way I approached that was by looking into psychological explanation. And from the point of view of psychological explanation I argued that it is questionable whether Schiffer's explanation of language understanding indeed qualifies as such. In other words, I argued that what he offered as being Harvey's process of understanding was underdescribed and thus that whatever Harvey had achieved in going through that process did not qualify as understanding.

This brought us to the final concern of having to redefine what constitutes understanding. Here I introduced Lepore's notion of a rationalizing step, that feature that would distinguish mere knowledge of a theorem from genuine language understanding.

Although I did not offer a concise argument for the necessity of a rationalizing step in the process of understanding, I did outline what such an argument might look like. In essence, with the rationalizing step as part of their account CV could claim that language understanding should be explained through a theory of meaning that shows how M-sentences or meaning theorems are derived, because without an indication of how a speaker's knowledge of a meaning theorem was derived we cannot distinguish competent speakers from those who are not. In turn, the only way to derive semantic theorems is from semantic rules and principles, i.e., from semantic axioms.

The result of my efforts as such has turned out to be suggestive rather then final. I can only hope it will spark further debate.

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